LSME RESEARCH COMPENDIUM

2022

PUBLICATION OF
RESEARCH PAPERS
PRESENTED AT THE
8th LSME INTERNATIONAL RESEARCH CONFERENCE ON
SUSTAINABLE DEVELOPMENT
AND EDUCATION

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RESEARCH PAPERS PRESENTED AT THE 8th LSME INTERNATIONAL RESEARCH CONFERENCE ON SUSTAINABLE DEVELOPMENT AND EDUCATION

Held on 26 – 27 August 2021
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FOREWORD

The international conference reported in this compendium of research papers is the 8th consecutive iteration in a series built on the principles of Responsible Research and Innovation (RRI) and themed annually to reflect changing priorities and points of focus for practitioners and academics around the world. The theme of our conference in 2021 was ‘Sustainable Development and Education’, which encompassed key challenges facing the whole of society and the design, delivery, consumption and lived experience of social systems.

Staging the event in 2021 presented continuing challenges for the organising team due to travel and social restrictions imposed by the ongoing global pandemic. However, by adopting a virtual delivery environment, continuing to uphold the principles of open access for researchers at all levels, and making participation for presenters and delegates free of charge, this conference achieved another successful milestone, with record numbers of researchers seeking to deliver their work through this important forum.

This compendium provides a complete account of the 2021 event, as an historical record for the ongoing Conference series, and for the stakeholders involved in its successful staging and delivery. It will also serve as a point of reference for scholars, academics and practitioners wishing to participate in future iterations of the LSME International RRI Conference series.

It was particularly encouraging that the 2021 conference once again achieved high levels of participation and enthusiastic support. The open nature of the overarching theme of RRI is perhaps at the core of this, as participation is based on principles of building research concepts with the needs of all stakeholders in mind, allowing for consideration of multi-faceted social phenomena, acknowledging the connection between the researcher and the researched and dissemination of results for open access. In common with all events in the series to date, the 2021 Conference was an inclusive celebration of research in many forms and featuring papers from novice and seasoned research practitioners alike, all welcomed on an equal footing and to our evolving research community. It can be counted as a success that the 2021 Conference bore the now traditional hallmarks of RRI as an academic focus, providing a supportive, collaborative, and distinctive research community for our contributing researchers. Of course, we continue to make the outputs from the Annual LSME International Conference series available on an Open Access basis, through LSME and our partner institutions across the globe.

On behalf of LSME, I express sincere thanks to members of the Organising Committee, and acknowledge the vital contributions made by Peer Review Group and Editorial Committee members. Grateful thanks too are extended to the staff and students at LSME, all who sought to take part in the conference including delegates and participants in the conference event. We were delighted that the 2021 event was again over-subscribed by more potential contributors than we were able to accommodate, which reinforces the contention that this is a vibrant and vital platform for collaborative engagement in research and reporting. We are especially grateful for
the unspoken by considerable good will of those who were unable to take part directly in the Conference.

Special thanks are given for the generous and unstinting work undertaken by dear colleagues, Professor Stephen McKinney, Dr Ravi Kumar, Dr Peter Gray, Dr Alexandra Okada, Dr Dolly Jackson-Sillah and Hassan Shifau, whose vision and drive continue to drive forward the LSME Conference series.

Dr Sarita Parhi  
Principal, London School of Management Education
INTRODUCTION

The 8th Annual LSME International RRI Conference on Sustainability Development and Education took place online in August 2021 and featured contributions from a wide range of researchers and the research community. A tightly packed agenda delivered high quality content to an eager and engaged audience seamlessly and synchronously across many time zones. Opening speakers offered insights into key drivers for research across many aspects of society, and we were once again treated to highly polished and professional delivery from novice and experienced researchers alike during the main Conference programme. Delegates were enthusiastically engaged as is an ongoing up-side of this series, such that the event must be considered a complete success. Since the event took place, the proceedings have been further scrutinised and refined into this document which we hope will be bring value to all who consider its contents.

This compendium of Conference contents and proceedings presents papers in the context of guidance given to those whose research papers were selected for presentation. There is information about the hosting Institution (LSME) and those whose ‘behind the scenes’ contributions were vital to conference delivery and the publication of proceedings. The main body of the document comprises papers presented at conference, organised around key themes and streams to optimise coverage of diverse subject matter. Messages from key contributors and conference supporters provide additional perspective for the 2021 event and its origins in the wider educational and social settings from which contributing authors were drawn.
OBJECTIVES OF THE CONFERENCE

The conference was underpinned by the overarching tenets of Responsible Research and Innovations (RRI) that have served to guide the LSME Conference Series since inception in 2015. The 2021 event featured the following objectives:

• To provide an inclusive platform fostering an active community of researchers collaborating
• To focus on issues of social significance and societal concern
• To advance the principles and practices of Responsible Research and Innovations (RRI) in support of researchers at all stages of their research journey
• To provide an open and accessible mechanism for sharing creative contributions to the research agenda across a range of subject matter and discipline areas

CONFERENCE MISSION STATEMENT

Our long-standing alignment with the tenets of Responsible Research and Innovation agenda provide an overarching mission for the conference, namely to:

• Promote social justice, inclusion and equity
• Increase the influence of research on policy and practice in key impact areas
• Increase the commitment of participants in research via active involvement in all stages of an open, principled and inclusive process of investigation and dissemination of findings

These principles are applied equally to all participants, including researchers, academic observers, delegates and the wider communities touched by research projects explored in the conference.
ABOUT THE LONDON SCHOOL OF MANAGEMENT EDUCATION (LSME)

The London School of Management Education (LSME) is a Higher Education Institution based in the London Borough of Redbridge, United Kingdom. Established in 2007, LSME provides a growing portfolio of opportunities for higher education study to an ever-expanding community of stakeholders across London and the South East of the UK.

VISION

To play a leading role in the delivery of global education services in partnership through radical Lifelong Learning training, equipping managers, health and social care professionals, tutors, teachers and trainers, with modern and transformational standards.

MISSION

Our mission is to provide affordable and high-quality training for aspiring and practising managers, health & social care professionals and educationalists that is innovative and global in perspective and abides by the United Nation’s Principles of Responsible Management Education. Values the School seeks to nurture and sustain a creative and supportive academic environment based upon an ethos of respect and transparency.

COMMITMENT

We are committed to:

- High-quality learning experience
- Developing and sharing expertise to strengthen our capacity
- Professional relationships based on mutual respect and transparency
- Equality and diversity
- Financial robustness

The School's philosophy is enshrined in its slogan: “Transforming people with skills”. We aim to introduce our students to the innovative skills required for their careers in business, education or health and social care. LSME aims to achieve this by being a facilitator for encouraging scholarly inquiries that examine “education and the learning processes and human attributes, interactions, organisations, and institutions that shape education and its outcomes”.

Research Papers Presented at the 8th LSME International Research Conference on ‘Sustainable Development and Education’
MESSAGE FROM THE 2021 CONFERENCE CHAIR
PROFESSOR STEPHEN MCKINNEY

The 8th LSME International Research Conference was held on the 26th and 27th of August 2021. The theme of the conference was Sustainable Development and Education. This was the second year in a row that the LSME conference was completely online – a move that was necessitated by the restrictions and lockdowns imposed by the pandemic. This was a new major theme for the LSME and the conference sought to explore the relationship between sustainable development and education. This theme is highly relevant to the present age and requires sustained and systematic research that is focussed on practical issues and is interdisciplinary. We record that there was some progress in the international strategies to protect and care for the environment at the Cop26 conference in Glasgow in November 2021. However, there is an awareness that there needs to be further progress and greater commitment from some of the world superpowers.

There were some significant highlights in the conference. The conference began on the morning of the 26th with a keynote and a special lecture. The keynote by Professor Petra Molthan-Hill was inspiring, informative and detailed. The special lecture by H.E. Dr Abdulla Naseer, Minister of state for the environment, Maldives, was insightful and very thought provoking. The keynote and the special lecture provided an excellent start to the conference and set the scene for the discussions and debate over the two days. All at LSME are grateful to our keynote speaker and special lecturer for their willingness to speak and for being so well prepared.

There was a diverse range of papers presented at the conference and this research book includes a large number of these papers. The members of the conference committee were delighted with the quality of the papers and the high level of academic rigour demonstrated in the research. I am especially delighted to note that many of the papers have been produced by early career researchers. This reflects one of the great strengths of the LSME Conferences – the support and nurture of early career researchers. The conference and this book provide excellent opportunities for them to share and disseminate their research findings. I also thank all of those who also presented papers at the conference but have not submitted for publication and I thank all of those who participated in the conference as delegates.

I thank Lord Sheikh, our Chief Guest, and the guests of honour for participating in the conference. I thank the members of the conference committee for all of their hard work: Dr Ravi Kumar, Dr Sarita Parhi, Mr Hassan Shifau, Dr Dolly Jackson-Sillah, Dr Peter Gray, Martin McAreavey, and Dr Alexandra Okada. I thank all of those who reviewed the abstracts and for the conference and those who reviewed the full papers published in this book. The staff and students at the LSME, as always, provided invaluable support to the conference and I think all of those who were rapporteurs and those who provided IT support. I conclude with my congratulations to Dr Ravi
Kumar, Dr Sarita Parhi and Mr Hassan Shifau for organising such a successful conference and producing this impressive volume.

With very best wishes,

Professor Stephen McKinney
University of Glasgow and Conference Chairman
MESSAGE FROM THE CHIEF GUEST: THE LORD SHEIKH

Dear Reader,

It was once again a great pleasure for me to take part in the 8th LSME International Research Conference earlier this year. This was the third consecutive LSME international research conference that I have attended, and once again I had the privilege of inaugurating the event.

Given the ongoing impact of the Covid pandemic on both a national and international basis, I was delighted to see such a broad range of nationalities and academic disciplines involved this year, facilitated by the use of enabling ICT. It was clear that the success of the 2020 event, also delivered using the internet across international boundaries, had resulted in the development of confidence, capability and flair in the use of technology as the medium for interaction between presenters and delegates. It was heartening too, to see the common ground now occupied by researchers and academics in terms of the dissemination and scrutiny of new knowledge.

Once again, our friends at LSME made a magnificent effort to foster a collegial and democratic atmosphere throughout all aspects of the conference. A tremendous amount of work and coordination clearly went into the preparations for the streamed sessions, including detailed screening of participants, selection of papers, and a myriad of conversations brought together smoothly to deliver a seamless and professional quality event. Without doubt the conference can be judged to have been a success, not only by the quality of the research presentations that were delivered, but also by the high level of interaction between delegates and presenters, a clear hallmark of deep interest generated though significant research themes.

The overarching theme for the conference, namely ‘Sustainable Development and Education’ is increasingly on the agenda for all nations. This year we have seen the start of a more coordinated international movement towards lasting economic change, and with this as a back-drop, many of the papers presented offered startling and challenging insights into the problems faced at grass roots level by those who will assume the mantle for implementing the changes that the world needs in order to survive.

As in previous years’ events in the series, it was particularly heartening to observe young researchers from different parts of the world, offering hope for a brighter future as we learn to adapt to global challenges. The maturity of the research community associated with this conference always fills me with awe and respect for the next generation.
I offer my sincere thanks to all who took part in the 2021 event for your contributions and insights, and I look forward to maintaining my involvement in the ongoing conference series.

Yours Sincerely,

The Lord Sheikh
MESSAGE FROM DR PETER GRAY

Dear readers, friends and colleagues,

This research book represents a long process of quality assurance, beginning with the efforts of the authors and continuing with the peer review process and the great efforts of the LSME team in bringing it to completion. But what do we mean by ‘quality assurance’? The concept encompasses a huge literature, not least in the industrial field, where quality assurance means that your TV is reliable, or your food is safe to eat. In research, as with other fields, there are complex processes at work. In education, particularly, we see ‘quality assurance’ as being related to accountability. Much of the everyday work of Dr Ravi Kumar and his team is devoted to this, and they are very good at it. Beyond LSME, however, we observe world leaders, or more accurately, national leaders, who are blind to the need for accountability. Their education has failed to instill the values of inclusion, internationalisation and induction.

These three words have lost some of their force in education, through a combination of overuse and over-specialisation. Inclusion, opening up to otherness, is reduced to a set of rules and practices. However valuable these are, they are no substitute for kindness towards all. Internationalisation has come to mean exploitation, as in the case of students coming to UK universities (but not LSME) to receive an underwhelming educational experience. And induction often consists of a cursory guide to the whereabouts of the stationery cupboard. All three terms should be connected through a deep vein of kindness and respect for otherness.

These terms should apply to research as much as to education in general. Researchers in the human sciences are not studying inanimate objects, but thinking subjects, whose attitudes and beliefs should be, but often are not, shaped by participating in research and the consequent reflection on their own being and their own practices. The term ‘re-education’ has been devalued through its cynical use by totalitarian regimes, but re-education is how we will overcome the challenges of the world. It is notable that, as mature adults, LSME students are undergoing a process of re-education to instill values of kindness and empathy, quite apart from their paper qualifications, necessary though these are. The relationship between education, research and life experience needs to be rethought and re- emphasised now, before we allow statistics and algorithms to replace thought altogether. Current events show that the Napoleonic mindset of uncaring violence towards others continues to dominate affairs of state. Let us work together, through research and education, to change that mindset.

Dr Peter Gray
Norwegian University of Science & Technology (NTNU), Norway
MESSAGE FROM THE CONFERENCE CONVENER

It is my great pleasure to extend a warm vote of thanks to our esteemed guests, keynote speakers, presenters and delegates for having contributed to the undoubted success of our 8th LSME International Conference on “Sustainable Development and Education”. On behalf of the organizing committee and all who worked tirelessly behind the scenes to deliver another outstanding event in August, I commend all who took part for your universally positive input, generous support and contribution of your valuable time.

In particular I wish to thank our Chief Guests, The Lord and Lady Sheikh, Professor Petra Molthan-Hill, His Excellency Dr Durga Bahadur Subedi and Professor Rajan Welukar for your distinguished contributions to the Conference and your continuing support to the Conference series. As ever we were delighted to receive your insights and observations as an underpinning source of inspiration and orientation to the Conference proceedings.

Special thanks must go to the Organising Committee for once again overcoming significant technical, economic and operational challenges to deliver a seamless and professional event. Likewise, the amazing support and unceasing effort expended by my wonderful staff and colleagues at LSME was once again a hallmark of the quality and attention to detail enabling the success of the Conference. To all speakers, for sharing your research concepts and findings freely, we commend you on your enduring thirst for new knowledge and practical solutions to challenging issues. Finally, thank you too for all delegates for listening attentively, engaging proactively and respectfully with speakers and for gracing us with your presence from so many international locations once again this year. Together we delivered an outstanding research event of excellent quality and wide thematic scope and coverage.

The LSME International Conference Series

Since our first conference in London in 2015, LSME has maintained an enviable track record of events each year, each based around the tenets of Responsible Research and Innovations (RRI) and themed each year to address issues and challenges of particular global relevance. We have enjoyed the opportunity to deliver these events in a range of settings and in a number of high prestige international locations. In 2021 the ongoing global pandemic once again mandated the use of virtual technology in order to enable the Conference to go ahead as planned. Rather than this impacting the Conference negatively, however, this enabled an increase in global participation and reach above and beyond what had previously been achieved in face to face events. We can confidently say, at this point, that we believe we can adapt to any challenge to maintain our onward and upward positive trajectory for the Conference series.
Conference Theme 2021

Our focus this year was selected to reflect the growing international interest in action to deliver sustainable positive change across all aspects of society. Taking an education perspective continued our track record for channeling Conference business into areas of practical impact and universal relevance. Whilst we sometimes become engrossed in the consideration of local, regional or national impacts of global phenomena, through the papers presented at Conference 2021 we once again found clear evidence of common issues facing human communities with resulting opportunities to consider potential solutions too.

I thank you, the reader, for taking the time to consider the Conference Proceedings contained in this publication. It is our strong intention to build into the long term on the learning and insights accruing to our community of interest around RRI and allied themes. I believe we can work together to improve understanding of many influences on the future, and events such as the LSME International RRI series present a unique opportunity for researchers, delegates and scholars to come together for the good of our wider human community.

As ever, there is a diverse range of contributions represented in this Conference Proceedings booklet. As proponents of RRI, we encourage participation from researchers at all levels and subject disciplines, with the one proviso that in sharing our knowledge, we do so freely and for the benefit of all stakeholders impacted by our work.

Please feel free to share your feedback with the Conference Organising Committee, and to consider taking an active part in the success of future research events in the series.

With best regards

Dr Ravi Kumar
Executive Director of LSME & Conference Convener
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- Dr Sarita Parhi, London School of Management Education, UK – Conference Vice Chairman
- Dr Ravi Kumar, London School of Management Education, UK – Conference Convener
- Hassan Shifau, London School of Management Education, UK
- Dr Peter Gray, Norwegian University of Science & Technology, Norway
- Dr Dolly Jackson-Sillah, London School of Management Education, UK
- Dr Alexandra Okada, Open University, UK
- Martin McAreavey, University of Bolton, UK

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- Dr Peter Gray – Norwegian University of Science & Technology, Norway
- Martin McAreavey – University of Bolton, UK
- Irfan Chhadat – University of Bolton, UK
- Andrew Kenny – University of Bolton, UK
- Dr Andrew Chimunya – University of Bolton, UK
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- Dr Shelly Aggarwal – Panjab University, Chandigarh, India

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<td>Miss Vimla Choudhary</td>
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<td>Mr Anand Sahu</td>
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<td>Mrs Antara Bose</td>
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<td>Learning Experience Design and Active Methods for Student Fun, Pleasure and Engagement in Online Courses</td>
<td>Mrs Luci Ferraz de Mello</td>
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<td>Ms Chaitali Halder</td>
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<td>Sustainability Consciousness - A study on Attitude of Upcoming Business Leaders Towards Sustainability</td>
<td>Ms Divya Juneja</td>
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<td>Impact of Higher Education System in Developing Entrepreneurship Skills</td>
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<td>Ms Viviane Cristina Marques</td>
<td>Selection for Use of Mobile Applications for Children with Autism Spectrum Disorder During Pandemic</td>
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<td>Professor Silvar Ferreira Ribeiro</td>
<td>Open Schooling with Collaborative Scientific Action for Environmental Protection of Wild Animals in the Semi-Arid Northeast</td>
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<td>66</td>
<td>Professor Zingiswa M M Jojo</td>
<td>The Teaching of Mathematics as a Humanized and Encultured Process for Sustainable Development</td>
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<td>Shanavas K E</td>
<td>Targeted Education for Sustainable Development</td>
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## CONFERENCE PROGRAMME

### DAY 1: 26 AUGUST 2021 (THURSDAY)

#### INAUGURAL SESSION

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<td>Technical Support to Delegates and Participants</td>
<td>Technical Co-hosts</td>
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<td>09:00 – 09:35</td>
<td>House Keeping Announcements</td>
<td>MC</td>
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<td>09:35 – 09:45</td>
<td>Welcome Address</td>
<td>Dr Ravi Kumar, Conference Convener</td>
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<td>09:45 – 09:55</td>
<td>Recognition of the VIP Guests</td>
<td>Hassan Shifau, CRIO</td>
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<td>09:55 – 10:00</td>
<td>Photo Presentation of LSME International Research Conference Series</td>
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<tr>
<td>10:00 – 10:07</td>
<td>Introduction to 8th LSME International Research Conference 2021</td>
<td>Professor Stephen McKinney, Conference Chairperson</td>
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<tr>
<td>10:07 – 10:12</td>
<td>Special Remarks</td>
<td>Dr Peter Gray, NTNU, Norway</td>
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<tr>
<td>10:12 – 10:15</td>
<td>Good wishes from the Guest of Honour</td>
<td>Professor Petra Molthan-Hill</td>
</tr>
<tr>
<td>10:20 – 10:30</td>
<td>Special Remarks by Guest of Honour</td>
<td>Professor Rajan Welukar, Vice-Chancellor, Auro University, India</td>
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<tr>
<td>10:30 – 10:40</td>
<td>Inaugural Address by the Chief Guest</td>
<td>Lord Sheikh, House of Lords, UK</td>
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<td>10:40 – 10:45</td>
<td>Vote of Thanks</td>
<td>Dr Dolly Jackson-Sillah, Vice Principal, LSME</td>
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<td>Group Photo</td>
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<td></td>
<td>Inaugural Session Ends</td>
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#### HEALTH BREAK (30 MINUTES)

#### PLENARY SESSION: KEYNOTE

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<tr>
<td>11:15 – 11:45</td>
<td>Keynote 1: High Impact Climate Solutions: We can do it!</td>
<td>Professor Petra Molthan-Hill, Nottingham Business School, Nottingham Trent University, UK</td>
</tr>
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</table>
Interactive Discussion

Q & A Session

11:45 – 12:00

All Presenters and participants move to Parallel Session Rooms and Housekeeping announcements

Technical Hosts

12:00 – 14:00

Parallel Session 1A: EDUCATION

[Presentation time is 12 minutes and 3 minutes of Q&A]

Chairperson: Martin McAreavey

Rapporteur: Mrs Lydia Mireku

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<td>12:00 – 12:15</td>
<td>Dr Amit Joshi</td>
<td>India</td>
<td>School is Not Out for teachers: Contribution of Continuing Education on the Career Growth and Development of Teachers in Higher Education Institutions</td>
</tr>
<tr>
<td>12:15 – 12:30</td>
<td>Mrs Antara Bose</td>
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<td>Dr Lt S Ravibalan</td>
<td>India</td>
<td>Educational Sustainability – A Historically Linear Perspective and its Techno Fads in Reality</td>
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<tr>
<td>12:00 – 12:15</td>
<td>Dr Madhumita Chanda</td>
<td>India</td>
<td>Treating the Root System: Introduction of Sustainability in School</td>
</tr>
<tr>
<td>12:15 – 12:30</td>
<td>Dr Mayurakshee Gangopadhyay</td>
<td>India</td>
<td>Online Education: Participation of Female Students and Gender Equality</td>
</tr>
<tr>
<td>12:30 – 12:45</td>
<td>Dr Minisha Gupta</td>
<td>India</td>
<td>Implementing Ed-Tech Model in Indian Institutions from Teachers’ perspective: A Conceptual Framework</td>
</tr>
<tr>
<td>12:45 – 13:00</td>
<td>Dr Monika Chopra</td>
<td>India</td>
<td>Heutagogy: An Approach to Empower Learners</td>
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<tr>
<td>13:00 – 13:15</td>
<td>Dr Rimjim Borah</td>
<td>India</td>
<td>How to Achieve Sustainable Development Goal 4: India’s Context with New Education Policy 2020</td>
</tr>
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<td>13:15 – 13:30</td>
<td>Dr Rini E Stephen</td>
<td>India</td>
<td>Pedagogic Calibration for Sustainable Living: Empirics from Evidence-Based Reasoning Strategy (EBRS) in Biology</td>
</tr>
<tr>
<td>13:30 – 13:45</td>
<td>Dr Shelly Aggarwal</td>
<td>India</td>
<td>Revamping E-Learning Platforms: Catering Life Long Learning Amid Pandemic</td>
</tr>
<tr>
<td>13:45 – 14:00</td>
<td>Dr Tapati Mukherjee</td>
<td>India</td>
<td>Targeted Education for Sustainable Development</td>
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<td>12:00 – 12:15</td>
<td>Mrs K Sindhu Bhavani</td>
<td>India</td>
<td>Impact of Digitalized Learning in the Field of Education Among Children with Learning Disabilities in Pandemic Situation: Case Study</td>
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<td>India</td>
<td>Opinion of the Stakeholder about the No Detention Policy in Secondary Students</td>
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## Parallel Session 1D: EDUCATION

**Presentation time is 12 minutes and 3 minutes of Q&A**

**Chairperson:** Professor Zingiswa M M Jojo  
**Rapporteurs:** Mr Alfred Anim Agyeman & Mr Richard Osei Asibey-Bonsu

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<td>India</td>
<td>Sustainable Development Through Environmentally Responsible Behaviour: Role of Education</td>
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<td>12:30 – 12:45</td>
<td>Dr Chandrashekaran Praveen</td>
<td>India</td>
<td>Pragmatic Solutions For Post COVID Teacher Education - Lessons from the Use of Sustainable Tools and Strategies</td>
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<td>12:45 – 13:00</td>
<td>Mr Shanavas K E</td>
<td>India</td>
<td>Targeted Education for Sustainable Development</td>
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<tr>
<td>13:00 – 13:15</td>
<td>Mr Swadesh Deepak</td>
<td>India</td>
<td>Scope of Distance Education Sustainable Development in Indian Context</td>
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<td>13:15 – 13:30</td>
<td>Dr Veda C V</td>
<td>India</td>
<td>The Role of Lifelong Learning in Personal and Professional Growth with Special Reference to Spirituality</td>
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<td>13:30 – 13:45</td>
<td>Dr Mini K S</td>
<td>India</td>
<td>Quality Management in Higher Education</td>
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<td>13:45 – 14:00</td>
<td>Ms Indu Bala</td>
<td>India</td>
<td>Education for Sustainable Development for Our Planet</td>
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<td>14:00 – 14:15</td>
<td>Dr Sankararao Kocherla</td>
<td>India</td>
<td>Sustainable Development and Education in India</td>
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<tr>
<td>12:00</td>
<td>Dr Alexandra Okada</td>
<td>UK</td>
<td>Open Schooling for Sustainable Development to Enhance Innovation Ecosystems</td>
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<td></td>
<td>Dr Cyril Dworsky</td>
<td>Austria</td>
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<td>Dr Maria Vicente</td>
<td>Netherlands</td>
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<td>Dr Pavlos Koulouris</td>
<td>Greece</td>
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<td>Dr Chagit Tishler</td>
<td>Israel</td>
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<td>12:45</td>
<td>Dr Cintia Rabello</td>
<td>Brazil</td>
<td>Innovative Ecosystems with Open Schooling to Support “Less Well-Represented Actors and Territories”</td>
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<td>13:00</td>
<td>Dr Sigrid Vedel Neuhaus</td>
<td>Denmark</td>
<td>Aligning Science Education with Societal Needs and Values: Intriguing</td>
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<td>13:30</td>
<td>Dr Silvar Ribeiro</td>
<td>Brazil</td>
<td>Open Schooling with Collaborative Scientific Action for Environmental Protection of Wild Animals in the Semi-Arid Northeast</td>
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<td>13:45</td>
<td>Dr Giorgos Panselinas</td>
<td>Greece</td>
<td>Science Teachers and Researchers as a Community for Adapting, Designing and Implementing Open Schooling for Sustainable Development</td>
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<td>14:00</td>
<td>Dr Raquel Kowalski</td>
<td>Brazil</td>
<td>RRI in an Interdisciplinary Approach: Developing High School Students' Multi-Literacies</td>
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**Conference Adjourns for the Day ...**
### DAY 2: 27 AUGUST 2021 (FRIDAY)

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<td>08:00 – 08:15</td>
<td>Housekeeping announcements and technical briefings</td>
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</table>
| 08:15 – 08:45 | Chairperson: Dr Sarita Parhi  
Rapporteur: Dr Minakshi Kishore  
Keynote 2: Sustainable Development and Education  
Q & A Session |                      |                          | Professor Stephen McKinney, University of Glasgow, UK |
| 08:45 – 10:30 | Parallel Session 2A: SOCIAL SCIENCES  
[Presentation time is 12 minutes and 3 minutes of Q&A]  
Chairperson: Prof Jan Apotheker  
Rapporteur: Dr Mabel Zvobgo |                      |                          |                                         |
| Paper Presentations |                                                                 |                      |                          |                                         |
| Time       | Name                         | Country | Title                                                                 |
| 08:45 – 09:00 | Ms Bhavika Bindra  
India  
Paradigm Shift to Embrace Justice for Women: A Need |                      |                                         |
| 09:00 – 09:15 | Dr Anupama Verma  
India  
Changing Cultural Dimensions of Indian Diaspora: A Study on Hofstede Model |                      |                                         |
| 09:15 – 09:30 | Dr Dhanonjoy Kumar  
Bangladesh  
COVID-19 Upshots on Students’ Health, Educational and Social Life: An Empirical Study |                      |                                         |
| 09:30 – 09:45 | Dr Jagnyaseni Panigrahi  
India  
Gender Equality For Sustainable Development Goals |                      |                                         |
| 09:45 – 10:00 | Dr Sharda Prasanna Rout  
India  
Disability and Discontentment: A Study of Social Exclusion in India |                      |                                         |
| 08:45 – 10:30 | Parallel Session 2B: SOCIAL SCIENCES  
[Presentation time is 12 minutes and 3 minutes of Q&A]  
Chairperson: Dr Dazy Zarabi  
Rapporteur: Mrs Amanda Babalola |                      |                          |                                         |
| Paper Presentations |                                                                 |                      |                          |                                         |
| Time       | Name                         | Country | Title                                                                 |
| 08:45 – 09:00 | Ms Meera Swami  
India  
Reflections of Youth on Usage of Social Media |                      |                                         |
| 09:00 – 09:15 | Mr Amit Kumar Das  
India  
Managing Factors Influencing the Construction of Road Over Bridges: A Critical Analysis |                      |                                         |
| 09:15 – 09:30 | Mrs Praseetha M S  
India  
Friendzone: A Remedial Social Media Platform for Social Anxiety Disorder |                      |                                         |
| 09:30 – 09:45 | Ms Priya  
India  
Cyber Bullying and Coping Mechanism Among Adolescents |                      |                                         |
09:45 – 10:00 | Ms Sanchika Taneja | India | Impact of COVID-19 on Sustainable Development Goals

10:00 – 10:15 | Mrs Anitha Sannakamaiah | India | A Study on “Impact of Social Isolation on Elderly and Social Inclusion of Elderly Through Social Work Intervention for Sustainable Development” with Special Reference to Omashram Oldage Home at Bangalore

10:15 – 10:30 | Ms Chaitali Halder | India | School as the Messiah of Sustainable Development: A Multiple Case Study of Three Leading Rural Schools of West Bengal

08:45 – 10:15 | Parallel Session 2C: SCIENCE
[Presentation time is 12 minutes and 3 minutes of Q&A]
Chairperson: Dr Tapati Mukherjee
Rapporteur: Mr Harsha Subhashana

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<td>Mr Jahangeer Mohd Reshi</td>
<td>India</td>
<td>Comparative Study on Physicochemical Status and Diversity of Macrophytes and Phytoplanktons of Manasbal Lake, Kashmir, India</td>
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<td>09:00 – 09:15</td>
<td>Prof Jan Apotheker</td>
<td>Netherlands</td>
<td>Special Issue of Chemistry Teacher International on Green Chemistry and Sustainable</td>
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</table>
08:45 – 09:30  Parallel Session 2D: HEALTH & PURE SCIENCES  
*Presentation time is 12 minutes and 3 minutes of Q&A*
Chairperson: Professor Stephen McKinney  
Rapporteur: Dr Dolly Jackson-Sillah

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<tr>
<td>08:45 – 09:00</td>
<td>Dr Anupam Karmakar</td>
<td>India</td>
<td>An Empirical Study of the Relationship Between Vaccination in India and Nifty Pharma Index</td>
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<td>09:00 – 09:15</td>
<td>Mrs Richa Sahay</td>
<td>India</td>
<td>Motivation and Work Conditions of Healthcare Workers - A Study on COVID-19 First Wave</td>
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<td>09:15 – 09:30</td>
<td>Ms Viviane Cristina Marques</td>
<td>Brazil</td>
<td>Selection for Use of Mobile Applications for Children with Autism Spectrum Disorder During Pandemic</td>
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09:30 – 10:30  Parallel Session 2E: MANAGEMENT, MATHEMATICS & LANGUAGES  
Chairperson: Professor Stephen McKinney  
Rapporteur: Mr Alfred Anim Agyeman

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<td>09:30 – 09:45</td>
<td>Ms Divya Juneja</td>
<td>India</td>
<td>Sustainability Consciousness - A study on Attitude of Upcoming Business Leaders Towards Sustainability</td>
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<td>09:45 – 10:00</td>
<td>Dr Urvashi Mishra</td>
<td>India</td>
<td>Different Applications of Trigonometric Spline Curves</td>
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<td>10:00 – 10:15</td>
<td>Prof Zingiswa M M Jojo</td>
<td>South Africa</td>
<td>The Teaching of Mathematics as a Humanized and Encultured Process for Sustainable Development</td>
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<tr>
<td>10:15 – 10:30</td>
<td>Ms Rishika Bojwani</td>
<td>India</td>
<td>Impact of Higher Education System in Developing Entrepreneurship Skills</td>
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08:45 – 10:45  Parallel Session 2F: HIGHER EDUCATION – ONLINE LEARNING AND FUN  
*Presentation time is 10 minutes and 5 minutes of Q&A*
Chairperson: Dr Alexandra Okada  
Rapporteur: Mrs Lydia Mireku & Mr Richard Osei Asibey-Bonsu

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<td>08:45 – 09:00</td>
<td>Prof Kieron Sheehy</td>
<td>United Kingdom</td>
<td>Should ‘Meaningful’ Online Learning Experiences Be Fun for Higher Education Students in Indonesia?</td>
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<td>09:00 – 09:15</td>
<td>Dr Paula Carolei</td>
<td>Portugal</td>
<td>Creative Gamification and Fun: Possibilities of Authorship, Autonomy and Collaboration</td>
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<td>09:15 – 09:30</td>
<td>Dr Daniela Barros</td>
<td>Portugal</td>
<td>Higher Education in Pandemic Times: <strong>Personalization</strong>, Engagement, Autonomy and New Learning Strategies</td>
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<td>09:30 – 09:45</td>
<td>Dr Klaus Schlünzen Junior</td>
<td>Brazil</td>
<td>The CCS Approach and Fun Learning: An Analysis of Research Data for Inclusion</td>
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<td>09:45 – 10:00</td>
<td>Dr Luci Mello</td>
<td>Brazil</td>
<td>Learning Experience Design and Active Methods for Student Fun, Pleasure and Engagement in Online Courses</td>
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<td>10:00 – 10:15</td>
<td>Dr Ana Hessel</td>
<td>Brazil</td>
<td>The <strong>Pleasure</strong> of Learning: The Vision of Complex Thinking</td>
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<td>10:15 – 10:30</td>
<td>Dr Alexandra Geraldini</td>
<td>Brazil</td>
<td>Motivation, <strong>Involvement</strong> and Fun in the Online Learning Process: Perception of Undergraduate Students</td>
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<td>10:30 – 10:45</td>
<td>Dr Fernando Almeida</td>
<td>Brazil</td>
<td>Algorithmization of <strong>Happiness</strong> or the Reconstruction of the Humanizing Nature of Numbers?</td>
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**HEALTH BREAK (30 MINUTES EXCEPT FOR SESSION 2F, 15 MINUTES)**

**PLENARY: SPECIAL SESSION**

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<tr>
<td>11:00 – 11:30</td>
<td>Special Lecture, Q &amp; A Session</td>
<td>H.E. Dr Abdulla Naseer, Minister of State for Environment, Ministry of Environment, Climate Change and Technology, Maldives</td>
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Chairperson: Dr Sarita Parhi
Rapporteur: Mr Alfred Anim Agyeman
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<td>House Keeping Announcements</td>
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<td>11:35 – 11:45</td>
<td>Introduction to the Valedictory Session</td>
<td>Dr Sarita Parhi, Principal, LSME</td>
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<td>11:45 – 11:50</td>
<td>Recognition of the VIP Guests</td>
<td>Mr Hassan Shifau</td>
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<td>11:50 – 12:00</td>
<td>Overview of the Conference Proceedings</td>
<td>Professor Stephen McKinney, Conference Chairperson</td>
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<td>12:00 – 12:05</td>
<td>Announcement of the 9th LSME International Research Conference</td>
<td>Dr Ravi Kumar, Conference Convener</td>
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<td>12:05 – 12:10</td>
<td>Remarks by a Member of the Conference Committee</td>
<td>Dr Peter Gray, NTNU, Norway</td>
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<td>12:10 – 12:20</td>
<td>Special Remarks by Guest of Honour</td>
<td>Mohamed Mahid Shareef, DVC of Islamic University of Maldives</td>
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<td>12:20 – 12:35</td>
<td>Valedictory Speech by the Chief Guest</td>
<td>H.E Dr Ibrahim Hassan, Minister of Higher Education, Maldives</td>
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<td>12:35 – 12:40</td>
<td>Experience of the Conference</td>
<td>Rishika Bhojwani</td>
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<td>12:40 – 12:45</td>
<td>Vote of Thanks</td>
<td>Dr Tapati Mukherjee</td>
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<td>12:45</td>
<td>Group Photo/Closing of the Conference</td>
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## DIGNITARIES AND FACILITATORS

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ABSTRACTS OF PAPERS PRESENTED AT THE CONFERENCE

ABSTRACT – 1

WHAT HAVE WE LEARNED ABOUT CLOSURES OF EDUCATION INSTITUTIONS DURING THE SARS OUTBREAK OF 2003 AND THE COVID-19 PANDEMIC?

By Stephen J. McKinney, Sarita Parhi, Ravi Kumar, Hassan Shifau and Peter Gray

The paper produced by McKinney et.al. for the LSME Research Book 2021 explored the history of pandemics in the twentieth and twenty first centuries and the consequent effects on education, especially school education. This paper draws on international research literature and reports and updates of research from World Organisations: Unesco, United Nations, Unicef, OECD and WHO. The paper will briefly examine some key aspects of the school closures during the SARS outbreak in 2003 and the closures throughout the world during the covid-19 pandemic. For the period of the Covid-19 pandemic, the paper will focus on digital exclusion and food insecurity; the impact of Covid-19 on children’s human rights and the preparation of teachers and student teachers for online learning.
ABSTRACT – 2

THE PLEASURE OF LEARNING IN ONLINE CLASSES: THE PERSPECTIVE OF COMPLEX THOUGHT

Dr Ana Maria Di Grado Hessel¹, Dr Maria Otilia Jose Montessanti Mathias²
¹, ²Pontifícia Universidade Católica de São Paulo/ Brazil

ISSUE

Online learning and fun is a topic that has been the focus of the online research OLAF - Online Learning and Fun - which is a project developed by Open University, UK. The Pontifícia Universidade Católica (PUC), in São Paulo, Brazil, and some other educational institutions in Europe, are involved in this proposal and have developed academic works with the aim of enriching the debate.

EVIDENCE

A disruptive scenario took shape in the context of educational experiences in view of the need to adopt online education in the context of the COVID-19 pandemic. The individuals involved have faced challenges and the need to promote changes is necessary. The search for innovations becomes a priority goal to cope with understanding and promoting the pleasure of learning in new scenarios.

LITERATURE

The concept of understanding in the context of complex thinking (Edgar Morin) complemented by the concept of meaningful learning (David Ausubel) are the filters to support the interpretative analysis of the research. The notion of understanding sees human phenomenology within a historical context and meaning. In this sense, human understanding perceives the individual in its environment, time and space, in its plurality and potential, as well as moved by its meanings and feelings.

INNOVATION

The study proposes a discussion based on complex thinking (Edgar Morin) with the aim of presenting a reflection on a pandemic reality.

PURPOSE

To reflect on the conditions in which the pleasure of learning can occur in the context of online classes through the following developments: what senses and meanings are present in learning; in what extent the relationship between theory and practice contributes to meaningful learning; how didactic and methodological strategies, such as problematization, are valued in pleasant learning experiences.
RESEARCH QUESTION

How can the conditions perceived by undergraduate students from PUC/São Paulo/ Brazil contribute to identify the best learning experiences in online classes, implemented during the COVID-19 pandemic, with such an objective to understand what the pleasure of learning is?

METHODOLOGY

This is a qualitative research that implements an interpretive content analysis. The data collected by means of a digital form, in the OLAF survey, were selected according to educational level criteria of the respondents (in this case it was the under graduation).

PARTICIPANTS

Students (71) responding to a questionnaire, from different undergraduate courses at PUC / São Paulo / Brazil who are participating in the online survey OLAF - Online Learning and Fun.

FINDINGS

The results are discussed in order to highlight the identified relationship between the individuals' perceptions of the pleasure of learning and the concepts of understanding in the systemic/complex dimension and meaningful learning.

KEYWORDS

Pleasure of Learning, Complexity, Meaningful Learning, Online Classes.
ABSTRACT – 3

SOCIO-DEMOGRAPHIC DETERMINANTS AFFECTING EDUCATION AND THE NUTRITIONAL STATUS AMONG SCHOOL CHILDREN AND ADOLESCENTS DURING COVID-19: IN CONTEXT TO INDIA

Mrs Antara Bose¹, Mr Sanjoy Ghosh²
¹Research Fellow, Department of Anthropology, University of North Bengal, District: Darjeeling, West Bengal, India
²Assistant Teacher, Department of Science, Ishwar Chandra Vidyasagar High School, Bagdogra, District: Darjeeling, West Bengal, India

Education and nutrition are among the most important related terms which coincide with one another as these two effects the growth and development of school children and the adolescent group. Nutrition can enhance the behavioural pattern in shaping an individual whereby increasing the attention span, psychological well-being as well as development towards motor and language skills. Nutrition-related micronutrient deficiencies lower the intelligent quotient thus diminishes the cognitive skills. The ongoing pandemic, COVID-19 in India had shifted to its second phase which had further caused continuity in schools, colleges, and universities closure, further fully shifting the traditional mode of learning to the digital online mode. The closure of school had hampered the mid-day meal scheme though take away of ration is indeed helpful, but on the other hand, the technology usage had increased which made the children and adolescents belonging to the poor household hard to access the internet facilities. Thus, the change in the present scenario has made the growing age group withhold the current challenges by coping up with both the educational changes as well as nutritional balance. The present paper highlights the current prevailing situation in context to the educational system and the nutritional relation among the school children and the transitional group. The paper further discusses the factors, causes, and consequences that have led to a challenging issue among the growing age groups.

KEYWORDS

ABSTRACT – 4

GAUGING FINANCIAL LITERACY - A STUDY ON COLLEGE TEACHERS OF KOLKATA

Ms Anusree Bose¹, Mr Sayan Basu²

¹Research Scholar, University of Burdwan, West Bengal, India
²Research Scholar, West Bengal State University, West Bengal, India

Financial literacy is essential for enabling people to make right financial choice. The term financial literacy refers to the set of skills and knowledge which enables an individual to make an effective decision regarding the financial resources. Hence financial literacy can be considered as a part of the elementary education system and as essential as the others day to day basic items. According to the OECD/INFE framework, measuring financial literacy essentially encompasses financial knowledge, financial attitude and financial behaviour necessary to make sound financial decisions and ultimately to achieve individual’s financial well-being. Therefore, Financial Literacy is requisite for financial inclusion. On the other hand, Digitalization in financial sector has resolved the whole scenario and consequently digital literacy become as essential as the financial literacy to make sound financial choice in the digital financial era and also has a great impact on financial inclusion. If awareness regarding the digital products and services are increased, the usage level would also shoot high which ultimately bring a significant change in the inclusion level and thus contributing towards the economic growth of the nation. The present study is basically intended to evaluate the financial literacy of the teachers of different colleges in Kolkata on the basis of age by applying the OECD/INEF Toolkit and further this paper is focused to compare the level of financial literacy on the basis of gender and educational departments of the colleges by applying the unpaired t-Test & One Way ANOVA at 5% level of significance respectively.

KEYWORDS

Financial Literacy, OECD/INEF Toolkit, Independent T-Test, One Way ANOVA.
ABSTRACT – 5

VOCATIONAL EDUCATION AND ICT IN COLLEGES:
A PROSPECT ON LIVELIHOOD PROMOTION FOR RURAL DISTRICTS IN NAGALAND

Ms Azhanuo Peki, Research Scholar, Department of Education, Nagaland University, India

Vocational education is a sculpting practice that demands experience and proficiency to be mobilized. It is the advanced education and training which in today’s context is the need of the hour for a developing nation when employment under the government sector cannot incorporate the thousands of graduates that qualify every year. Education should not be limited to theory and syllabus content but stand in order to serve as a tool to prepare each individual student in the colleges to pursue essential skills and knowledge regarding vocational courses and training. In addition, alongside the growth and progress of technology initiatives can be extended with the help of ICT in techniques and tools to assist and facilitate vocational education courses in delivering diverse growth concerning self-development, self-sustainability and self-independent for livelihood promotion. Incorporation of ICT with vocational education can build single individual graduates to back up in source of income by what has been studied and cultivated besides not exclusively dependent over government sector for income and employment. This paper is an attempt to put forth the different vocational courses and practices introduced for colleges in Nagaland. The Objectives behind implementing such vocation will be stated and besides the anticipated benefits of such practices will be discussed. The study is descriptive in nature and based upon available sources of data. Introduction of vocational courses and its practices in the colleges of the state is still a very new concept to most educators, students, administrators and even the society as a whole. Suggestions on mechanising vocational education and ICT awareness for further measures of improvement will be emphasized. The study is to call attention towards a productive, self-reliant and supportive job through the new paradigm of vocational education in association with ICT knowledge. Thus, this paper will be highlighting on how vocational education with ICT can be the prospective impetus in improving livelihood issues for a rural state like Nagaland, where on unemployment handicaps a massive number of qualified citizens every year under higher education sector and jobs are limited. Furthermore, it is an attempt to outline on approaches ICT can serve as a breakthrough in elevating vocational education true success for individual livelihood promotion and global knowledge sharing.

KEYWORDS
Vocational, Livelihood, ICT, Colleges.
SCHOOL AS THE MESSIAH OF SUSTAINABLE DEVELOPMENT:
A MULTIPLE CASE STUDY OF THREE LEADING RURAL SCHOOLS OF WEST BENGAL

Ms Chaitali Halder¹, Sagnika Sahoo²
¹Med. 2nd Year, Institute of Education for Women, Hastings House (CTE), WBUTTEPA University, Kolkata, West Bengal, India
²Assistant Professor of Bijoy Krishna Girls’ College, Howrah, West Bengal, India

Sustainable Development Goals (SDGs), otherwise known as the Global Goals, are a universal call to action to end poverty, protect the planet and ensure that all people have peace and prosperity. Education, the guiding force to create worthy, dignified, responsible, productive, philanthropist citizens of the world, can only ensure peace and prosperity to all people. That is why Education is considered to be the most influential medium to achieve the goals of Sustainable Development. As it is quite easier to develop among the young learners the attitude and values which are instrumental to achieve sustainable development goals, the present study is an attempt to explore those school where initiatives & innovative strategies have been taken for achieving the goals of sustainable development like- No poverty, zero hunger, good health and well-being, quality education, clean water and sanitation, industry, innovation and infrastructure, reduced inequality, climate action, peace & justice, etc. for which the schools are working in partnership with the communities. The study also aims to analyse the impact of the activities to change the attitude and values of the learners to accelerate the journey to achieve the goals of sustainable development. Case study research design has been followed for the present study and 3 Higher Secondary schools located in remote rural areas in West Bengal, India which have been working excellently to achieve the goals of sustainable development are selected as sample for this study. In order to collect in-depth data from the participants, semi-structured interview schedule with the self-made questionnaire focusing on selected Sustainable Development Goals, has been administered. The qualitative data has been analysed by using narrative analysis technique. The study has found out that the initiatives not only enriched the quality of education but also changed the attitude and values of the learners that are instrumental to achieve the goals of sustainable development because they are the future citizens of the country and of the world as well upon whom the well-being of the planet depends on. It also has an indirect impact on the families and communities on a large scale. Thus, the study has explored how schools can work as a messiah to achieve the goals of sustainable development.

KEYWORDS
Case Study, Sustainable Development Goals, School Education, Impact on Students and Community.
ABSTRACT – 7

MOTIVATION, ENGAGEMENT AND FUN IN ONLINE LEARNING PROCESS:
UNDERGRADUATE STUDENTS PERCEPTION

Dr Alexandra Geraldini1, Dr Karlene Campos2, Dr Mario Cesaretti3
1, 2, 3 Pontifícia Universidade Católica de SP (PUC-SP) – Brazil

ISSUE
Impact of the Covid-19 pandemic on Higher Education

EVIDENCE
The social distance measures imposed by the Covid-19 pandemic induced Higher Education Institutions to migrate the teaching processes to the online context, supported by digital technologies. Education has been significantly affected, in such a way that new challenges are added to pre-existing difficulties. More than ever, it is necessary to reframe the teaching methodologies, seeking to promote greater student involvement and avoid school dropout.

LITERATURE
The central role of students' feelings and their effective participation in learning processes has been reiterated by scholars in the areas of Psychology (Vygotsky, 2008, 2010; Rogers, 1971), Education (Freire, 1996) and Neurosciences (Damasio, 2018; Immordino-Yang & Darling-Hammond, 2018).

The presence of joy, fun and playfulness in the learning processes has generated an increase in the retention of knowledge and an improvement in the learning results (Santaella, 2012). Active learning methodologies have contributed to students' motivation, involvement, better understanding and memorization of content (Alves, 2008; Valente, 2014).

OBJECTIVE
Check, among undergraduate students at PUC-SP, how they perceive fun learning and the extent to which it articulates with motivation and involvement and whether, in their opinion, fun should be part of learning.

METHODOLOGY
This quantitative and qualitative research is part of a project coordinated by Open University (OU), on the theme of Online Learning and Fun. The data were collected through a questionnaire applied to students from different universities in Brazil and Europe. In Brazil, there were 153 respondents, of which 71 are undergraduate students. The corpus of this work is composed by 69 undergraduate students at PUC-SP.
RESULTS

Data reveal that most students consider that fun should be associated with learning and relate fun learning to activities that promote motivation and involvement. However, online learning experienced during the period of social isolation was considered fun by only 27% of participants. Considering the important role that fun and enjoyment can play in the learning process, this last data reiterates the already addressed need to reshape pedagogical dynamics and strategies at the University.

KEYWORDS

Online Learning, Higher Education, Student’s Motivation, Fun, Enjoyment, Perception.
ABSTRACT – 8

PRAGMATIC SOLUTIONS FOR POST COVID TEACHER EDUCATION – LESSONS FROM THE USE OF SUSTAINABLE TOOLS AND STRATEGIES

Dr Chandrasekharan Praveen, Former Principal, Institute of Advanced Study in Education, Thrissur, Kerala, India

The National Curriculum Framework for Teacher Education (2010, India) proposed to prepare humanistic and reflective teachers with the potential to develop more professional teachers and improve the quality of education. A decade later, when the Covid pandemic struck, teaching was shifted to online mode and social distancing resulted in an abrupt end of face to face instruction. Untrained teacher educators were directed to engage classes online for student teachers who had no prior experience of learning online. The existing digital divide in India and issues related to accessibility and affordability affected seamless delivery of instruction resulting not only in lowering of quality of instruction but also affecting negatively, student mental health. Then, finding ways to address student needs, suddenly became imperative.

As early as 1943, Abraham Maslow proposed that individuals must satisfy lower level deficit needs before progressing to higher level growth needs. With the Covid pandemic raging in 2020, many parents of students lost their jobs and the resulting financial crunch affected the family budget set aside for education. This meant that investing in laptops and acquiring a broadband connection with high internet speed not only became a luxury but an elusive dream resulting in widening the gap between the have and the have not’s.

The investigator cum teacher educator, a former faculty of a government run teacher training college, where meritorious students mostly from low socio-economic backgrounds study, explored affordable tools and quality content for delivering online instruction. In order to raise the quality of instruction, the investigator for half a decade, attempted a resource mining of Massive Open Online Courses (MOOCs). Then by utilizing an affordable and sustainable tool like WhatsApp, the investigator transacted the teacher education syllabus in a blended mode by integrating it with the high quality content acquired for own CPD from MOOC’s offered by leading universities. Such a strategy opened up the possibility of student teachers to continue education even in times of crisis and acquire to an optimum level the instructional goals of the teacher education programme.
This paper presents the strategy employed which basically attempted to match Maslow’s hierarchy of needs with the needs of student teachers to ensure quality instruction. Now it is becoming increasingly clear, that the Covid pandemic and online instruction is likely to continue in the coming years. In such a scenario, the author hopes that the sustainable strategies and tools employed in own academic setting can provide pragmatic solutions for teachers struggling to cope with online Post Covid teacher education.

KEYWORDS

COVID, MOOC, Needs, Sustainable, Teacher Education, WhatsApp
History of modern education almost of necessity goes back, briefly to the work and contributions of ancient civilization. But have mostly failed to encourage the existence of moral values. We teach, assess and try to reflect employable graduates that we hope to produce. We wish for a good intake of many students as possible to mastery who can collaborate, manage products, and solve problems. But we produce students who can recall facts or regurgitate by rote. Academic freedom and academic sustainability is forsaken with IRP (Institutional Rating Point) in mind. Education is now a factory creating an unbridgeable gap amidst the student’s community. First generation learners and the downtrodden have got the exposure but failed to have an optimum utilisation of the source owing to many socio political predicaments. Many colleges and universities regard students as customers that need to be aggressively recruited. But a Learner’s focus is totally forgotten. Mostly the curricula, schedules, pedagogies, assessments, and workload policies reflect the interest of departments rather than what we know about the challenges faced by today’s growing number of non-traditional students. Despite the freebies in the education sector based on political manifestos the main purpose of education to a society has got diluted.

People play the most important role in shaping the status of the country but education is responsible for shaping a person. It is believed the higher literacy rate, the lower in unemployment rate and greater GDP growth. Apart from worrying about the growth of GDP, education should also transform a student to be handy. Living sustainably must nurture student’s attitudes in the field of Agriculture production, health, Construction, Environment and moral values. It shall help all to transform our lives into something that doesn’t impact too heavily on our current routines. To err is human and that’s for education and experimentations but erring leads to a despicable living and a tumultuous society. Let the education be set on Baconian experimentation- truth is discovered through empirical observation and induction- and frees us from all the isomorphic clutches. It must create an overall educated sustainable mind towards the welfare of others rather self-centeredness.

KEYWORDS

ABSTRACT – 10

TREATING THE ROOT SYSTEM: INTRODUCTION OF SUSTAINABILITY IN SCHOOL

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Although the term “sustainable development” was conceptualized in the Brundtland Report in 1987, it had made its first appearance” in 1980. The SDGs were set up in 2015 by the UN General Assembly to be achieved by 2030. We all understand the ‘why’ of it. It is about ‘our children and our grandchildren, and the world we will leave’ for them. Therefore, building a sustainable world should start with us and must be viewed as a unilateral commitment. The present paper wishes to explore the ‘what’ and ‘how’ of it from an Indian perspective. We have strategized policies to help us reach the goals. Our world is like a wilted plant with a poorly functional root system. To save it from perishing we are perhaps treating the shoot system. It’s time to realize that we just don’t need policies, departments, strategies, fund, and goals but the right kind of people to execute them. An empirical analysis through the case study method will be adopted to support the findings that sensitization at the grass-root level brings about a positive behavioural change among the children. At the same time, it also indicates that education should aim at value creation. A revision of the process of education may help the present general appreciate the magnanimity of the situation. ‘What’ is required is the implementation of the new educational policy with a focus on value creation. ‘Why’ because we haven’t been able to achieve anything substantial in all these years. We had data to apprise us of the situation and goals to pursue. A case study on reports furnished on CSR activities would be examined to show how some companies are unethically ploughing back the money they seemed to be investing in sustainable practices. Instances of value crisis! Out of the three dimensions of sustainable development, i.e., economic growth, social development and environmental protection, the biggest challenge arises from adequately attempting to secure the environmental and social dimensions, and integrate them with economic growth. Needless to say that economic growth remains the primary objective as our developmental model is unidimensional and continues to be driven by the economy. How can we strike a balance among all three dimensions? The problem concerns ‘us’- the humans. The non-human elements of the world are not responsible for the ecological disbalance! We need to find the right direction to make the world a happy planet. If we succeed in solidifying our value system at the school level, the coming generation would adopt the sustainable mode of living naturally.

KEYWORDS

Value-Creation, Sustainable World, Value Crisis, New Educational Policy.
ABSTRACT – 11

ONLINE EDUCATION: PARTICIPATION OF FEMALE STUDENTS AND GENDER EQUALITY

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Due to pandemic online education is the only effective process to educate students and continue teacher-learner communication. But with its effectiveness there comes specific limitations like connectivity problems, unavailability of tools and infrastructure, language barrier, inability to produce performance based curriculum etc which can be addressed with improvement of social policies. But there are more unrecognized problems in which one is the participation of female students and gender equality.

In the developing countries, female students are likely to get married after the legal age of marriage and is the rural areas most their families are only capable of feeding their children. Because of that, institutions and government have arranged policies to provide free education, food and scholarship to the girl child. Now, due to pandemic, institutions are closed and students do not have available logistics to access online education. They are residing in the home and helping other family members to run the family in this tough situation where earning money for day to day expense is very difficult. Many of them are starving and that will clearly have an impact on future dropout rate. Adding to this, family members feel that there will be no future of their girl child after this pandemic and they will fail to secure a job. So, it is better to arrange marriage rather than encouraging their daughter to participate in online mode education. These tendencies have a serious impact on the mindset of female students as they feel male students are superior in terms of right to education and are privileged. Also this study focused on the larger argument that whether a female student is comfortable in online discussion and the kind of reaction she gets for being a girl.

While researchers have provided data that participation of female students increased in online education (Secreto, Percia 2013), this paper argues that the study is restricted to urban areas and only states that the percentage of admission whereas the pass-out percentage can be different. On the otherhand women feel more safe and free to express their views in online education (Alipour et al. 2011), but the possibility of discouragement in family should be noted equally. This study also aims to indicate the maximum limitation and deduce it to possible solution in its implication by which the present research contributes to narrow down the future paradigm for sustainable education.

KEYWORDS

Online Education, Female Participation, Gender Equality, Sustainable Education.
HEUTAGOGY: AN APPROACH TO EMPOWER LEARNERS

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In the world of technological advancement, bombardment of information & knowledge and digital & e-learning platforms, a person of any age group can enhance skills and competencies to adapt to meet personal, social, economic and professional needs. Since centuries, various traditional and formal educational techniques have been in practice to inculcate various life and career growth learning skills to survive in a competitive environment. In daily life, everyone comes across different opportunities to enhance their personal and professional skills. Organizations do conduct various training programs to upgrade their workforce with innovative and transferable skills. COVID-19 and work from home culture has put pressure on every person to sharpen their soft and technical skills. Primary, secondary and tertiary levels of learning revolve around curriculum and classroom teaching. Even in organizations, people resist changes and innovative techniques rather than gaining new ideas and concepts. Heutagogy is an innovative approach which is applicable not only in education sector but also in other areas of life. The term Heutagogy has its origin in the Greek word heuriskein and was used by Hase and Kenyon in 2000 emphasizing on self-learning without using formal methods of teaching. This method of learning focuses on learner’s potential, capabilities, understanding, experience, skills and willingness to gain knowledge of the concept without any time constraint. An educational institution, commercial organization, sports institution, NGO, retired persons or even illiterates can make use of Heutagogy approach. This approach helps in preparing the future generations more independent, flexible, capable, knowledgeable and talented. COVID-19 situation has changed patterns, experiences, relevance and methods of learning. In an unpredictable and dynamic environment, this way of learning can prove to be fruitful, aiming at building the confidence and competencies of learners of any age. One can discover higher potential through self-learning and overcome various digitalization demands of the complex and uncertain work place situations. Heutagogy targets on individual needs and enables the learner to access the best learning content resulting in the cost effective solutions to overcome complexities. This paper aims to survey workforce across different organizations learning voluntary or work based skills as well as retired peoples’ interest in lifelong learning through heutagogical approach in different geographical locations.

KEYWORDS

ABSTRACT – 13

HOW TO ACHIEVE SUSTAINABLE DEVELOPMENT GOAL 4: INDIA’S CONTEXT WITH NEW EDUCATION POLICY 2020

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In today’s competitive world, well-structured education system is one of the main instruments for achieving sustainable development of a country. Education is the key to promote knowledge, skills, values and attitudes of human resources for achieving a sustainable society. The United Nations approved a plan of action- the ‘Sustainable Development Goals’ (SDG) in 2030. In India, the National Education Policy 2020 was approved by the Union Cabinet on 29 July 2020. The aim of this NEP 2020 is to achieve the UN Sustainable Development Goal 4. The policy also aims to transform our nation into an equitable, vibrant knowledge society and sustainable nation by providing quality education from elementary to higher education including vocational skills. The objective of the present paper is to analyse how India’s New Education Policy 2020 will achieve Sustainable Development Goal 4 (SDG4) on education in Indian context. This paper is a theoretical paper which is based on secondary sources. This paper analyses the recommendations of India’s National Education Policy 2020 for achieving SDG4. The reforms of the NEP 2020 will certainly help India to convert into the top economies of the world. It is expected that in the next 10 years, the NEP 2020 would transform the education sector of our country to a sustainable sector. This paper also attempts to do a SWOT analysis of NEP 2020. The strong point of India’s NEP 2020 is well designed school curriculum, flexibility in learning, no demarcation between streams, curricular- extra-curricular, vocational and academic course, multiple entries and exit system in higher education, focus on quality of teaching, research and innovation etc. The Education system of a country is a true indicator of its economic strength. For successful implementation of NEP 2020, there should be 100 percent cooperation and collaboration from all stakeholders of education system including the Central, State Government and the Ministry of education.

KEYWORDS
Sustainable Development Goal 4, National Education Policy 2020, SWOT Analysis.
TARGETED EDUCATION FOR SUSTAINABLE DEVELOPMENT
‘IS THE EDUCATION SYSTEM IN INDIA DISASTER/CALAMITY PROOF? ’
EDUCATION SYSTEM DURING THE PANDEMIC IN INDIA – A SPOTLIGHT

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Swami Vivekananda had rightly said, “Education is not the amount of information that is put into your brain and run riots there, undigested all your life.” It is something more, education for sustainable development allows every human being to acquire the knowledge, skills, attitudes, values necessary to shape a sustainable future. It is simultaneously a sub-field of education for shaping educational policies that will take into account the present environmental, societal and economic challenges.

This paper emphasises on a fool proof education system that will survive any kind of adversity be it a pandemic, a war or a natural calamity. Apart from jobholders, the lives of students waiting to give their Boards, one of the deciding factors for students to go for higher studies were the biggest losers. Due to the present pandemic the Indian education system is feeling the pinch of catching up late in adjusting to the switch from offline to online. Is the pandemic creating a ‘new normal’ in education or simply accenting what has already become a normal-an accelerating tendency towards technologization? This tendency presents an important challenge for education which requires to think about post COVID-19 curriculum. With students scattered in cities and country, online teaching enables students to continue their learning and the educators can complete syllabus in some sort of a methodical way. But the educational institutions in remote areas are unprepared to take this advantage due to improper connectivity.

As education is a passage to progress, this paper will aim to address the following question,

What form of Education will stand the test of time? Be it war, a calamity, or a pandemic?
The approach for the same will be done by studying in detail, three types of education systems namely Formal (offline teaching), Informal (online teaching) includes practical adult learning, diversity in methods and content and the New Education Policy (NEP) as proposed by the Government of India with emphasis on Goal 4 that make up 2030 agenda and ensures inclusive equitable quality education to all individuals.

From the above this paper will present its conclusions about the ideal Education System for India that’s flexible and can be adapted in any scenario.

KEYWORDS
Sustainable Development, Present Education System, 2030 Goal 4, National Educational Policy.
ABSTRACT – 15

THE ROLE OF CHAKRA MEDITATION IN THE ENHANCEMENT OF LIFELONG LEARNING CONCERNING TO PERSONAL AND PROFESSIONAL GROWTH

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Lifelong learning can enhance our understanding of life and the people around us, it provides us with more and better opportunities and improves our quality of life. There are two main reasons for learning throughout life for personal growth as well as for professional growth these reasons may not necessarily be distinct as personal development can improve over employment opportunities and professional development can enable personal growth. The objective of the paper is to understand the key factors which enhance our personal and professional growth. The paper is based on historic research design and data collection has done through secondary data. The paper majorly highlights the key factors which are responsible to enhance personal and professional growth such as spirituality factors includes self-awareness, self-love, Intra-personal development, being optimistic, Forgiveness, Hope, the need for meaning and purpose in our lives, the need to love and feel loved, the need to feel a sense of belongingness, the need to feel hope, peace and gratitude. The results show that spiritual factors help an individual to grow personally as well as professionally.

KEYWORDS

Lifelong Learning, Spirituality, Personal Growth, Professional Growth.
ABSTRACT – 16

SWOT ANALYSIS ON A PROFESSIONAL COMMUNITY OF LEARNING IMPLEMENTING OPEN SCHOOLING FOR SUSTAINABLE DEVELOPMENT

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Open Schooling is a novel concept promoted by the European Commission since 2015. A key issue is that there are still limited resources and tools for promoting this approach in schools. “Open schooling is where schools, in cooperation with other stakeholders (scientists, families...), become an agent of community well-being;” (European Commission, 2015).

To explore this issue, a novel component in the CONNECT project developed by the Regional Directorate of P&S Education of Crete (RDE) team is the collaborative production of open schooling resources involving educational researchers and science professionals from Museums and Research Centers.
This exploratory study aims to examine procedures and benefits to promote collaboration among teachers and researchers. Qualitative data were generated by observation, discussions and semi-structured questionnaires.

Participants were 18 Science teachers and 4 science researchers coordinated by 2 coaches who worked together to:

(a) recreate an educational scenario from “Rewilding Britain” to “Rewilding Greece”, to reintroduce marine and terrestrial animals that once existed in several ecosystems in Greece.

(b) co-design five new scenarios for promoting sustainable development: Renewable Energy, Global Warming - Chemical Pollution, Plastics, Measuring CO₂ for coping with pandemic Covid-19 aerosol transmission and using Map skills for problem solving, and

(c) implement these resources with 13 secondary schools of Crete to augment the science capital of 336 students measured through a pre and post-questionnaires.

Findings revealed that **three useful procedures** to promote collaboration: 1. discussing educational scenarios to address relevant issues for the community; 2. identifying links to formal and non-formal learning objectives and 3. using the “open schooling” framework of Care-Know-Do (Okada, 2020) to prepare activities to engage students with teachers, researchers and parents.

These procedures were implemented through online workshops; five to prepare open schooling resources and four to organise and assess the implementation. Along with synchronous online tools we have been using asynchronous collaboration tools.

There were **three key benefits** of collaborative production of resources for the community members: 1. developing resources that can be used in activities in and outside schools; 2. providing students with activities that are more real with topical data selected by scientists including meaningful connection with the curriculum; and, 3. having students motivated with resources that enable them to become agents of sustainable development.

**KEYWORDS**

CONNECT project, Open schooling, Greece, Sustainable Development, Community of Practice.
ABSTRACT – 17

STUDY OF HIGHER EDUCATION SCENARIO IN INDIA WITH SPECIAL REFERENCE TO STATE MAHARASHTRA

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Education means transforming of knowledge, skill, habits from one generation to other through the process of teaching and learning. Education is a major factor contributing to the process of national and individual development. It is defined as the investment of the current time and resource for future earnings. India has grown phenomenally in higher education during the last decade but there is long way to go. Maharashtra is the financial capital of India. The state is characterized by large youth strength; fast growing economy and emergence of knowledge play a significant role as an economic driver. The research present paper is an attempt to evaluate the challenges, problems and opportunities in higher education in national context while focus on the diverse issues of Maharashtra. The paper will assess the enrolment in different level of higher education in state and unfold the different challenges in higher education like expansion, inclusion and excellence.

METHODOLOGY / DESIGN

The methodology is mainly based on the literature review. Secondary data has been taken from previous research work and collected from books and internet sources. The pilot survey was conducted among the students under different higher education institution to analysis the satisfaction level and view about state higher education facilities.

RESEARCH OBJECTIVES

The main object of this research paper is to understand the higher education scenario in Maharashtra, opportunities to access the higher education, challenges faced by different stakeholders.

RESEARCH LIMITATIONS

The present paper is focused in Maharashtra higher education and not compared with pattern of higher education with any other states in India. The primary survey also based on student’s attitude towards the higher education paradigm not considers the view of other stakeholders of the society.
PRACTICAL IMPLEMENTATIONS

This paper will provide a pertinent policy recommendation in higher education. This recommendation on the basis of present scenario will surely help policy maker for achieving the excellence quality. The primary survey will review the student’s opinion and their recommendation is highly acceptable for new pathway.

KEYWORDS

Paradigm, Stakeholders, Enrolments, Pilot Survey.
IMPACT OF DIGITALIZED LEARNING IN THE FIELD OF EDUCATION AMONG CHILDREN WITH LEARNING DISABILITIES IN PANDEMIC SITUATION: CASE STUDY

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The world before and during pandemic has brought a drastic change in the Global education. Although the other way round education is being continued with digitalization as a back end support, there are exceptions in cases where children with learning disabilities are completely overlooked. They have lost their educational track due to lack of physical connectivity with their teachers and supporting people. The purpose of the researcher is to study the impact of digitalized education among children with learning disabilities. Multiple case study design has been adopted. Semi-structured interviews and focused grouped discussions were conducted for the teachers and parents under the experts’ guidance. The sample for the study was special schools in Telangana state in India. The findings suggested that making adjustments to the routine such as experiencing closure of schools and confinement to home atmosphere has proved to be a real struggle for children with learning disabilities. Support from siblings, parents and teachers were very less due to lack of digital skills understanding among children with learning disabilities. The study suggests that an alternate way for educating the children with learning disabilities need to be upgraded by flexible curricula, professional advancement among the teachers as well as parents and availability of learning resources should be given special consideration. Support from schools and teachers are very much necessary in building motivation and mental wellbeing among the children with special needs.

KEYWORDS

Digitalized learning, Children with Learning Disabilities, Pandemic Situation, Mental Wellbeing.
ABSTRACT – 19

SHOULD ‘MEANINGFUL’ ONLINE LEARNING EXPERIENCES BE FUN FOR HIGHER EDUCATION STUDENTS IN INDONESIA?

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Indonesia is the ‘most diverse multi-ethnic state in the world with very low enrolment rate in tertiary education (36%) comparing to primary education (93%) and secondary education (79%) according to UNESCO Institute for Statistics. There are 4 kinds of tertiary institutions in Indonesia, namely polytechnics, academies, institutes and universities.

A key issue highlighted by the Ministry of Education and Culture is to provide ‘meaningful’ online learning experiences for their H.E. students, which was aggravated by the pandemic. Eight million of tertiary students are experiencing distance education for the first time in Indonesia. Examining approaches to ‘meaningful’ online learning experiences became extremely relevant. 80% of institutions whose students have left campus and returned to their home locations are concerned about how to support students’ retention and progress. To explore the needs and views of H.E. students, this work examines epistemic beliefs and relationships between fun and learning.

In addition, previous work in Indonesia suggests that international epistemological research needs to have a more differentiated view of learning models in order to better understand and inform how more meaningful pedagogies can be applied (Budiyanto et al, 2018) in all levels of education. This study in Indonesian tertiary education is supported by a recent research (Okada & Sheehy, 2020a) which has identified two key factors students’ epistemological beliefs and their beliefs about fun in learning. These factors are relatively underexplored in distance education.

Through a mixed-method approach, this study examined questionnaire responses from 774 students from across Indonesia. Findings shows that five themes emerged which reflected relationships between students’ epistemological beliefs and beliefs about study and enjoyment. A key issue that emerged from the findings is the lack of enjoyment with online study including a dissatisfaction with a content delivery approach to online teaching. These findings will be used to provide recommendations for tertiary education in Indonesia.

KEYWORDS

OLAF, Indonesia, Online Learning and Fun, Epistemic Beliefs.
ABSTRACT – 20

THE CCS APPROACH AND FUN LEARNING: AN ANALYSIS OF RESEARCH DATA FOR INCLUSION

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The social distancing measures imposed by the COVID-19 pandemic highlights the importance of considering accessibility in strategies, resources and pedagogical actions in learning environments combined with the Constructionist, Contextualized and Meaningful (CCS) approach in the perspective of the principles of learning with fun. The CCS approach has been successfully consolidated in the past 20 years as it values diversity and centres the students’ skills and potential to promote meaningful and contextualized learning. This study is innovative and aligned with the Sustainable Development Goal 4 (SDG4), which scope is "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all", since it reinforces the importance of considering accessibility in strategies, resources and pedagogical actions in learning environments consistent with the CCS approach and the principles of learning with fun. In this context, this study sets to analyse the perception of educators concerning the relationship they establish between diversity, inclusion and fun learning with reference to the assumptions of the CCS approach. As part of the Online Learning and Fun (OLAF) project, a questionnaire was applied to 897 students, teachers, lecturers, and other stakeholders in 7 countries between November and December 2020. For the purpose of this study, selected data for analysis correspond to the teachers and lecturers. The results demonstrate that among teachers and lecturers, 96% agree that students and teachers/lecturers should participate together in learning in diversity. These teachers and lecturers reveal they use diversified pedagogical strategies to promote open, more meaningful and engaging learning. Accordingly, only 5% indicate that it is necessary to separate the students in a homogeneous way and by intelligence. The study proposes an extended discussion of the challenges facing the complexity of Education during and in the post-pandemic global setting.

KEYWORDS

Inclusive Education. Constructionist, Contextualized and Meaningful Approach, Online Learning and Fun, During & Post-COVID-19.
ABSTRACT – 21

IMPACT OF COVID-19 ON SKILLS AND ATTITUDE OF SCHOOL TEACHERS IN RELATION TO TEACHING LEARNING RESOURCES

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Only I can change my life. No one can do it for me.
Carol Burnett

The dawn of Covid-19 has collectively made all to reimagine education and achieve our vision of equal access to quality learning around the globe. The pandemic directly affected the education of nearly 1.6 billion learners which is 90% of the world’s total student population. This crisis has challenged the teacher’s creativity, innovation, acceptance and leadership. Globally, in a context where teachers and learners didn’t have computers, internet access. Online learning was a new leap- a novel way of teaching, creating an interactive learning environment and simultaneously ensuring that learning never stops.

Being technologically sound, working systemically and using the appropriate teaching learning resources was a big challenge for the teachers as all the teachers did not have the skill and attitude to accept this new change. The purpose of this paper seeks to address the problems related to the attitude of the school teachers towards the paradigm shift of offline learning towards online learning. The questions that arose in the minds of the researchers were- Are the teachers ready to accept the new change? Do they have the skills which will help them to inculcate new teaching-learning resources for the students? Can a workshop or small sessions on teaching-learning resources conducted will help the teachers during this pandemic. In an attempt to answer the above questions, the researchers conducted a survey on 50 school teachers to find out their attitudes towards online learning and their awareness towards the different skills required for online teaching.

It was found that 72 % of the respondents did not have a positive attitude towards online teaching.85% of the respondents were not aware of the skills required for online learning.80 % teachers were ready to know the new teaching methods. Considering the above need the researchers thought of taking some measure which will be useful for the teachers. The researchers created an Edu-Tech module on teaching-learning resources which will establish a linkage between the teacher and the student in the classroom teaching. The teachers can utilize the technology and resources which are available to engage students, keep an eye on their progress from far and ensure quality education.

KEYWORDS

ABSTRACT – 22

ROLE OF EDUCATION IN COVID-19 SAFETY AWARENESS AMONG BUILDING CONSTRUCTION OPERATIVES IN ADAMAWA – NIGERIA

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Coronavirus (COVID-19) has devastating effect on human health and the global economy. Poor COVID-19 safety awareness culture is linked to the rising number of COVID-19 cases. COVID-19 safety awareness is vital for sustained recovery for the Nigerian construction industry. The study investigated the role of education in COVID-19 safety awareness among building construction operatives in Adamawa – Nigeria. A quantitative research approach was employed through descriptive research design. Questionnaires containing information relating to respondent level of education and COVID-19 knowledge were randomly administered to 450 building construction operatives from nine selected construction sites across the state, 306 valid responses were used for analysis; corresponding to an 68% response rate. The data collated were analyzed using descriptive and inferential statistics through SPSS v26. The result revealed that operatives’ level of education plays a significant role in the state of COVID-19 safety awareness culture among building construction operatives in Adamawa - Nigeria. Construction employees with formal education exhibited higher level of COVID-19 safety awareness compared to their counterpart with no educational qualification. The study therefore recommended that construction firms should prioritize educational qualification for all level of employee. More educated operatives should assist less educated operatives with COVID-19 safety education. Authorities should enforce COVID-19 safety education through massive COVID-19 awareness promotion campaign among construction companies to halt the rising number of COVID-19 cases.

KEYWORDS
In the current scenario, there is a tremendous transformation in learning a language. Education of sustainable development (ESD) is a comprehensive and transformative educational process in which participatory learning and creative, critical, and systemic thinking are strengthened by creating links between individuals and the community. William Butler said once “Education is not the filling of a pail but the lighting of a fire”. This paper mainly focuses on the goal of ESD and how reading can be magnified through Two-fold text to make students lifelong learners.

The researcher had introduced & termed for the first time in India a new reading technique called “Two-fold Text” that enables students to interact with the text effectively. This technique mainly emphasizes for students to prepare for their CORE Examinations. Learning is defined as assimilating and processing new knowledge and skills, moving them via short-term memory to long-term memory, and then re-using them in another context. The researcher had investigated research with 20 samples with pre & post-test to test language elements in reading for 9th & 10th-grade learners in Chennai, Tamil Nadu.

The researcher had applied methodology as content-based instructional method (CBIM) for this research. This article gives a brief account of CBIM and its advantages & reading techniques. CBIM simply brings immersion learning into the language classroom. In this research article assets of two-fold text have been discussed briefly. The supremacy of sustainability provides rich and engaging contexts for developing students’ abilities in reading comprehension.

Reading comprehension assists students to develop the skills necessary to understand, organize, generate, analyze, evaluate, synthesize, internalize, interact and communicate ideas and information related to actions for sustainable futures. The learners can develop their understanding and skills necessary to act responsibly and create texts that inform and persuade others to take action for sustainable futures. In this learning area, students may interrogate a range of texts to shape their decision-making, problem-solving, critical thinking, & social skills with sustainability.

The content-based instruction, language, and literacy strands are key to improve and share the knowledge about social, cultural, economic, and worldviews that promote social justice. Through outcomes of the results investigated by the researcher that Two-fold text has proved a positive outcome for students in their reading.

KEYWORDS
Sustainable Education, Content language and Integrated Learning, Reading & Two-Fold Text.
ABSTRACT – 24

IMPACT OF COVID CRISES ON SCHOOL EDUCATION IN INDIA

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The present study is conducted to see the impact and challenges to Indian school education system during covid crises. A documentary analysis of various sources like research papers, newspaper articles, government documents and other research evidences is used in the present study. A paradigm shift has been witnessed in the education sector in India during covid pandemic as schools and teachers are forced to adapt to e-learning, leaving the traditional way of teaching. In India, school closures have affected 320 million students and only 37.6 million children across 16 states are continuing education through online classrooms. The covid pandemic has brought a huge digital divide by pushing a large number of children out of school and increase a gender disparity in education. A learning gap has been created among marginalized sections of society which includes disables, ethnic minorities, children on the move (migrant, refugee and internally displaced children), and the ones that are in the most rural hard-to-reach and poorest communities. The pandemic has disrupted school meal services thus affected the nutrition of 115.9 million children between 6-17 years of age who are enrolled under the mid-day meal scheme. The lockdown during COVID-19 pandemic have had huge consequences on the health, nutrition and learning of 30 million children (3-6 years) who were beneficiaries of the Integrated Child Development Services (ICDS) scheme. The government of India has undertaken various initiatives such as: educational channels through Direct to Home TV, Radios for students, social media tools like WhatsApp, Zoom, Google meet, Telegram, YouTube live, Facebook live and digital initiatives (Diksha and e-Pathshala) to continue school education in covid crises. The efforts of government, corporate giants, and other social agencies need to be synergized as it is difficult for one single entity to bring about the change, as the scale is enormous.

KEYWORDS

COVID-Pandemic, School Education, Online Learning, Digital Initiatives.
ABSTRACT – 25

OPEN SCHOOLING WITH COLLABORATIVE SCIENTIFIC ACTION FOR ENVIRONMENTAL PROTECTION OF WILD ANIMALS IN THE SEMI-ARID NORTHEAST

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This study identified relevant scenarios and collaborative scientific actions to prepare young students to understand the problems of the natural environment caused by man and their consequences for the balance of the planet. The trafficking of wild animals, capture, marketing, and captivity of songbirds was chosen, because it has a strong impact on the environmental balance. The illegal transport, death and mistreatment of the birds that are the majority, many extinct and or threatened with extinction. The focus of the research is to answer the following question: how can the collaborative scientific partnership be co-evaluated by those involved in open schooling for the conception and implementation of curriculum plans in public schools of basic education?

The discussions in meetings, researches in scientific literature, dialogues between the participants resulted in the creation of the Rewinding Birds Brazil Project, linked to the Connect Project, in a public elementary school in the city of Irecê, in the State of Bahia, Brazil, with 34 teachers and 810 students from the Antônio Carlos Magalhães Municipal School. The objective was to implement collaborative scientific actions with open education. Education supported by open schooling for environmental protection has a key challenge to engage distinctive societal representatives to select real world scenarios to empower the youth to become scientific literates as responsible innovators for the green economy growth and responsible citizenship for a sustainable world (Okada et. al 2020).

PROCEDURE

1. Open invitation and mobilization of basic education teachers, university, including researchers and undergraduate and doctoral students.
2. Weekly meetings to adapt the scenario to Rewilding Birds Brazil.
3. Coaching to support teachers in establishing partnerships and student-led scientific actions.
4. Co evaluation of results using the European project instruments adapted for Brazil.

METHODOLOGY

Exploratory action research with responsible research and innovation principles (RRI). Data from synchronous and asynchronous discussions using Microsoft Teams and WhatsApp for interaction with the subjects. The interpretation and model of CONNECT "Take Care-Act".
PRELIMINARY RESULTS

The co-evaluation of several factors: The relevant and engaging scenario; principle of open schooling; collaborative scientific actions; planning and definition of study coverage and focus; mobilization of participants. Areas of law, pedagogy, language, biology, basic education; sciences; technological resources, analysis software, databases and ways of carrying out field activities.

KEYWORDS

ABSTRACT – 26

TARGETED EDUCATION FOR SUSTAINABLE DEVELOPMENT IN HIGHER SECONDARY STATE SYLLABUS TEXT BOOKS OF KERALA

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Targeted Education for Sustainable Development, it is often referred to as TESD allows every human being to acquire knowledge, skills, attitudes and values necessary to shape a Sustainable Future. TESD Goal4 is about quality education and is among the 17 Sustainable Development Goals established by the United Nations in September 2015.

Mission (4 Quality Education, Wikipedia) is "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all".

OBJECTIVES OF THE STUDY

To equip Higher Secondary school students to build a more sustainable world in chemistry text books in Kerala state syllabus.

METHODOLOGY OF THE STUDY

The Methodology used for the study is Qualitative approach/Systematic review / whole institutional approach is used for the study. It helps the policy makers and acute researchers to assess multiple development and impact across the environmental, social, economic and educational dimensions. The study is theoretical and qualitative and uses the content analysis is to explore the opportunities offered by the chemistry text books to promote TESD in the school class room. The whole institutional approach involves how the school planning, management, well-being, teaching-learning process, Content transaction, care for oneself, others, environment, behaviour of students. Observation is the tool used for the study.

TARGETS OF EDUCATION BOURN, 2018

The main three "means of achieving targets" are: Build and upgrade inclusive and safe schools;
Expand Higher Education scholarships for developing countries;
Increase the supply of qualified teachers in developing countries
TARGETS AND INDICATORS OF EDUCATION FOR SUSTAINABLE DEVELOPMENT UNESCO, 2012; UNDESA 2013

SDG 4 has 10 targets which are measured by 11 indicators.
Target 1. Free primary and secondary education
Target 2. Equal access to quality pre-primary education
Target 3. Equal access to affordable technical, vocational and higher education
Target 4. Increase the number of people with relevant skills for financial success
Target 5. Eliminate all discrimination in education
Target 6. Universal literacy and numeracy
Target 7. Education for sustainable development and global citizenship
Target 8. Build and upgrade inclusive and safe schools
Target 9. Expand higher education scholarships for developing countries
Target 10. Increase the supply of qualified teachers in developing countries

ANALYSIS FOR THE STUDY

The study is conducted to find out the sustainability of chemistry text books to promote Targeted Education for Sustainable Development in the school class room. Simple and categories analysis (content wise, chapter wise, unit wise analysis) of higher secondary chemistry text book in kerala state syllabus is used for the study. Frequency distribution, Bar graph, Pi diagrams etc is used as the statistical techniques for the study.

CHALLENGES OF THE STUDY FILHO, 2020

Impact of COVID-19 pandemic
Just as all SDGs, achieving SDG 4— for inclusive and equitable access to education—is likely to be missed due to the COVID-19 pandemic, there is a projection that more than 200 million children will still be out of education by 2030.

CONCLUSION/OUTCOME OF THE STUDY

Empower the students to take the responsibility for the present and the future generations and actively contribute to societal, economic, environmental and educational transformations and to build a more Sustainable World. Employ interactive, project based, e learning resources and learner centred pedagogy in higher secondary texts and syllabus in Kerala state. Transform all aspects of learning environment through a whole institution approach to Education for Sustainable development to enable learners to live what they learn and learn what they live.
ABSTRACT – 27

ATTITUDE TOWARDS SUSTAINABLE DEVELOPMENT AND ENVIRONMENTALLY RESPONSIBLE BEHAVIOR OF STUDENT TEACHERS OF NORTHERN DISTRICTS OF KERALA

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Sustainable development was first officially discussed in the Brundtland Report published by the World Commission on Environment and Development in 1987, and the corresponding rapporteur defined it as "sustainable development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs" (WCED, 1987). The life of human being depends entirely on the environment and any adverse change in the environment makes the life of the human being difficult on the planet. The desires and expectations of humanity increase exponentially which crosses all limits consumption of environmental resources that are essential for the existence of future generations. The greedy nature of certain people makes this planet not suitable for human life. Development is essential for humanity but the projects for those developments do not affect the existence of human being. In this context the term sustainable development got importance. Sustainable development has three dimensions, namely economy, environment, and society (Olsson, Gericke, & Chang Rundgren, 2016). For sustainable development to take place, the sustainability of these three dimensions must be ensured simultaneously (Alkış, 2007). On the road to sustainable development, the role of individuals and their awareness is important. Even though the attainment of sustainable development is a global one but the understanding of individuals especially students, teachers, and teacher educators are important in attaining sustainable development goals.

By 2030 United Nations aims to build a more prosperous, more equal, and more secure world. For this 193 Member States at the UN General Assembly Summit in September 2015 formulated seventeen sustainable development goals and 169 targets. Awareness and understanding are important in achieving the goals by 2030 with the motto leaving no one behind. This study aims to find out the attitude towards the sustainable development and environmentally responsible behaviour of individuals especially students, teachers, and teacher educators and also to find out the relation between them. This study also intended to make awareness to individuals about the importance of sustainable development goals and developing and promoting different strategies based on the above findings. Mixed method research is used to find out attitude, behaviour, and the extent to which the individuals show environmentally responsible behaviour. The different tools used for the study are Sustainable development attitude scale and environmentally responsible behaviour inventory. Environmentally responsible behaviour is important in attaining sustainable development goals. Through education these behaviours can be imparted to the individuals and thereby SDG can be fulfilled.
ABSTRACT – 28

MOTIVATION AND WORK CONDITIONS OF HEALTHCARE WORKERS
A STUDY ON COVID-19 FIRST WAVE

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In the ongoing health crisis of COVID-19, the health care workers dedicated to serving the sick have become vital and the only resolution. The healthcare sector that deals with human lives currently needs pressing utilization of its resources to touch each person. That can be addressed with employee’s motivation and improving their work conditions that are the significant markers of quality of any enterprise.

Therefore, this study is aimed to investigate the motivation and prevailing work conditions of the health care workers during the first wave (March to June 2020) of COVID-19. As a method, an online survey using Google forms was distributed to health care workers working in three different locations in India. (N=84) The questionnaire was designed to explore the demographics, motivation, and factors concerning the prevailing work conditions during the 1st wave of COVID-19. Descriptive statistics (mean and standard deviation) were applied that were analysed using PSPP Statistical Analysis Software.

This finding of the study foregrounds the necessity of adequate work conditions and safety for enhancing the motivational levels of the health care workers. That is indispensable for constructing a robust health care sector for the forthcoming times to be equipped for future occurrence of pandemics while remaining sustainable. Finding from this study can also provide a solution to the policymakers, administrators, planners, researchers, and NGO's looking towards better management of work conditions and health care workers' motivation to the continuing pandemic of COVID-19.

KEYWORDS
ABSTRACT – 29

SELECTION OF MOBILE APPS FOR CHILDREN WITH AUTISM SPECTRUM DISORDER DURING PANDEMIC

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The impacts of the Covid-19 pandemic on educational processes have intensified the challenges experienced in the education of students with Autism Spectrum Disorder (ASD). ASD is defined as a neurobiological condition characterized by severe and invasive damage in the areas of interaction and social communication and by a restricted and stereotyped repertoire of activities and interests. During the period experienced as a result of the isolation imposed by the emergency situation, teachers and families had to adapt to new contexts. Thus, the use of digital resources was necessary to maintain students' activities. Therefore, this study aims to present a mapping and systematization of mobile applications for people with ASD. A survey was conducted on the platforms: Apple Store and Google Play. The descriptors used were: autism, autistic children, autism apps, autism games and autistic space. 81 applications were identified, and 53 were selected, of which 23 are open access (free) and 30 limited access (free and paid). From this analysis it was found that the applications are about: educational games, aimed at literacy and the development of reading and writing; applications aimed at developing social and emotional skills; applications for pairing, communication and intellectual development and for routine organization. Applications designed for routine development have an intuitive interface facilitating children's interaction. Its content is gamified to encourage the user to perform the tasks. Applications that have a job related to emotions are structured from narratives providing greater contact and communication between the user and the device and the content. Alternative communication applications have different options, providing choices that help the user to identify themselves. It was found that the categories with the most development of games and applications for children with ASD are aimed at the early stages of education, communication, routines, social skills and emotions.

Applications for students with ASD are considered assistive technology resources and can be used in educational processes and for the development of different skills.

KEYWORDS

Autism Spectrum Disorder (ASD), Mainstream Education, Pandemic, Mobile Applications.
ABSTRACT – 30

ALGORITHMIZATION OF HAPPINESS OR THE HUMANIZATION OF EDUCATION

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ISSUE

This article is situated in the Online Learning and Fun (OLAF) research context, which brings together many universities to understand the meaning, importance and efficiency of learning that is considered “fun, pleasureful and meaningful”, particularly in activities taking place during the Covid-19 pandemic. It considers the meanderings, the values, and the achievements of human beings that have been scrutinized by search engines that aim to reveal their secrets and control their points of entry and exit, adapting them to the dominions and finalities of Big Data operators.

EVIDENCE

Over the last 5 years, Brazil, with its profound socioeconomic differences, has produced and experiences the symbolic and concrete violence that stems from neoliberal thought, the negation of science, of fact substituted for the “post-truth”, and the manipulation of data on social media. In this scenario, education takes place through online activities, and one finds youth who are fluent in technologies.

INNOVATIVEMETHOD

This study analyses the students’ voice regarding their online classes, through the lens of Paulo Freire’s (1997) theoretical principles.

LITERATURE

We utilize the concept of algorithmization which affects education and ideas of emancipation, liberty, and social transformation through education. It is also based on the concepts of transformational education developed by Freire and concepts by Vieira-Pinto (1995), Zuboff (2020) Levitin (2019), Morozov (2020) and Sadin (2016).

PURPOSE

The objective is to analyse and shed light on the constitutive elements of the process of algorithmization of “happiness” and its reflexes on education so as to gather, through the students’ voices, paths for the construction of its humanizing nature.
RESEARCH QUESTION
What are the conceptual paths for the reconstruction of the humanization of education that go beyond the algorithmization of happiness?

METHODOLOGY
The methodology involves a theoretical debate, as well as qualitative analysis of the answers to a questionnaire about “fun learning”.

PARTICIPANTS
The participants consist of almost 70 students in undergraduate courses at the Pontifical Catholic University of São Paulo, who answered the questionnaire in 2020.

FINDINGS
Our findings indicate that students understand learning that is pleasurable or fun occurring in situations that involve a challenge, group projects, interactions between teachers-students-students, when they feel respected, listened to, and valued.

DISCUSSION
The title of the article points to an issue that is part of the recent challenge in education: One of the school’s tasks is “to educate citizens that are capable of social interaction and for life that has the quality of being fair and free, through knowledge production”; It’s the school’s responsibility to produce an understanding of the universal nature of knowledge and the different ethical, economic, aesthetic, and scientific dimensions of social life; It’s the school’s role to make viable the conditions that permit that new generations have access to such tools, creating projects for society. Technology presents itself in an ambiguous role: at times it can induce a world of consumption and surveillance, and in other moments it has the potential to create solidary and humanizing networks.

KEYWORDS
Curriculum, Fun-Learning Algorithmic ICT.
DIFFERENT TRIGONOMETRIC SPLINE CURVES AND THEIR APPLICATIONS

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In recent year’s trigonometric splines have found many interesting applications in problems involving geometric modelling and it has been observed that many problems of surface modelling could be better handled by trigonometric splines specially those relating to data fitting on spherical object. All these possible applications have led to introduction of various types of trigonometric splines having different features suitable for CAGD applications. The objective of the study is to find spline function approximation techniques as a powerful tool in the field of Computer Aided Design and Computer Graphics. As a unified mathematic model with many desirable properties, spline functions can be applied very conveniently in modelling free form curves and surfaces. In the present study the main objective is to construct some spline curves and surfaces with a good range of shape parameter that provide local control, sufficient continuity and possess satisfying shape preserving properties. The scheme which be developed in the chapter should be very easy to implement, convenient and economical and the curves visually pleasant.

KEYWORDS

Bézier Trigonometric Bases Functions, Bézier Trigonometric Curves and Surfaces, Trigonometric Polynomial, Shape Parameter.
ABSTRACT – 32

IMPACT OF HIGHER EDUCATION SYSTEM OF MANAGEMENT COLLEGES ON DEVELOPMENT OF ENTREPRENEURSHIP SKILLS IN MUMBAI CITY

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Higher education institutions are required to demonstrate the ways in which their students respond to the social and economic needs of society. Higher education also triggers for entrepreneurship skills and employability skills. Study is to identify the contribution of higher education in postgraduate management to develop entrepreneurship skills. Besides academic knowledge which students acquire in their high education it is equally important to develop skills related to leadership, teamwork, resilience, communication which are essential for entrepreneurship. Hence, a 'holistic' approach for exploring the entrepreneurial and innovative potential of the university as the basis for change and future development (Gibb, 2012) is a necessity. For this, a certain degree of autonomy is needed both at the level of individual staff as well as for the organisation itself. Regarding entrepreneurship, the literature shows the importance of the soft skills related to leadership, moral values and ethics, communication and also the ability to adapt to new work contexts are inevitable. (Bell 2009; Beckton 2009; McIntosh 2008; Eisen et al. 2005; Leroux and Lafleur 2006)

PURPOSE

Purpose is to study the impact of higher education on development of entrepreneurial skills. Various components of higher education such as teaching and learning methods, Use of advance technology, Industrial visit, Internships etc, Results and conclusion of study will provide suggestions to higher educational institute to improve curriculum or to make necessary modification.

METHODOLOGY

Type of research is primary. Questionnaire method will be used to collect data from around 100 respondents who are the students of Post Graduate programs.

CONTRIBUTION

This study specifically deals with how entrepreneurship skills will help students develop higher education system. And also what the education system provide to stakeholders and approach towards them.

KEYWORDS

ABSTRACT – 33

THE TEACHING OF MATHEMATICS AS A HUMANIZED AND ENCULTURED PROCESS FOR SUSTAINABLE DEVELOPMENT

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Mathematics is not seen as an absolute corpus of well-founded knowledge anymore, but as a human activity, a social phenomenon, part of human culture, historically evolved and intelligible only in a social context. It is also important for teachers to explain why a mathematical concept is worth knowing and understanding together with how it relates to other concepts in both theory and practice. The paper reports from a mixed methods approach research project that analysed the teaching and learning environment that promotes mathematics as an encultured process for sustainable development. The main research question was: How can mathematics in the senior phase be taught as a subject that embraces culture for sustainable development? From a population of 126 senior phase mathematics teachers in the Bizana district, a sample frame of 60 teachers was used for the study, obtaining a stratified random sample of four teachers. Questionnaires were administered to the whole population, after which semi-structured interviews were conducted with four teachers based on their responses in the questionnaires. Results indicated that the use of mother tongue and visual representations in learning activities promote the learners’ development of their own meaning-making processes. It was also found that the introduction of multiple meanings each mathematical concept taught enabled its connections to culture for sustainable development.

KEYWORDS

Mathematics; Teaching; Culture, Connections, Sustainable Development.
ABSTRACT – 34

THE DEVELOPMENT OF THE JOURNAL CHEMISTRY TEACHER INTERNATIONAL
GOOD PRACTICES IN CHEMISTRY EDUCATION

Prof Jan Apotheker, Editor in Chief, University of Groningen, the Netherlands

Chemistry Teacher International (CTI) is an open access journal published by DeGruyter in close cooperation with the Committee on Chemistry education of IUPAC and the Division on Chemistry education of EuChemS. The first issue of the journal was published in 2019. The first issue of volume 3, containing 15 articles was published recently. All issues are available at the following URL: https://www.degruyter.com/journal/key/CTI/html.

The journal was set up to bridge the gap between educational research and educational practice in the classroom. It accepts articles describing good practices that teachers wish to share with the teaching community around the world. All levels of education are accepted in the journal.

CTI is an open access journal. This choice was made deliberately in order to make articles available in all countries. In order for the journal to be economically feasible an Article Processing Charge has been set, starting in volume 3. The Article Processing Charge has been set as low as possible. Reductions of 50% and waivers of 100% for authors from emerging economies are in place. Members from IUPAC and EuChemS also receive a reduction on the APC.

CTI is planning special issue on Green Chemistry and Sustainable Development for the September issue of 2021. In this issue examples of choices made in industry for a greener process or the application of Sustainable Development principles are described in such a way that they can be used in education as examples. In many chemistry curricula Green Chemistry has become a feature. The curriculum in the Netherlands is an example (Apotheker, 2018) But the concrete examples of green processes is limited. In this issue sofar 8 abstracts have been received, which will be discussed in more detail in the paper.

KEYWORDS

ABSTRACT – 35

MANAGING FACTORS INFLUENCING THE CONSTRUCTION OF ROAD OVER BRIDGES; A CRITICAL ANALYSIS.

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Infrastructural development is an essential criterion for the overall development of any nation which includes: Roads, Over Bridges, and Flyovers etc. As population ratio of India is much higher than any other third world country, the policy for development nature should be more effective. The periodic labour force survey (PLFC) of the national sample survey office showed that the worker population ratio in India stood at 46.8% in the 2017-18 fiscal year. The unemployment rate in the year of 2019 was 5.36%. But in the pandemic situation, it has increased up to 6.8% (updated CMIE unemployment rate 2020). It has been seen that, due to various factors, majority of infrastructure projects are affected by time delay and it leads to cost overruns, moreover these overruns vary from a few months to as high as five or more years, placing the project viability at risk. The road over bridge (ROB) can be defined as a grade separated bridge structure with gradient approaches on both sides. People’s lives are getting faster. People become engaging their life with various work places, developing life style and their expectations for development towards nation is growing very fast. Roads are one of the main mediums of transportation, so the traffic at any level crossing (LC) is becoming large and the main problem of waiting at LC leads to loss at man hour, fuel, consequent loss of GDP, increasing sound pollution and finally damnification of a fast growing economy. The Industrial sector is second largest sector of India (Source: statistic times.com) and contribution has accounted for around 40% at the development investment during the past 50 years. Around 16% of the nation’s working population depends on construction for the livelihood. This study not only examine the cost overrun and delay factors but also, to contribute something to the society for the development of employment level. An observation can be made to generate an idea on economy and it may help to fill the gap of loss due to some common factors like time delay, cost, quality and design. Therefore, our study will gradually focus on ways to build up a linkage between the economy and development of the nation through a structured framework keeping emphasis on the quality improvement of ID particularly by constructing over bridges or smooth running as well as easy movement.

KEYWORDS

Infrastructural Development, Road Over Bridge, Cost Overrun, Time Delay, GDP.
ABSTRACT – 36

IMPACT OF SOCIAL ISOLATION ON ELDERLY AND SOCIAL INCLUSION OF ELDERLY THROUGH SOCIAL WORK INTERVENTION WITH SPECIAL REFERENCE TO OMASHRAM OLDAGE HOME AT BANGALORE

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INTRODUCTION

Aging is a normal process of each human being in his/her lifespan development. In each phase of human life, one or the other way we were connected with family, friends, colleagues more with the society through social relationships. Elderly life will become more wretched as they were lacking family support, retirement, diminishing joint families, death of their friends/colleagues, prone to life threatening illnesses, feeling isolated and neglected by relatives, friends, society. Due to all these issues, they feel isolated, try to make suicidal attempts, eagerly waiting for their children and grandchildren will visit them to provide emotional support and they can go back to their home with their children. In current scenario, it is highly difficult task to change the mindset of new generation and intergenerational bonding is required to change the society. So, it is an effort of the researcher to build social relationship in the society and with the elderly through social work strategies.

OBJECTIVES OF THE STUDY

To understand about the social isolation and its impact on their life
To know about the social work intervention for social inclusion of elderly for sustainable development

METHODOLOGY

The Present study is based on descriptive research design. The study impounds to elderly who is 60 years and above. This paper is to comprehend the social work perspectives to address the significance of family and societal support for elderly social inclusion.

RESULTS

To educate new generation to understand the family values and provide emotional support to lead contemptful life through intergenerational bonding for sustainable development in geriatric social work.
CONCLUSION

Ever since elderly were lacking family support, emotionless life, diminishing joint families, acquisitive mindset, today’s world is losing the significance of elderly. Social workers should formulate social work strategies to strengthen the elderly to lead contemptful life.

KEYWORDS

Elderly, Social Isolation, Family Support, Social inclusion, Sustainable Development.
ABSTRACT – 37

CHANGING CULTURAL DIMENSIONS OF INDIAN DIASPORA:
A STUDY ON HOFSTEDE MODEL

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The culture of a group of people or country refers to the experience, knowledge, beliefs, values, attitudes, and possessions of material objects acquired through generations, communicated, and transmitted from one generation to another. The individual's behaviour pattern is guided by the cultural belief of the group he or she belongs to and the learning through experience, perpetuated in a society through various institutions. India is a diverse country with various religions, cultures, dialects, beliefs reflected through their diverse behaviour. These beliefs and behaviours of the individuals are reflected in the organizations they are associated with and play a crucial role in determining the organizational culture and work environment.

The Dutch Psychologist Hofstede studied people of different origins and cultures to determine their behaviour patterns in the organizations. As people's culture and beliefs are changing with the influence of various external factors and their exposure to international dimensions, it becomes necessary to study the changes experienced by the Indian society, which moulds the future of the organizations. In this paper, an attempt has been made to study the change in cultural dimensions of people residing in different geographical locations of the country with different educational and experiential backgrounds, exhibiting diverse behaviour through different social learning. The analysis of the cultural evolution will assist the organizational change practitioners to introduce change and development in their organizations successfully according to the requirement of the society. A questionnaire method has been adopted for collecting the responses from different regions of the country. The Reliability Analysis has been done to check the reliability of the scale employed in the study. Further, Descriptive Statistics showed interesting results.

KEYWORDS
Culture, Organizational Development, Organizational Culture, Hofstede Model.
ABSTRACT – 38

PARADIGM SHIFT TO EMBRACE JUSTICE FOR WOMEN: A NEED

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In a culture, everybody has the opportunity to live his or her ideal lifestyle without discrimination. It is called fairness, until a state is achieved in which all persons are considered equal regardless of their caste, sex, colour, profession, or position. The most common type of prejudice is gender bias. Women want a dream; they govern to participate and flourish fairly by good governance. Female provides financial stability of steady investment and business empowerment; females look to those who have a greater impact on the development of long-term peace as well as resilience, and they all prosper fairly through prevention. Gender equality is a constitutional right for stability, security, and economic growth. Women are subjected to patriarchal legislation, societal norms, and thus are marginalized in the current elite. A cultural shift is required to bring about the reforms necessary to end women's inequality and injustice.

Approach: This paper deals with the status of women, their work arrangement, policies, strategies for their participation, sexual harassment, domestic violence, women trafficking, child marriage, acid attacks, etc.

Need: The need is for radical positive action to readdress the inequalities in women’s lives and build a just and resilient world. There is also a need to spread awareness and empower women to fight for their rights.

Methodology: Secondary data is used to highlight the actual position, women’s misery, and gender inequality in numbers. Various academic papers and related articles are compiled to throw some light on the status of women.

Conclusion: Women's participation, gender wage disparities, and educational attainment remain challenges. Women have historically been looked at with scorn for decades, with numerous strictures inflicted on them restricting their standing to the whims of men. They've been restricted to the hearth and the house. However, society's perspective has shifted, and a general mindset is being formed to strive for the emancipation and advancement of women so that they can also contribute to the enhancement and wellbeing of society.

KEYWORDS

Justice, Women, Growth, Equality, Gender.
THE UPSHOTS OF COVID -19 IN STUDENTS’ HEALTH, EDUCATION AND SOCIAL LIFE: AN EMPIRICAL STUDY

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Due to the Covid-19 virus, almost all the countries of the world have fallen unawares into the trap of the reality of disruptions and instability, requiring painful adjustments to the new reality. Bangladesh is no exception, but it has tried above par to confront and handle the acuteness and effects of the pandemic on the public health, economy, and society. The struggle is still ongoing and so, it is essential to understand the nature of the influences of the virus to chalk out proper preventive and recovery measures in order to handle it effectively and professionally. The intention of this research is to find out the influences of covid-19 on students’ health, educational and social life in the perspective of Bangladesh. The research work has employed a descriptive survey with a structured survey questionnaire and interactive interview for collecting the possible data. Some important statistical tools like chi-square test, factor analysis and regression analysis have been deployed for analysing the data. Covid -19 virus has affected the stoppage of the consistent academic core curriculum of about 40 million students through the state from 17 march, 2020 to date. The government and concerned authorities have by far taken some initiatives for students e.g., out-school online learning and using TV media to deliver education during the pandemic but these do not meet the desired levels of satisfaction. The study has yielded that school closure has brought about disruptions to education, hampered regular routine learning, changed lifestyle, increased students’ violence, invigorated social media addiction, created unemployment and increased poverty levels.

KEYWORDS

COVID-19, Student, Social Life, Online Education, Bangladesh.
ABSTRACT – 40

REFLECTIONS OF YOUTH ON USAGE OF SOCIAL MEDIA

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The world has turned into a global village since everyone is connected through social media. Social media has been embraced with high dynamism especially among youth across the globe. Based on review of studies regarding social media, it was observed that social media is greatly impacting the lives of youth. There is a dearth of studies focusing on social media use by youth in India; therefore, a necessity was felt to carry out this study on the reflections of youth on usage of social media in the Indian scenario. Main objectives of this qualitative study were to understand the outlook of youth regarding social media; the ways of accessing social media; the extent and the purposes of social media usage among youth; and the problems encountered related to social media usage. The sample for the pilot study comprised of 8 undergraduates and postgraduates in the age group of 18-25 years, from streams of science and technology, commerce and management, humanities and interdisciplinary studies from South Mumbai. For the purpose of data collection, in-depth interviews were conducted for which the researcher used open-ended, unstructured interview protocol and a personal data sheet. The data analysis technique involved arranging the data into codes, categories and broad themes. The data interpretation was carried out according to the final themes that emerged subsequently. The themes were as follows: (1) Social Media: A multidimensional digital ecosystem, (2) Repercussions of excessive social media usage, (3) Threats of social media usage, (4) Remedial measures for building up a social media friendly society. The study revealed that maximum number of youth today access social media. The youth uses this tool for learning, sharing, interacting and building relationships, for awareness, activism. The youth perceives social media as an integral part of their lives and has a great understanding of pros and cons of the social media usage. The threats of excessive social media usage cannot be neglected and an effort can be always be made to minimize them. Hence, social media is akin to a double-edged sword. This study will fill lacuna in the existing literature, create awareness for responsible usage of social media and will guide further research along with government and other stakeholders.

KEYWORDS

Reflection, Social Media, Youth, Social Networking Sites.
ABSTRACT – 41

FRIENDZONE: A REMEDIAL SOCIAL MEDIA PLATFORM FOR SOCIAL ANXIETY DISORDER

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The present study explores the concept of Blockchain Technology with special reference to its implications in the perspectives of anxiousness and fearfulness in common people due to usage of their data through social media. Many businesses run successfully by using the data about a large set of unknown customers. We people are in the dark about data and scared of being spammed or scammed. With the immense usage of social media platforms, we unknowingly share our data through simple search button clicks, creating accounts on e-commerce websites, following others’ business profiles, etc. The paper discusses the enormous possibilities of using social media platforms that ensure data privacy and security through blockchain social media platforms. Introduction of a blockchain social media application “FRIENDZONE” that does most of the functions or tasks that we have usually done on social media platforms like Facebook, Instagram, etc.

KEYWORDS

Social Anxiety Disorder, Blockchain Technology.
WHAT HAVE WE LEARNED ABOUT CLOSURES OF EDUCATION INSTITUTIONS DURING THE SARS OUTBREAK OF 2003 AND THE COVID-19 PANDEMIC?

By Stephen J. McKinney, Sarita Parhi, Ravi Kumar, Hassan Shifau and Peter Gray

INTRODUCTION

Two serious outbreaks in the twenty-first century threatened global health very quickly and both led to school closures. The SARS outbreak in 2003 had a very serious impact on a small number of countries and without the interventions in these countries, the virus would have posed a very grave threat to world health. Covid-19 developed rapidly into a pandemic in 2019-2020 and this led to world-wide disruption and extensive school closures. Initially, this paper will provide a concise overview of some of the key lessons that were learned from the school closures during SARS 2003. These provided an early indication of some of the challenges and successes in online education that would re-emerge later during Covid-19. This will be followed by a more detailed discussion on key aspects of the worldwide school closures during the Covid-19 pandemic and what has been learned from these school closures. This discussion will focus on: public awareness of the virus; school closures and the reopening of schools; digital exclusion and food insecurity; the impact of Covid-19 on children’s human rights and the preparation of teachers and student teachers for online learning and teaching. Finally, the paper will offer some concluding points for consideration in the event of school closures (and school re-openings) in future outbreaks of epidemics and pandemics.

WHAT HAS BEEN LEARNED FROM THE OUTBREAK OF SARS IN 2003?

The earliest cases of SARS probably emerged in mid-November in 2002 in Guangdong, a southern province in China (WHO, 2003a). The SARS virus appears to have been brought from Southern China to Hong Kong in February 2003 and spread quickly through Hong Kong, an international financial centre, and on to Hanoi, Toronto and Singapore (WHO, 2003b; Fox, 2004). Schools were closed in Canada, mainland China, Singapore and Hong Kong as a preventative measure to contain the transmission and spread of the virus (Rao, 2006). The schools in Hong Kong were closed with little warning, leaving little time to prepare for a transition to forms of home learning and teaching and there was insufficient time for the Department of Education and Manpower Bureau to develop guidelines for schools. In these circumstances, the schools were advised to develop and implement their own strategies. This led to a variety of different outcomes. Some schools were better equipped and skilled in the use of ICT and were able to construct effective whole school strategies for the introduction of online learning and teaching. Other schools struggled to develop school approaches and the responsibility devolved to the individual teachers. The preschools in
Hong Kong were officially closed between March 29 and May 18, 2003, although 15% had already closed before the March date (Rao, 2006).

When the schools re-opened there were some significant changes to the educational practices and the social interaction. In pre-schools in Hong Kong, children and staff wore face masks and social interaction was very restricted; there was no physical interaction between children. Toys were no longer shared between the children and they were carefully sterilized after use. In 2003, there was mandatory temperature monitoring of all school children in Singapore (Chng et. al., 2004). It is noteworthy that this temperature screening did not detect any of the children who were diagnosed with SARS but had a powerful psychological effect – it acted as a reassurance to parents and the general public that the schools were safe.

One very interesting development during SARS 2003 was the intervention by the National University of Singapore to educate their 32,000 students in health care related to SARS. The University, with support from the Centre for Instructional Technology and the Ministry of Health, developed a six lesson online module of self-directed learning on health education for the students. This aimed to raise awareness of the engagement with the protective measures during the SARS outbreak (Wong et. al., 2005).

**WHAT HAS BEEN LEARNED FROM THE RESTRICTIONS, LOCKDOWNS AND SCHOOL CLOSURES DURING COVID-19?**

**PUBLIC AWARENESS OF THE VIRUS**

Covid-2019 has been caused by a highly infectious coronavirus called SARS-CoV-2, a severe acute respiratory coronavirus (Bose, 2021). The outbreak of Covid-19 was declared a pandemic by the World Health Organisation on March 11, 2020. There were a number of responses required to understand the nature of the outbreak and a series of actions to be undertaken to tackle the disease. The first response that was required pre-dated the identification of the pandemic status of Covid-19. This response was a prompt reporting of the disease that had the potential to have an international impact on health (WHO, 2003a). The World Health Organisation warns:

Attempts to conceal cases of an infectious disease, for fear of social and economic consequences, must be recognised as a short-term stop-gap measure that carries a very high price: the potential for high levels of human suffering and death, loss of credibility in the eyes of the international community, escalating negative domestic economic impact, damage to the health and economies of neighbouring countries...

While this would appear to be directed to the early stages of the Covid-19 pandemic and the delay in reporting the disease, this warning was issued in 2003 in response to the outbreak of SARS. Any delay in prompt reporting of a potential world-wide disease may be caused by fear or an over cautious approach but will inevitably lead to serious consequences. Once the disease was reported, scientists, medical doctors and public health experts were able to engage in
international collaboration to examine the nature of the disease and prepare informed and rapid responses (Liu et. al., 2020).

This prompted action to raise public awareness and understanding of the virus and the effects of the virus. This was focussed on the range of symptoms that could be experienced and the age groups that were most vulnerable (Lee et. al., 2003). Those with existing health conditions who were most at risk were also identified. This stage was important for school education as it helped to identify the levels of risk for children of school age. If there was to be effective preventive education and publicity, it was important that the information on what was known was accurate and science-based, and that there were also clear indicators on what was not known (Hung, 2003). This information had to be shared internationally and disseminated in a timely manner, and ‘rumours, misinformation and misinterpretation’ needed to be countered and dismissed (Centers for Disease Control and Prevention, 2005). This information had to be updated regularly: at the time of writing (November 2021) there are anxieties being expressed about the potential of increased incidences of school infections in primary schools caused by the more infectious delta variant of the Covid virus (University of Bristol, 2021).

SCHOOL CLOSURES THROUGHOUT THE WORLD

Schools throughout the world were closed very quickly in response to the rapid spread of Covid-19. The closure of schools was deemed to be a ‘last resort’ and, while this was expected to reduce the transmission of Covid-19, school closures were not sufficient in themselves and had to be understood as part of a series of measures such as restricted social interaction or lockdowns, non-pharmaceutical interventions and a vaccine programme (European Centre for Disease Prevention and Control, 2021; Somekh, 2021). There were many views on the most effective courses of action and the different forms of school closure: Reactive and Proactive school closures and ways of isolating those who were infected such as Class Dismissal (McKinney et. al., 2020). More recent studies indicate that, in some instances, it might have been more effective to isolate positive cases rather than adopt bubble quarantining measures (Woodhouse et. al., 2021).

The school closures were the result of decisions that balanced the risks and harms of children being in school with the potential effects on children when they were out of school. If children remained in school, there were risks of an increase in the infection rate for the children and for the teaching staff (and other school staff) and consequent effects on the wider community. If children were out of school there were serious detrimental effects on their social development, learning, mental and physical well-being and, for some children, their safety. Once the consequences of school closures became clearer, there were major concerns about the safety of mentally, physically or sexually abused children during restrictions and lockdowns (Sweeney-Reed et.al., 2021). Often the children were in a lockdown situation with the abusers. Further, when schools were closed children were unable to access health care and social care that was normally provided within a school context (Bark et. al., 2021; Mensah et.al., 2021). School closures also affected the labour supply and impacted on essential personnel during the pandemic, for
example, healthcare workers who had to take time off work to care for their children who were out of school (Vlachos et. al., 2021).

School leaders played a vital role in local contexts when schools were closed (and being reopened), and effective communication with the staff, pupils and parents that was timely and accurate was crucial (Harmey and Moss, 2021). This was especially important to instil confidence in parents about the management of the learning and teaching and the types of support that was provided by the school (Cambridge Educate, 2021). Once schools reopened, there needed to be clear communication on any new arrangements for the school day and on the range of safety measures being adopted in the school.

THE RE-OPENING OF SCHOOLS

While the schools were closed with great alacrity and often with little warning, the reopening of schools was less rapid and managed more cautiously (Somekh et. al., 2021). There were many aspects to reopening schools to children that required careful consideration. As schools gradually reopened throughout the world, a number of safety measures were adopted in daily school life to prevent any further transmission of the disease. These included social distancing, greater emphasis on outdoor learning, face coverings, frequent handwashing, regular testing and tracking systems (Orschelin et. al., 2020; Thampi et.al., 2020). The school buildings and fitments such as desks were cleaned thoroughly on a regular basis and the classrooms checked to ensure that they were adequately ventilated. The school day was shortened in some cases and school attendance and breaks were staggered to minimise the numbers of children mixing with each other in the school (OECD, 2020). Schools had to prepare to deal with the emotional stress that some children experienced during the period of restrictions and lockdown. There was also a duty of care to the teachers and other staff who had experienced stress in this period. One advantage of the return to school was that the concrete examples and experience of protective measures in school contributed to the safety education of the children and young people as they began to gather together again. They had the opportunity to learn from these measures and follow them outside of school (Buonsenso et.al., 2021).

DIGITAL EXCLUSION

The effects of the pandemic highlighted some of the major issues that existed pre-Covid and were exacerbated by the effects of the lockdowns and closures (Children and Young People’s Commissioner Scotland, 2021). There were particular concerns for those children who were experiencing severe educational disadvantage before the outbreak of Covid-19 (Engzell et. al., 2021). This included many children in the poorer areas of the world, sub-Saharan Africa and Southeast and South Asia (Lorente et. al., 2020). In some of these poorer countries, the education of the children during school closures was disrupted by moves to online learning because of digital poverty – they lacked devices, or regular access to devices, and/or internet access (Unesco, 2021a). There were also examples of a gender divide in the opportunities to engage in online learning. For example, girls were less likely to own a mobile phone (which can be used as a learning
device) in three districts in Pakistan. While 93% of boys owned a mobile phone, this was compared to the significantly smaller percentage of 44% of girls. Other forms of home learning were adopted in the poorer parts of the world to address digital exclusion. This included the use of paper resources, television programmes and radio programmes. Many girls and boys in the poorer countries did not spend sufficient time in these non-digital forms of home learning because they were supporting the household through domestic chores (girls) or through child labour (boys). Food security for children throughout the world was also a serious problem pre-Covid-19 and this was exacerbated by the effects of Covid-19. This will be discussed in the next section on Covid-19 and children’s human rights.

THE IMPACT OF COVID-19 AND CHILDREN’S HUMAN RIGHTS

There are questions emerging about the implications of restrictions and lockdowns for human rights and, for our specific purpose, the human rights of children. The restrictions and lockdowns were extraordinary emergency measures that were often introduced very quickly to protect public health (United Nations, 2020). Nevertheless, these courses of action imposed limitations on rights to human movement and freedoms (Sekalala et. al., 2020; Tzevelekos and Dzehtsiarou, 2020). The principles underlying these imposed limitations were: the limitations are necessary (based on scientific evidence), proportionate (to the threat to public health and must be limited in time) and non-arbitrary (there should be no discrimination). One issue was children’s right to education and the implications of the disruption to this right in many contexts during the school closures (Buonsenso et. al., 2021). There are two responses to the emerging questions about school closures and the human rights of children.

First, during the pandemic over 888 million children faced disruption to their schooling as a result of full or partial school closures (Unicef 2021a). In March 2021 it was recorded that schools had been closed for almost a year for more than 168 million children. This affected 98 million children in Latin America and the Caribbean, 37 million in South Asia, 25 million in East Asia and the pacific and 9 million in the Middle East and North Africa. However, there were serious threats to the right to education for many children prior to the onslaught of Covid-19. Before the pandemic there were 158 million children out of school in 2018 (59 million children of primary school age, 62 million children of lower secondary age and 138 million children of upper secondary age) (Unesco, 2021b). While the effects of the restrictions and lockdowns did disrupt the right to education for many children, this was already a pressing human rights challenge before Covid-19 and will continue to be after Covid-19.

Second, closer examination of the disruption to children’s rights to education under Covid-19 reveals that this is a complex discussion that involves competing children’s rights. The right to education, as articulated in the United Nations Convention on the Rights of the Child, is normally expected to be in the form of school education and directed to the ‘development of the child’s personality, talents and mental and physical abilities to their fullest potential’ (Unicef, 1990, articles 28 29). In the period of Covid-19, this had to be weighed against the right to the highest
attainable standard of health (article 24). The closure of schools for health reasons inadvertently posed a risk to the food security, and subsequently the health, of children in many parts of the world. Many children rely on free school meals for daily sustenance and this is their main source of food, and for some their only source of food (Unicef 2021b). Food insecurity for children is a denial of their right to a ‘standard of living adequate for the child’s physical, mental, spiritual, moral and social development’ (article 27). This includes adequate nutrition that will support their development. While many governments introduced new food programmes to support the children who were in receipt of free school meals, the food insecurity during Covid-19 will lead to a rise in child mortality and the effects of poor nutrition will impact on cognitive and physical development, including stunting (Osendarp et. al., 2021).

PREPARATION OF TEACHERS FOR ONLINE TEACHING

There are serious challenges caused by the digital divide that exists throughout the world and, arguably, the digital divide (or digital poverty) which became visible during SARS 2003, became highly visible during the Covid-19 pandemic. In school education, many children and young people had limited access to devices and to the internet which prevented them from engaging or fully engaging with online learning and teaching. Nevertheless, the internet does provide an excellent means of delivering health messages and online learning, and lessons for the future can be learned from the current pandemic and the SARS outbreak in 2003.

As has been stated, the lockdowns and school closures under Covid-19 were, on the whole, sudden, and required a swift response from school leaders and educators. There were three conditions that had to be met for an effective transition for teachers to online learning. First, teachers needed appropriate resources (devices, apps) that were available to them when required and they had to have regular and uninterrupted access to an internet connection that was efficient (Winter et. al., 2021). Second, teachers had to be proficient in the use of the technology and the software and have the skills to adapt to new devices, new ways of using devices and new platforms. Third, the teachers had to be skilled in creative online pedagogy that provided a variety of learning experiences for the children. The results of the OECD Teaching and Learning International Survey (TALIS) in 2018 revealed that only 60% of teachers in the sample had experienced professional development in ICT in the previous year and 18% had identified ICT as a high need for development (Schleicher, 2020). In the move to online learning and teaching there were examples of excellent practice and innovative teaching online. However, these are best described as ‘islands of innovation’ and not symptomatic of the systemic change that was required. There are challenging questions about the types of online teaching and learning that occurred in many places and the quality of the educational experience for the children (Dhawan, 2020; Valverde-Berrocoso et.al., 2021). A study in Spain, for example, demonstrated that the online learning was much more focussed on reproductive learning rather than constructive learning and more teacher-centred rather than pupil-centred (Pozo et. al., 2021). While many teachers upskilled rapidly in their use of technology and platforms during the pandemic a second stage of upskilling in creative online teaching and learning was also required.
EDUCATION IN DIGITAL TEACHING AND LEARNING

McKinney et. al. (2021) argued that trainee teachers should be prepared ‘more extensively in online learning and teaching in case of further waves of Covid-19 and possible future pandemics’. We now continue this discussion in more depth and detail. Research evidence provided by the OECD indicates that there is a very varied approach to the preparation of student teachers in ICT (OECD Teaching and Learning, 2021). Further, this preparation in ICT cannot be solely theoretical but should be matched to practical use. The preparation of student teachers should move beyond the acquisition or ‘development of basic digital skills’ and explore different forms of learning and not be restricted to reproductive learning (Valverde-Berrocoso et. al., 2021; Pozo et.al., 2021). There are many creative and innovative ways to use online teaching and online teaching sessions can be synchronous and asynchronous. Teachers can make use of virtual field trips and virtual labs (Lockee, 2021). This requires greater attention to the preparation of teachers who can demonstrate flexibility and agility to adapt quickly to a new learning environment.

CONCLUDING COMMENTS

This paper has drawn on many academic research papers and Reports of research from World Organisations. These have all provided insights into the major issues that have arisen during the school closures in the Covid-19 pandemic (and some from SARS 2003). These are insights that are invaluable for our knowledge and understanding of the effects of school closures on the lives and the cognitive and physical development of children and young people. The imposed lockdowns and restrictions have also served to highlight the pre-existing inequalities in the lives of children and in access to school education and in the quality of the educational experience in schools. Pre-existing inequalities included high numbers of children out of school, food insecurity and digital exclusion and all of these were exacerbated during the pandemic. Arguably, there is now a greater public and academic awareness of these inequalities and a greater commitment to strategies and action to tackle inequality.

The pandemic has provided an impetus for new thinking about models of schooling and modes of learning and teaching. There is now a greater understanding that digital teaching does not simply replicate face to face pedagogies but requires a skill set in online pedagogy that is creative and innovative. We have identified the current age as an opportune time to develop the ICT and online pedagogical skills of serving teachers and to include education in these skills in the professional preparation of student teachers.
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THE PLEASURE OF LEARNING IN ONLINE CLASSES: THE PERSPECTIVE OF COMPLEX THOUGHT

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INTRODUCTION

In 2020, we were all taken aback by COVID 19 and the need for people to isolate from others as a way to control the progress of the pandemic. A new social order was established and several measures were adopted to give continuity to the demands of human life. In Brazil, as in many other places in the world, in-person classes became remote and educational institutions had to face this challenge by adopting appropriate platforms for remote learning.

On that occasion, the Pontifical Catholic University of São Paulo - PUC/SP was already using Microsoft Teams, integrated with the Office 365 services and applications, developed to streamline communication and collaboration among users. Quickly, as soon as the decision to implement classes remotely was made, the platform was activated for all teachers and students at the institution to use. Continuing education programs were developed to qualify teachers on using Teams. Since then, all university classes have been developed remotely.

From then on, the new reality of online classes has been the focus of research (ALMEIDA, ALMEIDA and SILVA, 2020; BARROS, 2020; KERSCH, 2021; PESCE & HESSEL, 2021; PIMENTEL, 2020) both to understand how in-person classes were replaced by remote classes, and to learn the experiences of professors and students.

The research reported in this paper is part of the OLAF (Open Learning and Fun) Project, initially developed by the Open University, United Kingdom. A team of multidisciplinary researchers from PUC/SP, engaged in the initial proposal of the project, adapted it to the context of online education in Brazil and proposed to investigate online learning and fun in order to formulate recommendations to guide educators in actions aimed at better learning experiences for students in remote classes. Data collection of the OLAF Project involved undergraduate and graduate students from the institution.

From this database, we selected undergraduate students and developed this study in order to identify, in the questionnaire responses, the best learning experiences in online classes, implemented during the Covid 19 pandemic, with a view to understanding what is the "pleasure of learning".

We defined "pleasure of learning" as the satisfaction obtained from the experience of significantly incorporating a new element into the subject’s cognitive structure. We chose the concept of understanding in the context of complex thought (MORIN, 2015) and the concept of meaningful learning (AUSUBEL, 1968) as filters to theoretically support and subsidize the interpretive analysis.
of this research. The notion of understanding sees human phenomenology within a context and a historical meaning. In this sense, human understanding perceives subjects in their environment, time and space. The concepts of understanding and meaningful learning are related to the extent that they value the learning context, its senses and meanings.

THE PLEASURE OF LEARNING

The study by Okada and Sheehy (2020) addresses the value of fun in online education with the aim of contributing to student learning. The authors suggest that fun can be understood as a feeling of well-being that involves connection and participation with other learners and that it can be a motivation for learning among other possibilities.

In this study, we focused on pleasure in the act of learning, that is, arising from the fact that the subject has learned significantly, has discovered something new, the feeling of success resulting from understanding a subject, the satisfaction obtained after solving a problem or an insight. Thus, we seek to identify pleasurable learning experiences in order to clarify the senses and meanings present in the act of learning, how the relationship between theory and practice contributes to meaningful learning, and the didactic and methodological strategies that facilitate learning.

We propose research on some type of fun in the act of learning, related to the pleasure felt upon gaining new knowledge and meaningful learning.

Authors such as Ausubel (1968), Piaget (1973), Novak (1981), Moreira (1999) and Morin (1990, 2000, 2001, 2015) provide theoretical frameworks that address the learning process.

Piaget (1973), a 21st century interactionist, argues that it is the subject who builds their knowledge and the metaphor that represents this process is cognitive balance. Imbalance in the face of new knowledge can take place in response to disturbances in the environment and cause the need for adaptation. This is a continuous movement that allows the subject to always re-signify their knowledge through learning that must have meaning for them.

Constructivist teachers believe their students develop through the proposition of hypotheses, reflection and the gradual and dynamic construction of layers of knowledge.

Ausubel (1968) elaborated the Theory of Meaningful Learning, and drew a distinction between meaningful learning, memorization and discovery, which can take place in the classroom. Learning is considered meaningful when new information makes sense to learners and is anchored in their cognitive structure. The points in which the new concept or idea is anchored are pre-existing in the cognitive structure and are called subsumers. This structure is dynamic because previous knowledge changes as new ones are integrated into it. This way, knowledge is built when meanings are attributed to it, otherwise it is mechanically internalized.
In the course of the meaningful learning process, subsumers progressively differentiate themselves as they incorporate new knowledge and acquire new meanings. As ideas, concepts and propositions multiply, the cognitive structure is reorganized and integrative reconciliation takes place, that is, the subsumers establish new relationships. When there is significant learning, the cognitive structure is dynamic and is under constant reorganization.

We can consider that Ausubel's theory (1968) has similarities with the constructivist approaches contained in Piaget's theory (1973), because it takes into account learning developed from an educational context, and the structuring of new knowledge from pre-existing structures in the cognoscitive subject, as well as the relationships established after new information is received.

Novak (1981), inspired by Ausubel's (1968) theory of meaningful learning, worked on the idea of “educational event”. It involves the learner, teacher, knowledge, context and evaluation and an important aspect in this relationship is the exchange of meanings and feelings between teacher and student.

Furthermore, in the perspectives of Ausubel (1968) and Novak (1981) meaningful learning can occur when the student has a predisposition to learn. In the words of Moreira (1991, p.171): “This predisposition is closely related to the affective experience that the learner has in the educational event.”

In this study, we also highlight Morin's framework (1990, 2000a, 2000b, 2001, 2015) related to knowledge, more specifically the concept of understanding, as a substratum for reading the research data.

Human knowledge accumulated during the process of hominization has been organized into epistemological compartments, which we refer to as disciplinary areas. The predominant linear logic within our social structure has supported the constantly increasing specialization of knowledge. More than linear and Cartesian knowledge is needed to understand social reality to intervene in it. Morin (2001) argues that today we are unable to perceive and address the complexity of reality, because of the way we organize knowledge. We experience the simplification paradigm, that is, we try to put order in the phenomena, we reject disorder, we rule out uncertainty, we do not understand the complementarity of opposites, we distinguish and hierarchize.

The paradigm of complexity understands human knowledge within an interdisciplinary and transdisciplinary perspective, so that reality can be perceived in a systemic manner, in which life is an intertwined scenario of relationships, interactions and feedback. In Morin's (2001) conception, reconnecting knowledge is necessary, that is, the re-articulation of knowledge already built with the purpose of overcoming how reality is seen under the aegis of reductionism. The purpose of this reconnection is to develop subjects capable of organizing their knowledge rather than simply accumulating it, teach the human condition and teach how to live.
Therefore, we must rethink the knowledge that is conveyed in higher education and overcome the tradition of transmitting information that still persists in the teaching practice. Overcoming this simplification requires reflecting upon knowledge that recognizes the contextualization, the dialogical and recursive relationship between theory and practice, the appreciation of human tolerance, the recognition of uncertainties, ambiguities and the challenges of life. In Morin's (2015) teachings included in a manifesto to change education, we need knowledge that teaches us to live, among which, human understanding. This concept is explained below.

Morin (2015) sees the concept of human understanding from two perspectives: intellectual or objective (explanation) understanding and intersubjective human understanding (understanding).

Explanation or intellectual understanding focuses on the object with all objective means of knowledge. Generally, this explanation is characterized by fragmenting knowledge and tends towards specialization in order to deepen concepts, with the purpose of clarifying them. Culturally, this explanation focuses on information that is gathered and organized in the form of subjects. According to the metaphor presented by Morin (1990), the whole is both greater and smaller than the sum of the parts. The sum of knowledge encapsulated in isolated areas is important in certain aspects, when the whole is smaller than the sum of the parts. But they are not recognized in a systemic context, when the whole is greater than the sum of the parts.

The concept of human understanding, according to Morin (2015), transcends the concept of explanation, as it involves intersubjective knowledge, knowledge between human beings, from subject to subject. Almeida and Carvalho (2002, p.90) explain that understanding “aims to understand human beings not only as objects, but also as subjects”. It means approaching the other through empathy, identification and projection. In this perspective, the opening of oneself is fundamental for practicing understanding.

Understanding perceives human phenomenology within a context, an ontological path and a historical significance. The cause and effect relationship of facts is not perceived linearly, but within an area in which the elements relate and interact in circular and recursive movements. Human beings are understood both as autonomous and dependent, because autonomy is related to their cognitive and biological structure, while their dependence is related to the environment in which they live. The subject is both influenced by the environment and influences it. In this sense, human understanding perceives subjects as protagonists in their context, plurality and potential, and also perceives them as ones driven by their meanings, desires and passions.

Teaching for understanding has gained relevance, as it can present alternatives for confronting and overcoming linear and reductionist views, as well as enabling the overcoming of global problems, interwoven in a pathological social scenario. Understanding presents itself as one way to reform thought, with a view to sustainable life on our planet.
METHODOLOGY

This qualitative research was developed based on the records of the OLAF Project, which collected data from higher education students by means of a digital form. Our sample includes seventy-one undergraduate students from PUC/SP, more specifically from the Education, Law, Journalism and Medicine courses.

From this selected database, we chose answers to the five essay questions in order to reflect upon the conditions in which the pleasure of learning can take place in online classes or even to identify the best learning experiences, whether truly experienced or idealized. We implemented the content analysis technique to examine the students' opinions given in response to questions regarding: fun online learning; events of satisfaction in learning; the role of a professor who had great impact on the student's life: the reasons for choosing their field of study; the experience of online learning using technologies.

In order to capture the senses and meanings that are present in online learning, as well as the didactic and methodological strategies that result in the pleasure of learning, we chose three categories of analysis, a priori, based on the theoretical framework presented. They are: teaching pedagogical practice, online learning and the significance of knowledge.

The analyzed data reflect the statements of the students which are recognized in this text as P1, P2 etc.

DISCUSSION ON TEACHING PEDAGOGICAL PRACTICE

The students' answers indicated that the teaching pedagogical practice can promote fun online learning, which enables the pleasure of learning, as it is developed through dynamic activities that engage students. Among them are guided case study, flipped classroom, simulation, problem solving and team-based learning. Teaching practice that values interactive work between subjects, in online classes, seems to be considered relevant for students:

Group work and seminars on relevant topics, questionnaires and other interactive and group activities make up for their loss of social interaction and engagement in the learning process associated with remote learning (P1).

The students consider hands-on activities that materialize the development of intervention projects important, as well the experience of coming into contact with everyday situations related to social and professional matters that are interesting for learning. Morin (2015) refers to this pertinent knowledge as necessary for the development of human beings because it makes them capable of intervening in their reality. In this systemic dimension, the subject influences the environment and is influenced by it. This subject is a protagonist of their context in which they can project their desires and feelings.
Another emphasized aspect is related to the teacher's conduct. Students notice when teachers are committed to their profession and have an interest in teaching. They notice when teachers plan and prepare lessons diligently, are welcoming, understanding and show empathy. These are the teachers who manage their time properly with deadlines for carrying out activities, arrange students into smaller groups to promote integration, cooperation, engagement, and ask questions. They ask that the camera and microphone be turned on, open, allowing for joint collaboration between teacher and students. Students observe when teachers ensure understanding, reflection and identify difficulties, when they listen to students, ask questions and provide emotional support. In fact, there are teachers who perceive students as subjects, as identities composed of creative capacity, capable of transforming their journey and history (Morin, 2000). In the opinion of the research participants, it is desirable to have educators who practice interdisciplinary teaching, according to the view of complexity:

Educators who guide their students to expand their knowledge not only with regard to the conveyed content, but to other areas of knowledge (content applicability, ability to use it as a transforming factor in people's lives, their history, among others), always relating them to what is being studied (P2).

In the research responses, we identified one element that constitutes meaningful learning in Novak's (1981) perspective, that is, the teacher who is responsible for organizing and carrying out the "educational event", as they implement a pedagogical practice that drives exchanges of meanings and emotions between teachers and students. We consider that the characteristics presented above for teaching pedagogical practice can be a means to achieve meaningful learning in online classes, which can allow for the pleasure of learning.

**DISCUSSION ON ONLINE LEARNING**

Positive opinions related to learning in online classes show the students' opportunity to develop autonomy, create a study routine, organize to carry out the proposed activities, the possibility of taking class notes and watching the recording later. Another aspect considered was the opportunity to learn about new technological resources, such as Teams and Zoom.

Based on the research reports, we understand that experiencing online learning was quite challenging for students in remote classes. Some students considered using technology an incentive to participate in online classes. Intrinsic motivation, predisposition to learn as advocated by Ausubel (1968) and Novak (1981) is one of the elements of meaningful learning. Students explain what they consider to be an enjoyable online class experience:

An enjoyable online learning experience would be one that integrates audiovisual resources - such as slides - and technology - such as the Internet; that engages students where films, series, books and other tools are shown; that seeks to integrate other areas of knowledge and demonstrate the application of concepts in reality; that encourages debate, avoiding the idea of expository classes (P3).
Some negative aspects that hindered in-class learning were also reported. Some students considered that learning in online classes is not possible and cannot be a fun experience. They explain that the classes were always very expository and tiring and that they never experienced a dynamic, practical and engaging environment, let alone interactivity with their study partners. They stated that it was exhausting, a bad experience, there was no organization of study hours, no concentration, classes had little use and did not motivate them, and there was no concrete context to put the knowledge gained into practice. Their statements show their opinion:

Difficult, being able to concentrate was a struggle. The classes became very expository, contrary to what took place in the classroom, which made learning particularly difficult (P4).

Terrible. Spending hours in front of the computer is bad, you can't focus (P5).

At this point, we can hypothesize that teachers had difficulties with online teaching, to the point of not being able to develop their classes with the same proposals as in-person classes. We must consider the pandemic situation that everyone has been going through and that it must certainly have generated a lot of anxiety. Isolation, uncertainties about the future and bouts of depression considerably reduced the motivation for studies.

DISCUSSION ON THE SIGNIFICANCE OF CONTENT

We consider that the significance of content is related to learning with comprehension, pedagogical experiences and learning in online classes. These relationships are also present in the research participants’ responses. They saw meaning in the content when their professor presented a theoretical subject with meaning, when the professor respected the students' life contexts, the learning times of each student due to their individual characteristics and experiences.

When lessons on the subjects begin with an inquiry, a case study, followed by individual and group discussion and reflection, knowledge can be built with significant learning. In the perspective of Ausubel (1968), when the subjects to be learned are presented through hands-on activities related to the theoretical aspects, they enable a meaningful learning experience for each student, who build their knowledge based on the characteristics of their cognitive structure. According to Morin (2015), theory and practice must coexist in a recursive and retroactive movement, that is, one relating to the other circularly.

When didactic situations are presented for studying subjects that generate satisfaction in learning, they provide a reason to study. These responses clearly demonstrate that students perceive the importance, sense, meaning of the content to be studied, discussed and learned in their initial training, and in their future performance as professionals. A statement shows their preference:

learning that is focused on students, that seeks to learn about their contexts and the knowledge that such students have on the subject and, consequently, that engages
everyone involved in the construction of meaningful knowledge that can be applied in the practical lives of those who learn (P6).

FINAL CONSIDERATIONS

When reflecting upon the opinions of research participants, many elements were considered relevant for identifying the conditions in which learning can be pleasurable in the online classes developed in undergraduate courses.

The best experiences identified in the research lie within the scope of pedagogical practice that is committed to addressing contents in a meaningful, inquiry-based, reflective, interactive and contextualized manner, as well as focused on a friendly human relationship present in the online classes scenario. The technological aspects were only considered relevant because they allow online classes to be rewatched, as they can be recorded on the platform.

Students can enjoy online classes when they are allowed to take the lead in their study, research or even their intervention plan in reality, because they incorporate knowledge contextualized by understanding and in a significant manner.

We understand that no model or solution can ensure the pleasure of learning in online classes. Active learning methodologies, projects, research, technological resources and hybrid activities are the elements of an educational proposal that needs to be articulated in the form of a dynamic combination. This means that these components should not be thought of linearly or separately, but rather planned together. In this case, the view of complex thought can contribute to a comprehensive and systemic proposal, in which the constitutive elements are closely related and adjusted in a balanced manner.
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Socio-Demographic Determinants Affecting Education and the Nutritional Status Among School Children and Adolescents During Covid-19: In Context to India

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INTRODUCTION

The outbreak of coronavirus (COVID) in December 2019 in China of type I had bought millions of deaths among different age groups, which further shifted from the first phase to the second phase and had now entered the third. The very first phase of COVID-19 affected the old age groups who were more susceptible to death. The mutant variation thus shifted its host towards the adolescents and early adults where numerous deaths occurred in the second phase, but now presents the third phase had started which is affecting the children. Though the cases of children being affected had been recorded very less due to the mild symptoms of SARS-CoV-2, new variants can bring a huge effect on the health systems of the children, whereas the adolescents were also affected during the second wave, which resulted in infections and deaths, further causing a devasted long-term effect.

Figure 1: The effect of Covid-19 among school children and adolescents concerning education and nutrition

The inter-linked relation between education and nutrition is a long-term effect where inadequate nutrition hampers cognitive skills, intellectual development, and attention span.
WHY SCHOOL CHILDREN AND ADOLESCENTS ARE FOCUSSED

School children and adolescents are the phases where school and colleges serve as an important criterion in determining the educational settings. The childhood phase starts just after one year of birth and continues till the child enters the adolescent phase. As maximum development occurs during these two phases so proper nutrition serves as an utmost important criterion. Adolescents are the transitional phase which lies between the childhood and the adult phase where maximum changes occur. The sexual characteristics, as well as pubertal changes, are considered to reach their peak during this very phase. The adolescents attain the growth spurt during the phase where rapid development occurs with changes in sexual and secondary sexual behaviours. The menstrual cycles began at the early adolescent phase where the excessive loss of blood among the girls results in weakening the body's functional system. The period is marked with more intake of nutritional food to cope up with the bodily changes which further improves the socio-economic and demographic factors. The weaker section of the societies is much vulnerable towards the attainment of essential nutrition as programs such as mid-day meal schemes had been interrupted due to school closure, where cooked hot meals were provided to the poor children as a subsided facilities during the school lunch hours. Though "take away ration' had been continued even after school closure but indeed cooked hot meals served to the poor children in real-time had lowered the dropout rate in schools. School closure had affected both the nutritional as well as the educational settings, where children due to online classes had to depend on internet facilities with proper connections, but the disturbance in the facilities would hamper the teaching-learning system. The 'deep-rooted poverty' entangles financial crises in making the poor families rely on ration products that are indeed cheap and of very low quality.

COVID-19 AND ITS EFFECT: EDUCATION AND NUTRITION

The out breaking of Covid-19 had affected the poor and the marginalized section of the society which unequally includes the poor, minorities, and most popularly the vulnerable section of the society which includes the children, adolescents, and the women group. The global economy had led to a decrease in its developmental changes which in turn had directly affected the lower strata of the society (Shadmi et al., 2020). The ongoing lockdown had changed the economic pattern of both the low and middle-income countries, which had disrupted millions of lives of people worldwide, particularly people from poor households. The children and adolescents belonging to the marginalized sections are very much prone to food insecurity. Various studies had been conducted to understand the relation between Covid-19 and its impact on the psychological development among children and teenagers. The development of stress, mental disorders, anxiety, depressions, anger, and distress lies as an important criterion during the ongoing pandemic.

According to Elliott (2020), long-term Covid-19 follows two-dimensional paths which include Culture-centred on lifestyle and Institutional/Organisational-centred. The pandemic had changed the daily settings were in comparison to the lifestyle pattern. Staying inside the house due to
lockdown had changed the way of living where sedentary lifestyle patterns with very little to no physical activities had changed the current scenario of well-being and had risen the cause of over nutrition whereas the poor households with no income sources had been starving to death.

The institutional system had shifted the mode of the teaching-learning process from face-to-face mode to digital online moods where students had to sit ideally in front of the electronic devices and attend the classes. This shift though had led to a decrease in the chance of transmission of the virus among the children but many drawbacks had been taken into the count where poor children or adolescents could not afford a high-quality gadget for online education. Too much sitting in front of the electronic gadgets had led to eye strain.

Children as taken into account from the previous year 2020 had been less affected by the virus but are facing the problems of inadequate diets, mental health deterioration, self, and social isolations, with lack of proper health care facilities. Nutritional requirements had made a potential impact on the overall health of children, where malnutrition had risen at an alarming rate. The consequences of the increase in malnutrition had made a shift which had further caused the rise of undernutrition in low- and middle-income countries as well as an increase in over nutrition among high-income countries. The classification of BMI or Body Mass Index to determine the categories of malnutrition is depicted in figure 2.

<table>
<thead>
<tr>
<th>Body Mass Index (BMI) (Children and Adolescents)</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;5&lt;sup&gt;th&lt;/sup&gt; percentile</td>
<td>Underweight</td>
</tr>
<tr>
<td>5&lt;sup&gt;th&lt;/sup&gt; percentile to &lt; 85&lt;sup&gt;th&lt;/sup&gt; percentile</td>
<td>Normal weight</td>
</tr>
<tr>
<td>85&lt;sup&gt;th&lt;/sup&gt; percentile to &lt; 95&lt;sup&gt;th&lt;/sup&gt; percentile</td>
<td>Overweight</td>
</tr>
<tr>
<td>95&lt;sup&gt;th&lt;/sup&gt; percentile and above</td>
<td>Obese</td>
</tr>
</tbody>
</table>

Figure 2: Childhood weight categories with BMI percentiles

**FACTORS IN RESPONSE TO COVID-19**

School children and adolescents had been bearing the worse consequences due to the ongoing pandemic. The increase in physical distance, social distancing, closure of recreational sites, closures of educational departments, restrictions in outgoing, and disruption in production, sale, and transportation of nutritious food had made most of the middle- and poor-income families rely on poor nutritional diets. The decrease in the availabilities and affordability of humanitarian access had hampered the social system.

The economic downturn had changed the low and middle-income countries to such an extent that the vulnerable poor families struggle to withhold the food and its service. Covid-19 had made a large impact on mothers and children who are the vulnerable section of society. The impact of covid had led to such an extent that malnutrition had risen among children adolescence and
women. To tackle malnutrition among children and the growing adolescence access to nutritious food with affordable quality should be safeguard towards the investment in maternal and child nutrition, withheld during pregnancy, pre-pregnancy, and post-pregnancy. The early detection and treatment of child wasting should be activated so that the ongoing pandemic should not affect the malnutrition criteria of children. The school and colleges are closed but school meals which were provided in school in India known as ‘mid-day meal’ should be safeguard and access to a nutritious diet should be available based on taking away ration. Child malnutrition includes stunting, micronutrient deficiency, overweight which is further categorized into obesity and over nutrition. The takeaway ration had been a very good initiative that had provided the essential proteins, carbohydrates, and other nutrients for the children. It had led to the right nutritious value during the ongoing pandemic Covid-19 in the form of proper meal which is essential and full of nutritious.

During the ongoing pandemic that is Covid-19 the forms of malnutrition which includes undernutrition, over nutrition as well as micronutrient deficiency had increased with a long-term effect which further diminished the capital income as well as the economical background of both low and middle-income countries. At the same time school, closer which was a turn in the traditional model of face-to-face learning into online digital mode had made children and the adolescent group sit at home before the electronic gadget for the hours and attain their respective classes. Early life nutrition serves as an integrated development for child growth, also providing a lifelong response on both communicable as well as non-communicable disease and overall economic development of the human capital. Good nutrition and proper health increases better understanding capability as well as develop intellectual skill, with proper psychological and physiological growth. Proper development of body growth and mental growth helps in increasing the attention span and learning skills which enhances the teaching-learning process. Students if are provided with proper nutrition seem to learn and understand faster. The highest level of education in the teaching-learning process is the reflective level where new conception and critical thinking arises. The thinking capabilities, as well as intelligence quotient of a child, always depends upon health. Malnutrition on the other hand affects growth and development which includes child stunting, wasting, and undernutrition would be eradicated soon. Micronutrient deficiency which includes vitamin A, folate, iron, zinc, iodine, and vitamin B12 complex consists of a minor portion but are essential micronutrients for body development. The deficiency of any one micronutrient harms the body's development. Thus, malnutrition in all form affects health which in turn affect the educational system of the educational scenario in the teaching as well as a learning process. Concentration is very important, where children have to concentrate or pay attention while learning and understanding, but if proper health is not maintained then how can they concentrate. Thus, the concentration level decreases, as well as attention span, decrease with improper health. According to the Sustainable Development Goals, 2030 malnutrition is to be eradicated from India but due to the sudden ongoing pandemic, malnutrition had increased and will be increasing which will indeed harden India’s economic background and downturn towards the increase in malnutrition and decrease in the health. On the other hand, using internet
connections availing in a poor household is very difficult as the cost is too high so attaining online classes seems to be very difficult where the network issue always arises with technological glitches. Continuously sitting in front of electronic gadgets like laptop, desktop or mobile had always affected the eyes of both the children as well as the adolescence. Incidents had occurred where children are using spectacles due to the strain in their eyes. The ongoing classes for 2 to 4 hours had increased to such an extent that the children had been facing various effects inside their bodies. Covid-19 had shifted the educational setting from traditional to online mode but it had also affected the lifestyle pattern of small children and the adolescence as social distance and continuously remaining inside the houses for months, weeks, or days which had affected the learning abilities. Though the children had not been affected much from the first as well as the second wave of Covid-19 death, the third wave may have a devastating effect on the lives of the children. The third wave may continue the closure of school till the end of 2021, but though the school closure extent proper nutrition should not be delayed. India is a very big country with crores of people so as the population is very high and the number of children and teenagers are maximum in India. The future of every country is the growing ages so they should be always looked at and proper attention should be given to them so that even though the ongoing pandemic affects their life but their mental growth should not be filled with any depression, anxiety, stress on mental difficulties. Another very important factor is stress staying at home, being in front of online gadgets, always watching television, eating junk foods and no physical activities had led to a haphazard way of leading life. Poor people cannot afford a proper diet whereas wealthier households have shifted from a healthy diet to an unhealthy diet which consists of area drink junk food the discouraging their mental ability as well as health capacities.

**EDUCATION AND NUTRITION: AN INTER-LINKED RELATION**

It had been always known that one of the sustainable goals was the eradication of malnutrition by 2030 and another is to achieve universalization of the elementary education system but in contrast, the above two goals are interlinked in one or another way (Figure 1). The goal to achieve educational attainment among children can only be fulfilled if the children who are provided with education also fulfil the criteria of proper nutrition. Proper and essential nutrition helps better understanding level, which further increases the attention span. Various studies had shown the relationship between socio-demographic factors and nutritional intake where education serves as one of the criteria which determines the influence of both the quality and the quantity of food choice. Education always had a positive influence on food choice as educated people follow very wide access and vast information regarding the intake process (Worsley et al., 2004). According to Rogers, 1995 higher educated individuals accept the process of innovations rather than the uneducated or the lower educated individuals, where follows the social diffusion theory (Worsley et al., 2004). Education among the household levels helps to attain better occupational structure which directly increases the income of the family, this leads to access to more proper nutrition.

The Covid-19 crisis had left hardship to the vulnerable household where both the level of income as well as food security had fallen. The first 8,000 days of a child's life (Mason-Jones et al., 2012;
Xu et al., 2020; Borkowski et al. 2021) is very important for both cognitive as well as psychological development where school plays an ideal role in providing them but due to the pandemic and school closer according to UNESCO 1.6 billion learners had been affected worldwide which includes 199 countries whereas up to 150 countries are affected where children didn’t receive school meal (UNESCO, 2020; WFP, 2020; Borkowski et al., 2021). Children belonging to the poor household extremely rely on the nutritional service provided to them through the school authorities which was mainly the mid-day meal system. Among the first days, especially girls receive education for only 7000 days whereas the first 1000 days they nearly go to school. A mid-day meal feeding program in school had shown that children who had been affected and had low growth and development, started to cope up with the group which led to the catch-up growth (Bundy et al., 2018; Borkowski et al., 2021). The burden of malnutrition reduces the ability to learn whereas over nutrition on the other hand leads to various non-communicable diseases such as type-2 diabetes, coronary heart disease, several types of cancers, hypertension, arthritis, as well as stigmatization (Popkin, Adair, and Ng, 2012; Abarca-Gómez et al., 2017; Cediel et al., 2018). Falling in income and increasing in price had led the poor household to bear the burden of food insecurity whereas the stability of food supply had decreased affecting the marginalized society who spends most of the expenditure on food (Banerjee and Duflo, 2006; Borkowski et al., 2021) but Covid-19 had diminished the income pattern which harms the food quality as well as quantity. Especially in rural areas with low-income patterns plant-based diet had been preferred which further reduced the essential nutrients which further diminished the growth pattern. Adolescence, as well as the children, are more susceptible to micronutrient deficiency whereas, on the other hand, the wealthier household depends on energy-dense food which contains low essential nutrients for the given rise to overweight, obesity, and non-communicable diseases mainly among the children and adolescents group (Popkin, Adair, and Ng, 2012; Abarca-Gómez et al., 2017; Cediel et al., 2018; Marrón-Ponce et al., 2018; Borkowski et al., 2021).

Economically Covid-19 the Global pandemic affected the Human Development Index which served as a key driving source for food insecurity and the insecurity towards food had increased due to loss of income.

School closure had not only affected the mid-day meal scheme but had also affected the availability for supplementation of Iron and Folic Acid (IFA). Education, as well as developing methods, had also disrupted the normal distribution channels through which the conduction of the mid-day meal program was operated. Studies had been conducted on school feeding habits where children who live below the poverty line had shown an increase in the cognitive skills and learning abilities due to the nutritional upliftment through the mid-day meal scheme (Kristjansson et al., 2006; UNESCO and Pôle de Dakar, 2013; Paul Glewwe and Muralidharan, 2015; Borkowski et al. 2021). All the low and middle-income countries like India had benefited through the mid-day meal scheme where nutritional deficiency had decreased. The scheme had targeted children the most where overall undernutrition had decreased (Desai et al., 2015; Borkowski et al., 2021). School closure had provided a long-term effect because the routine time work had been disturbed.
which had increased the dropout rate and would indulge in problems for the adjustment of the previous situation that was the school rules and regulations. An increase in malnutrition decreased the cognitive development because during the early childhood phase brain development takes place where reviews had shown that school-age children development in cognitive growth are interlinked with the nutritional essentiality taken where the importance lies in the micronutrients such as iodine iron folate zinc vitamin B12 and omega-3 polyunsaturated fatty acid. (Frisvold, 2015). Studies from India had shown that food insecurity caused a reduction in numerical solving problems methods, English scores as well as reduced the capability of reading. It further affects the regulatory system, as well as short-term memory symptoms, arises (Aurino et al., 2019).

Impairment in both physical and mental development leaves a child or an adolescent with lifelong effects. Various nutritional interventions in India had been always put forward from time immemorial. The aim to get zero hunger was one of the primary motives of the Sustainable Development Goal whereas the step towards the reduction in malnutrition that is a reduction in undernutrition, as well as low birth weight, and anaemia was also targeted to reduce by 2022. The sudden rise in Covid-19 had disrupted and affected the services in terms of nutritional assessment and mid-day meal scheme where no longer children were provided with a regular nutritious meal. The decrease in access to a proper health system had affected the economic background where frequency, as well as the quality of the nutritious meal, had also been reduced.

Due to the upcoming of Covid-19 in India where the eradicate of malnutrition was to be fulfilled by 2030 but the effect of the virus had affected the National Nutrition Mission for 2020 (Ambast et al. 2021). The social determinants which include targeting policy and the development sector which encompasses the nutrition sector were attributed towards the rise in malnutrition.

On 24th March 2020, the lockdown was imposed where the closure of both schools and help facilities was distracted. The ongoing situation had made India change the mode of delivery in terms of ‘take away ration’ or the home delivery system. According to Jain 2020, the supreme court has directed the states to take measures regarding the delivery of means but irregularity in the implementation had been regularly noticed. In April 2020 the Ministry of Health issued the provision of the reproductive maternal, new born child and adolescent health would be provided with special services during and post Covid-19 pandemic where the direction has been provided in the home delivery of Iron and Folic acid essential medicines which includes calcium, zinc and oral rehydration system to the current scenario. Various webinars had been organized by the Ministry of Health and Welfare so that the program outreaches to the vulnerable section of the society. The initial phase of Covid-19 lockdown had made children and the adolescence to depend on processed food which includes junk foods, drinks, canned food, noodles, biscuits, chocolate and area drinks which coincided with the local food system does distract the growth and development of the child and adolescence (Ambast et al., 2021) group. The Indian families belong from the marginalized society face difficulty in affording nutritious food like pulses, eggs, and vegetables as the price had risen during the Covid-19 resulting in the affordability of nutritious
food which contributes to higher malnutrition among the children. A girl child who belongs to the marginalized section where effect during the pandemic due to the existence of poverty for access to health, insecurity towards food and unhealthy diet, unhygienic sanitation, water facilities which led to a multidirectional effect (Varghese, 2020).

CONCLUSION

Adequate nutrition strengthens the immune system which helps to overcome the effect of Covid-19 both among children and adolescents. To boost the immune system food rich in micronutrients should be consumed, foods with a synergistic role decreases the contamination of the infection. Vitamin C, D, and E would help in increasing the fighting response off the cell. A well-balanced diet during the pandemic can help to overcome chronic diseases and further stimulate the body. India with the high rate of malnutrition among children will have an irreversible impact on children and adolescents who are mostly wasted and stunted due to loss of income and inadequate access to a healthy diet. The supply chain will be disrupted by the crisis which will rise due to improper nutritional balance. The school children and adolescents with proper intake of the nutritious meal will prevent the loss of cognitive abilities and attention span which hampers the learning process. Thus, proper nutrition is always related to social demographic factors such as the educational settings which serve as an important criterion in each child and analysis in becoming future adults. The fruitful interventions should be applied in both the educational scenario as well as nutritional programs so that children and adolescent groups are furnished with a proper diet which would in turn help to provide proper growth and development and increases the level of understanding in both teaching and learning process even during the ongoing pandemic.

RECOMMENDATION

Nutritious affordable diet safeguards and promotes the vulnerable section of the society even during the ongoing pandemic if the producer, as well as the consumers, are looked properly and the essential services are maintained keeping in focus that the vulnerable sections should be taken proper care were improved in maternal and child health care would help in securing children and women’s access to a nutritious diet. Where on the other hand early detection and treatment can help the vulnerable sections to overcome the pandemic and lead a normal life. The income pattern of the poor household should be encouraged so that the income and the occupational structure for the strengthen their livelihood are maintained thus, minimizing the risk of infection or be infected by the virus. The nutrients and safe meals for the children mainly in government schools or government-aided schools should be encouraged and fully shifted to the home delivery mode where the nutritional value which they were supposed to get during the mid-day meal would be made available to them also during the pandemic.

The continuation of meal delivery ensured by the government as well as additional support should be provided to all the states and union territories for the distribution system. Proper hygienic practice should be maintained even if the schools are closed as well as proper guidance and counselling system should be provided by the teachers as well as the Anganwadi workers.
According to the National Education Policy (2020), a provision had been made serving breakfast along with the mid-day meal scheme which would in turn require an increase in the budgetary system for the financial years. It had been presumed by Awasthi, 2020 that due to the pandemic the disruption in health service shall show increasing child malnutrition. Nutrition-rich food which includes fruits, lenticels, milk, and eggs should be included in the mid-day meal scheme so that essential nutrition is provided to the children.
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INTRODUCTION

Finances are playing a very important role in every day’s life and financial literacy can be said as the best way to prevent excessive debt of citizens. Financial literacy is becoming a protagonist item on the general public worldwide, with its relevance very much emphasized by the important role played by consumer finance in global credit crises from mid-2007 (Williams & Satchell 2011). Tomaskova et.al (2011) in their study stated that financially literate citizens are well acquainted with various issues of money and prices and can manage their personal budget in a responsible manner. Financial literacy helps individuals to understand the financial matters more properly, which enables them to process financial information and make correct decisions about their personal financial transactions. Financial markets have become easily accessible to the small investors all around the world, as new products and financial services growing very fast. Even if an individual has a proper financial plan that will meet most of the needs of one’s retirement years, then also that person will spend a lifetime dealing with issues related to mortgages, insurance (including automobile, home, life, and health), personal credit management, income taxes, and all of the other financial considerations which are very much a part of modern life in our society. One of the main reasons of Financial Crisis is found out as lack of Financial Literacy. There is a presence of large unorganized sector and the Government is withdrawing from pension schemes even in the organized sectors. In absence of any proper social security scheme, our economy may be in, for a major instability after demographic dividend starts shrinking after 20 to 25 years. Thus, financial literacy in the country is of utmost importance for the financial well-being of individuals, more importantly for the economy (Ambarkhane et.al, 2015). The Reserve bank of India, which is the central bank, has been actively participating in the field of improvement of financial literacy in the country. For this improvement, a project called “Project financial literacy “has already been started. (Nash, 2012) Financial literacy in India is on the positive side at present. The survey conducted by The Financial Express shows that India has made great progress in the field of financial education among the ten leading nations of the world. India also has been ranked 23rd out of 28 markets in Visa 2012 Global Financial literacy barometer. Financial literacy has also started gaining the attention of a wide range of major banking companies, government agencies, grass-roots consumer and community interest groups, and various other organizations. If somebody can manage their money effectively, it can also result in behaviors that make consumers open to severe financial crises. Improvements in financial literacy can provide individuals and families various benefits by giving them more control over their money and
helping them make better financial decisions (Subha & Priya, 2014). The Government of India and the Central bank of India have taken initiatives to spread the banking services such as expanding the number of rural bank branches, allowing the banking correspondent model and adoption of CBS technology. While in implementing financial inclusion in a diversified country like India, Financial Literacy will be playing a very prominent role in the success of this great social initiative opportunity (Shetty & Thomas, 2015).

Digital financial literacy is playing a very important at this present time as we already know that now all financial services and products are available in digitalized form and present government is also focusing on cash less India, faceless and digital India. Common people understood the importance of digital financial literacy after demonetization. The global change in mobile communication, along with a very fast advances in Digitalized payment system is creating opportunities to connect poor households to a proper, affordable and reliable financial tool through mobile phone and other various digital interfaces. At this present day, the unbanked can also make use of services that were previously not accessible to them.

Along with the advantages, cyber frauds are also increasing. To explaining the reasons behind the increase in amount related to cyber frauds, Pavan Duggal, Cyber law expert averred, “Relevant security mechanism has not been followed by the private sector banks while public sector banks continued to follow the traditional approach.” He explained that the Gopalakrishna Working Group (GGWG) report recommendations on safe electronic banking had met with poor compliances. These recommendations stated that each bank have their separate information security function to keep their eyes on information security management, a Board approved information security policy needs to be in place and reviewed at least annually as also digital evidence needed to be considered as similar to any other form of legal proof.

BRIEF REVIEW OF LITERATURES

Digital Financial Literacy has a strong impact on Digital Financial Inclusion. If awareness regarding the digital products and services are increased, the usage level would also shoot high which ultimately bring a significant change in the inclusion level and thus contributing towards the economic growth of the nation (Tony et. al, 2020). Therefore, it can be said that digital financial service provided by Fintech has a positive relationship with the financial inclusion in emerging and advanced economy. However, providers of digital finance services are seen as profit-seeking corporations that use digital finance to maximize their profitable opportunities in businesses (Ozili, 2018).

Digital payment is an integral part under the flagship of Digital India, an initiative taken by government of India to achieve the version of cashless society. Demonetizations create a unique platform to adopt this digital payment and to fight against corruption, black money & money laundering though there are a lot of challenges like high illiteracy rate, lack of financial literacy, reluctant attitude exists (Koley, 2020). Education level is also an important factor for awareness
and use of the digital platform. As a very little difference can be found between graduate and professional category respondents regarding the digital financial literacy therefore governments, banks and other institutions can focus on those persons for their promotional programs. It was also found that the statistical difference in use of digital platforms exist in service and non-service class of occupation which may be due to the fact that service class people have disclosed money thus they do not hesitate in doing transaction through digital platform whereas non-service group of people do not use digital platform due to non-awareness (Prasad et al., 2018). In contrast it was found in a research that the average financial literacy score of females who are salaried in Delhi is low. It is really a matter of concern that the salaried women whom are considered as confident and educated are not much financially literate. Therefore, government should take necessary actions to address this problem (Gupta et al., 2016).

To conduct this research convenient sampling process is adopted here and the same has been conducted in various colleges of Kolkata during Feb ’21 to Apr ’21.

OBJECTIVES OF THE STUDY

- To estimate the financial literacy of the teachers on the basis of age.
- To assimilate the level of financial literacy on the basis of gender.
- To compare the level of financial literacy on the basis of their departments.

RESEARCH METHODOLOGY

1. **Fundamental Concepts:** The OECD is at the forefront of financial literacy and inclusion measurement worldwide and developed a common method for ascertaining the Financial Literacy and Financial Inclusion in 2009. A core questionnaire and supporting toolkit was subsequently fabricated and made available online with a view to standardize the method that could be used to create a baseline measure for gauging the financial literacy & financial inclusion and to track the changes over time. The toolkit thus standardized was designed to capture the information about respondents’ financial knowledge, behavior and attitude to assess the level of financial literacy of the respondents. These foundational components of financial literacy are explained below.

1.1 **Financial Literacy:** Measuring Financial Literacy essentially involves measuring a combination of knowledge, attitude and behavior necessary to make sound financial decisions and ultimately achieve individual financial well-being.

1.1.1. **Financial Knowledge:** It is an important component of financial literacy because a basic knowledge of financial concepts, knowledge about the economy and financial landscape, comparing ability of financial products and services and making
appropriate, well-informed financial decisions by applying that skills in a financial context ensure that a person can act autonomously to manage his financial matters.

1.1.2. **Financial Behavior:** It implies actions and habitual conducts that ultimately shape the financial well-being of an individual both in short and longer-term.

1.1.3. **Financial Attitude:** It can be defined as that outlook or mental disposition of an individual which, despite their adequate knowledge and behavior, influences their decision whether or not to act that way. It involves an instinctive nature of individuals to regard personal satisfaction or ideas of living style as more compulsive than other considerations.

2. **Sampling Design**
   - The study has been conducted in various colleges in Kolkata with a representative sample size of 177.
   - On the basis of the OECD/INEF toolkit a structured google questionnaire has been prepared to conduct the survey within the teachers of various departments of that colleges.
   - Convenient sampling procedure is used here to conduct the survey.
   - The time period of this study is Feb’21 to Apr’21 i.e., 3 months.

3. **Approach & Methodology**
   - To measure the financial literacy a 5-point scale has been used relating to the component of financial behavior and financial attitude where the maximum & the minimum scores for each question under these components are 5 and 1 respectively. In case of financial attitude, the responses as per the questionnaire are either correct or wrong. Therefore, here the correct answers are assigned the score ‘1’ & the wrong responses are represented by ‘0’. The total maximum and minimum marks for these components are calculated by multiplying the maximum and minimum marks of each questions the by the no. of questions under each component and thus the qualifying marks for each 3 components has been calculated by computing the mean of average maximum and minimum marks of each component. Individuals obtained marks equal to or greater than qualifying marks are only considered as pass in respect of each component and financial literacy as a whole. The summery of this scoring schemes has been picturized in Table 1.
Table 1: Summary of the Scoring Scheme

<table>
<thead>
<tr>
<th>Components</th>
<th>Marks of each Question</th>
<th>No. of qus. Under each component</th>
<th>Total Marks of each components</th>
<th>Qualifying Marks of each components</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max/ correct Ans</td>
<td>Min/ Wrong Ans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Attitude</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>15/3/9</td>
</tr>
<tr>
<td>Financial Behavior</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>30/6/18</td>
</tr>
<tr>
<td>Financial Knowledge</td>
<td>1 (correct Ans)</td>
<td>0 (wrong Ans)</td>
<td>5</td>
<td>5/0/2.5</td>
</tr>
<tr>
<td>Financial Literacy</td>
<td>N. A</td>
<td>N. A</td>
<td>14</td>
<td>50/9/29.5</td>
</tr>
</tbody>
</table>

Source: Author’s own tabulation

- One-way Anova at 5% level of significance has been carried out to compare the level of financial literacy on the basis of educational departments in the colleges.
- To assimilate the level of financial literacy on the basis of gender unpaired t test at 5% level of significance & confidence interval are also used here.

I. Data Analysis & Findings

Table 2: Crosstabulation of Age & % of Respondents qualified for Financial Attitude
<table>
<thead>
<tr>
<th>Age</th>
<th>Financial Attitude</th>
<th>Financial Behaviour</th>
<th>Financial Knowledge</th>
<th>Financial Literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Respondents</td>
<td>%</td>
<td>No. of Respondents</td>
<td>%</td>
</tr>
<tr>
<td>Below 30 years</td>
<td>54</td>
<td>47.3</td>
<td>11</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>36.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>36.3</td>
</tr>
<tr>
<td>30 - 40 years</td>
<td>23</td>
<td>20.1</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25.7</td>
</tr>
<tr>
<td>41 - 50 years</td>
<td>29</td>
<td>25.4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>19.7</td>
</tr>
<tr>
<td>Above 50 Years</td>
<td>8</td>
<td>7.02</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>19.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18.1</td>
</tr>
<tr>
<td>Grand Total</td>
<td>114</td>
<td>63.3</td>
<td>20</td>
<td>11.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>46</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>66</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>36.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

**Source:** Author’s own tabulation

**Observation**

From the above table it can be observed that out of 180 respondents most of the respondents are qualified for Financial Attitude i.e. 63.33% whereas in case of Financial Behavior & Financial Knowledge this qualifying % is very much low i.e. only 11.11% & 25.56%. It can also be observed that in all the cases most of the qualifying respondents are belong from the age group of Bellow 30. But on an overall basis it can be commented that the % of respondents qualified for the financial literacy is very much low in all the cases.
Comparing the level of financial literacy on the basis of educational departments

H₀: There is no significant difference among the Various educational departments relating to the financial literacy

H₁: There is a significant difference among the Various educational departments relating to the financial literacy

<table>
<thead>
<tr>
<th>Table 3: Anova: Single Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUMMARY</td>
</tr>
<tr>
<td>Groups</td>
</tr>
<tr>
<td>------------------</td>
</tr>
<tr>
<td>Commerce/Management</td>
</tr>
<tr>
<td>Computer Science</td>
</tr>
<tr>
<td>Others</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source of Variation</td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>Between Groups</td>
</tr>
<tr>
<td>Within Groups</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Source: Author’s own tabulation
Observation

According to the result of one factor ANOVA at 5% level of significance here the null hypothesis is accepted against the alternative hypothesis which signifies that there is no significant difference among the Various educational departments relating to the financial literacy as the p-Value i.e. 0.98 is higher than α-value i.e., 0.05.

Testing of Hypothesis relating to the level of financial literacy on the basis of gender

\[ H_0 : \text{There is no significant difference relating to the level of financial literacy on the basis of gender} \]

\[ H_1 : \text{There is a significant difference relating to the level of financial literacy on the basis of gender} \]

Table 4: Independent Two Sample T-test at 5% level of significance & Confidence Intervals

<table>
<thead>
<tr>
<th></th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>24.97</td>
<td>26.08</td>
</tr>
<tr>
<td>Variance</td>
<td>19.33</td>
<td>13.76</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>4.40</td>
<td>3.71</td>
</tr>
<tr>
<td>Margin of error</td>
<td>0.03</td>
<td>0.02</td>
</tr>
<tr>
<td>Upper bound value</td>
<td>25</td>
<td>26.1</td>
</tr>
<tr>
<td>Lower bound value</td>
<td>24.94</td>
<td>26.06</td>
</tr>
<tr>
<td>Observations</td>
<td>61</td>
<td>119</td>
</tr>
<tr>
<td>df</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>t Stat</td>
<td>-1.68</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) one-tail</td>
<td>0.047456</td>
<td></td>
</tr>
<tr>
<td>t Critical one-tail</td>
<td>1.66</td>
<td></td>
</tr>
</tbody>
</table>

Source: Author’s own tabulation

Observation

As the t-statistic value i.e., -1.68 is lower than the tabulated value i.e., 1.66 so here the null hypothesis is accepted against the alternative hypothesis which signifies that there is no significant difference relating to the level of financial literacy on the basis of gender. Even through the confidence intervals, a similar type of result can be observed. According to the confidence intervals the score of financial literacy of male & female lies between the range of 26.06 to 26.1 & 24.94 to 25 respectively. This outcome portrays that the there is no huge difference regarding the financial score of male & female. Further it can also be observed that both in case of male & female the financial literacy score is below the qualifying financial literacy score.
CONCLUSION

According to this study though the percentage of the qualified respondents relating to the financial attitude is moderate but with respect to the financial behaviour & financial knowledge these percentages are quiet low. It can also be noticed that most of the qualified respondents are belong from the age group of 20 to 29 years & on the other hand the qualifying percentage in respect to the financial literacy is lowest in the age group of 50 & above. But unfortunately, on an overall basis it can be identified that irrespective of the age groups this qualifying percentage of the financial literacy is very low. Further, from the outcome of this study it can be stated that there is no significant difference among the Various educational departments relating to the financial literacy and lastly as per the result of this research there is no huge difference regarding the financial score of male & female. Even it can also be observed that both in case of male & female this financial literacy score is below the qualifying mark which is a big matter of concern.
REFERENCES


INTRODUCTION

Nagaland the 16th state of India achieving its statehood on 1st December 1963 is multi diverse in terms of culture, customs traditions, languages and dress. It is inhabited by 16 major tribes under the 11 recognised districts surrounded by neighbouring states of Assam, Arunachal Pradesh, Manipur and international country Myanmar. The State with an area of 16,579 sq.km and 19,78502 populations obtains the literacy rate at 79.55% according to 2011 census with highest literacy rate from the district of Mokokchung standing at 91.62%. The status of the State in increasing literacy has improved yet in 2016 recorded a total number of unemployment stands at 70,422 therefore it needs to alleviate the livelihood source for the ever growing population of the land. This unemployment issues can be minimizing to a certain degree with ICT supplementing vocational education courses.

Vocational education is the education which is based on manual or practical activities, traditionally non-academic and related to a specific trade, occupation or vocation provided to a learner. Vocational education according to Merriam Webster dictionary it is training for a specific occupation in agriculture, trade, or industry through a combination of theoretical teaching and practical experience provided by many high schools in their commercial and technical divisions, and by special institution of collegiate standing (as a college of agriculture, a school of engineering, or a technical institute). Vocational education is a sculpting practice that demands experience and proficiency to be mobilized. In addition, alongside the growth and progress of technology initiatives can be extended with the help of ICT in techniques and tools to assist and facilitate vocational education courses in delivering diverse growth concerning self-development, self-sustainability and self-independent for livelihood promotion.

OBJECTIVES OF THE STUDY

- To bring out the different vocational courses offered in colleges of Nagaland
- To discuss the application and benefits of ICT in vocational courses and suggest measures for improvement.
METHODOLOGY OF THE STUDY

The method selected for the study is descriptive in nature and based on secondary sources of data. The secondary sources of data will include published and unpublished articles, magazines, journals, newsletters and newspapers

REVIEW OF RELATED LITERATURE

Qureshi, A. I, Yasmin, R., Ilyas, K. Hitty, M. and Khan, J (2013) made a study on Information Communication Technology (ICT) and its impact on the Livelihood of Communities in the Agriculture: A case study of Pakistan reveals that ICT will improve and develop the efficiency and capacity of rural residents furthermore it is an important driver of economic sustainability. It recommended ICT centres for an interactive website to allow rural residents to share issues online and obtain solutions from experts.

Kichu, Tiamongla and Amareswaran, N(Dr) (2017) studied on Technical and vocational Education in Nagaland-A key for Development revealed that vocational education creates skilled manpower, enhances productivity and improves quality of life. The study suggested expansion and upgradation of vocational education and training in terms of emerging areas, investment and reform for sustainable growth.

Singha, Krishnamati (2002) on the role of information and communication technology in the development of rural India with special reference to north eastern India stated rural India is not behind with ICT and so initiatives to plant e-education facilities for distance learning and e-commerce centres together with news on latest farming, methods and prevailing purchase and sale prices of agricultural commodities. It also emphasizes to develop digital infrastructure a priority.

COLLEGES AND VOCATIONAL COURSES IN NAGALAND

Nagaland holds 64 colleges under higher education with 15 colleges under the government sector and remaining 49 colleges under the private sector. Colleges under government sector have started with vocational education for degree students since the 12th five-year plan under the financial assistance from RUSA. Till date so far only government colleges have been able to implement and practice different vocational courses with certificates provided at the end of the course. Vocational education for diploma courses training, workshops, are assured through Industrial Training Institutes (ITI), polytechnic which are certificate earning courses but for general education it is limited and rare.

I. The motto behind implementing these vocations is to support individuals for individual independency and self-sustainability for the predicaments of employment in the current scenario of literacy level on the rise yearly.

II. The vocation selected depends upon the nature of region the institute is situated to accommodate the adaptive capacity of each individual learner and also to bring out their
potentialities depending upon the availability of resources and graphs of interest and demands.

III. The vocationalization of education under higher education in these colleges begins by 2017-2018-year plan. The reason behind for such implementation is to break the traditional exercise of educating within the syllabus but rises to perform in preparing single individual graduates to have skills that will sustain them for livelihood profession and income along with in acquainting them to acknowledge manual work and realizes its inmost unseen creativity and talents.

IV. Table1 Showing colleges with various vocational courses and Training Programmes

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Name of the college</th>
<th>District</th>
<th>Vocational courses and Training Programmes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kohima Science College</td>
<td>Kohima</td>
<td>Pisciculture/Floriculture/Apiculture, Electronics Repairing</td>
</tr>
<tr>
<td>2</td>
<td>Mt. Tiyi College</td>
<td>Wokha</td>
<td>Horticulture</td>
</tr>
<tr>
<td>3</td>
<td>Zisaji Presidency College</td>
<td>Kiphire</td>
<td>Basic Computer Education</td>
</tr>
<tr>
<td>4</td>
<td>State College of Teacher Education</td>
<td>Kohima</td>
<td>Physical education</td>
</tr>
<tr>
<td>5</td>
<td>Peren Govt. College</td>
<td>Peren</td>
<td>Horticulture</td>
</tr>
<tr>
<td>6</td>
<td>Yingli College</td>
<td>Longleng</td>
<td>Horticulture</td>
</tr>
<tr>
<td>7</td>
<td>Sao Chang College</td>
<td>Tuensang</td>
<td>Horticulture</td>
</tr>
<tr>
<td>8</td>
<td>Phek Govt. Collge</td>
<td>Phek</td>
<td>Horticulture, Fishery</td>
</tr>
<tr>
<td>9</td>
<td>Wangkhaoo College</td>
<td>Mon</td>
<td>Horticulture, Driving and Motoring</td>
</tr>
<tr>
<td>10</td>
<td>Kohima College</td>
<td>Kohima</td>
<td>Horticulture</td>
</tr>
<tr>
<td>11</td>
<td>Mokokchung College of Teacher education</td>
<td>Mokokchung</td>
<td>Horticulture</td>
</tr>
<tr>
<td>12</td>
<td>Fazl Ali College</td>
<td>Mokokchung</td>
<td>Mushroom Cultivation</td>
</tr>
<tr>
<td>13</td>
<td>Zunheboto Govt. College</td>
<td>Zunheboto</td>
<td>Horticulture</td>
</tr>
<tr>
<td>14</td>
<td>Dimapur Govt. College</td>
<td>Dimapur</td>
<td>Floriculture</td>
</tr>
<tr>
<td>15</td>
<td>Pfutsero Govt. College</td>
<td>Phek</td>
<td>Floriculture</td>
</tr>
</tbody>
</table>

The Table shows list of government colleges practicing vocational training and programmes under the flagship of RUSA (Rashtriya Uchchatar Shiksha Abhiyan) which started completely by 2015 in all the colleges with different vocation courses. The vocational courses are provided by the in service teachers of the institution who are occasionally sent to attend workshops and training programmes related to the vocation. Arrangements are also made in organizing programmes to
call for resource person in inducting various skills and necessary steps to be taken for maximum benefit and enhancement of the learners. The vocational programmes of every institute are updated to the department of higher education, Nagaland so that implementation efforts and activities are on track.

ICT LITERACY IN EDUCATIONAL INSTITUTIONS

With the era of improved science and technology, ICT evolved to serve as an arch for all sections of the society in terms of geographical regions and social living status. ICT in itself is an Open Distance Learning (ODL) system for most users when it is browse for personal learning and experiences as such it can be the perfect tool to bring the dream of living with required skills and develops the vocation it selects to acquire them. ICT has united the people to a small quantum of unit exercising the available opportunity to one’s own needs and requirements. The most used ICT at present are computers, TV, mobile phones and for educational institutions purposes include digital satellite classroom, smart classroom, smart board, automated library, CCTV, Wi-Fi internet broadband, etc. ICT (Information Communication Technology) hit the educational institutions by the 11th Five Year Plan which introduced to incorporate technology in learning to facilitate learners. The first ever introduction of technology in the government colleges was made known by the premier college of Nagaland, Fazl Ali College in 2012-2013-year period through automation of library, opening accessibility to Wi-Fi facilities and LAN. The technology support in assisting learners’ adaptive abilities and interest in the learning process begins with Kohima College being the first to introduce it for enriching growth of learning and advance study to bring quality education to all structures under the institution. Furthermore in between the year period 2013-2014 witnessed government colleges and few other private colleges follow to incorporate ICT use even in the teaching-learning process to bring about positive learning output besides the facilities of Wi-Fi, e-resources and automation of library that are readily available. ICT is a well aware concept yet it requires achieving readiness in the minds of the people to actualize them for utility and practicability. There is hesitance or reluctance as it will be defined but has clouded the minds of people to operate. It is significant to literate individual towards technological value and benefits. Educational institutions need to blot out the apprehension towards technology and awaken the minds to further facilitate the advantages to every member of the society. The fundamental segment to achieve this call for important structures such as teachers, students and administrators of the institutions readiness needs to be considered. Illustrations of these structures can be defined below:

a) Teachers - Teacher occupies a pivotal stand in educational process and the role they display is indispensable. It is important to carefully nurture the professional growth of teachers by inducting modern technology usage to build and strengthen the upcoming generation with a new vision of pedagogical technology. Teachers should be provided with training programmes in the use of ICT to make teaching-learning transaction more interesting and practical which can create a constructive learning. The application of ICT for regular instructional transaction is hesitated and creates a blot of technical difficulty, unreliable and time-consuming in the minds of educators to which the traditional method of lecturing is still preferred. Teachers should be guided on practical learning and
capacities with available facilities in the smart world for the smart generation of tomorrow.

b) **Students** - Young learners today are not only inquisitive but smart and quick in perceiving their interest areas and to act in accordance with situations they arrived at. Generations have changed with time and in the contemporary settings learners prefer to have challenges ahead of them like they do in virtual reality games to go through with each level. The course of nature no more prefers traditional teaching and learning of syllabus and qualifying marks centred for quality education output. Students today are well aware of what technology the world holds in the hand and the amount of satisfying supplements it provides for any query with the most use of laptops, computers, mobiles with 3G and 4G connectivity of internet facilities. Right guidance to take the advantage of ICT for learning purpose can stride the students to achieve excellence not only in their academic areas but put the useful applications even in their daily activities. It is a necessity in this era to cater students’ needs and their aspirations along with accessible resources available for exploring. Induction programmes on basic computer skills with practical operations should be practiced and encouraged students to learn the essentials of the technology they are surrounded with.

c) **Administrators** - The enforcing power to direct and recreate the necessity lies in the hands of administrators of the institution. An administrator by nature of their designation held a huge responsibility to take decisions and perform task that are wise, accurate and desirable to be implemented. Practice what you preach is the essential code for administrators to row the boat to a direction they desired in reaching their destination. This code demands for administrators to actually practice, learn and experience what they desired out of others and as such updated knowledge in different regard should be the formula for a present day cooperative learning and practical sharing of information through ICT (Information communication Technology). ICT is inevitable for administrators in charge of higher education institutions with the coming of e-governance system being introduced countrywide. It is an initiative for a paperless work with instant posting and receiving through electronic media service of e-mail, internet facilities along with uploading and downloading format of available data and services. The operational performance of basic transactional application of technology involved in e-governance should be made well aware by administrators as it links to ICT and is one main objective for quality education.

PROSPECT OF VOCATIONAL EDUCATION AND ICT

Vocational education in Nagaland is at infancy stage which requires the correct dimension to treat for a successful livelihood. It is the advanced education and training which in today’s context is the need of the hour for a developing nation when employment under the government sector cannot incorporate the thousands of graduates that qualify every year. Institutions other than Polytechnic, training institutes purely run by government sectors are the lone institutions for vocational education and as such it is important to channelize in opening this vocational education
not only at government sector but also to other private institutions and financial aid for such courses should be encouraged. The benefits of ICT is unlimited if it is used correctly for the right purpose. ICT enhances students to develop a collaborative and skilful learning. Traditional learning for the different vocations theoretically should be limited and open gateways for more sophisticated and creative learning with technology to improvise the learning as well as the skills.

Incorporation of ICT with vocational education can build single individual graduates to back up in source of income by what has been studied and cultivated besides not exclusively dependent over government sector for income and employment. ICT as mentioned earlier furthermore delivers to be an Open Distance Learning (ODL) system for most users when it is browse for personal learning and experiences so that it can correspondingly assist degree granted or pursuing young students an opportunity to display their skilful creation and merchandise. This will also promote the indigenous cultural heritage of different communities via the artistry of vocations. A collaboration of ICT and vocational education will not only be a prospective impetus in improving livelihood issues for a rural state like Nagaland, whereon unemployment handicaps a massive number of qualified citizens every year under higher education sector and jobs are limited but will enhance the economic structure of each individual, reduce a certain degree of unemployment menace among youths and can even generate revenue for the state. The new platform of e-learning through the initiative of MOOCs under SWAYAM is being introduced in few science colleges of Nagaland on the related course of study but many colleges are yet to explore and prepare to begin with the courses but the disregard in ICT has been a barrier to set up. Taking a look at the growth of population, education literacy rate; it is imperative to open the different categories of certificate and diploma courses to promote and participate in ICT courses and skills that are based on entrepreneurship, business, e-commerce technologies for practical knowledge along with Vocational courses that are offered on different topics. This step will modulate to achieve livelihood promotion with vocational practice and e-learning initiatives.
SUGGESTIONS

The following points are suggestions made from the study done on how to improve incorporation of ICT with vocational courses for a true livelihood practice.

I. Theoretical classroom maybe equipped with projectors, smart board with internet accessibility to allow students learn interestingly avoiding bulk of lecturing method for the instructional transaction which covers only the domain of knowledge.

II. ICT instant facilities of internet with web resources, tutorial pages and videos give access to explore variety of things within seconds. Vocational courses should have the par between theory and practical by indulging practical session after instructional transaction class is provided so that continuity is observed in learning.

III. ICT will allow individuals to learn through internet browsing for more consistency and accuracy plus teach them the capacity to advertise the products of individuals rather than a full opened up shops which is expensive for any beginner in the business enterprises.

IV. Vocational education should be taught along the lines of ICT to be in parallel with latest demands of new techniques and updating to improvise one’s skill and knowledge.

V. Vocational education courses provided may necessarily not be limited to what is to be done but more to how it can be done differently and interestingly. This concept is not achievable without entry of technology which will give light to thousands of questions being answered and also opened up for a divergent thinking.

VI. Opportunities should be opened in showcasing students work through social Medias and print Medias to encourage community the needs and importance of vocational education courses for independent livelihood through self-labour and hard work. Programmes related to the different run vocations be organized with resource persons in the colleges will result to be more fruitful and interactive.

VII. Important places can be searched from internet and student’s exposure trip/field trip to places related to their vocational education courses be organized/ established would prove learning to be more exciting and a sound mind for creativity can be generated.

CONCLUSION

Introduction of vocational courses and its practices in the colleges of the state is still a very new concept to most educators, students, administrators and even the society as a whole. Government colleges in Nagaland are the prime starters for vocational education courses under the scheme of RUSA (Rashtriya Uchchatar Shikhsha Abhiyan) commencing from 2015 onwards. The first batch of acquiring vocational education fruitfulness from the courses is yet to be witnessed. Looking at the picture of vocational education courses in Nagaland at present which has selected vocations based upon the availability of resources and suitability of the topographical way of life can progress for expansion, variations in courses and essentially bring the art of vocational productivity flourishing toward livelihood revenue for sustenance. There are a total of 64 colleges in Nagaland comprising of 15 government colleges and with remaining 49 colleges under private sector and with a large scale of institutions under private sector. Colleges concerning private institutions compose of the maximum number of students under them and so it should also be given a priority with financial aid and support by the government to impart.
vocational courses which will not only serve as knowledge based course but practical reality of venturing into a true profession of the art they learned. ICT will serve as a breakthrough in elevating vocational education true success for individual livelihood promotion and global knowledge sharing. ICT shall be the avenue to vocational education courses for bringing progression, development and accomplishment. A collaboration of ICT and vocational education will not only be a prospective impetus in improving livelihood issues for a rural state like Nagaland, whereon unemployment handicaps a massive number of qualified citizens every year under higher education sector and jobs are limited but will enhance the economic structure of each individual, reduce a certain degree of unemployment menace among youths and can even generate revenue for the state.
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SCHOOL AS THE MESSIAH OF SUSTAINABLE DEVELOPMENT: A MULTIPLE CASE STUDY OF THREE LEADING RURAL SCHOOLS OF WEST BENGAL

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INTRODUCTION

One of the most demanding and pertinent issues in contemporary times is to sustain the condition of the environment (both physical and humane) to protect our living planet and ensure the peace and prosperity of its people. On the one hand, due to industrialization, modernization, various types of environmental degradation like pollution, deforestation, climate change, global warming, an increase of poisonous gases, ecological imbalance are grasping the happy lives of the people on the planet and on the other, extreme selfishness, greed, corruption are destroying the peaceful, humane environment and leading to poverty, inequality, injustice, violence etc. That’s why nowadays the slogan is not merely development but sustainable development because it not only ascertains the development for the present but ensures development in the future also.

To develop environmental integrity, economic viability and a suitable living society for present and future generations, education for sustainable development is the best approach in this regard (Wals, 2017). Only democratic participation in the educational process can build eco-conscious, self-sufficient world citizens who make out the immediacy of environmental responsibility. Education for sustainable development emphasizes the interconnection among the environment, economy and society. It emphasizes the way of teaching rather than the content where the teaching is not encircled only in the classroom rather students are given a chance of real-world experiences to improve their practical knowledge.

The teacher has a very important role in sustainable development. With their leadership qualities, classroom planning the teachers play a very crucial role to build a sustainable school (Henderson, 2004); (Gough, 2005); (Birney, 2009); (Novelli, 2016); (Evans, 2017). Education for sustainable development within the classroom at different school levels is very important to develop learning environments and experiences that can enable the students to undergo a good quality of life in a sustainable environment (McNaughton, 2012).

SIGNIFICANCE OF THE STUDY

“The destiny of India is now being shaped in her classroom and this we believe is no more rhetoric.” (Indian Education Commission 1964-66)
So, it is very important to create the right attitude, values from a very young age of the learners to ensure a sustainable environment (McNaughton, 2012). Creating awareness is the first step to achieving sustainability but especially in the rural areas the awareness regarding the sustainability of the environment among students, parents, and community members is very poor as compared to the urban areas because of the socio-economic-cultural-educational difference (Mondal, 2010); (Patra, 2017). So, the present study is an attempt to explore the role of different schools that are working effectively for creating an environment that ensures sustainable development.

OBJECTIVES OF THE STUDY

1. To study different innovative activities adopted by the three leading rural schools for sustainable development.
2. To analyze the impact of the activities to change the attitude and values of the learners to achieve the goals of sustainable development

METHODOLOGY

Method
A case study research method has been adopted for the present study to have an in-depth analysis of the several activities performed by the school and its impact on students to imbibe in them the desirable attitude and values to achieve sustainable development goals.

Sample
3 schools (who are doing pioneering work for sustainable development) from rural areas of Paschim Medinipur and North 24 Parganas district of West Bengal, India have been selected as samples by using the snowball sampling technique.

Tools and Techniques
An interview schedule focusing on some selected areas of sustainable development goals has been developed by the researcher to collect data for the present study.

CASE PRESENTATION

Case 1
In Paschim Medinipur, West Bengal, India, there is a school, named Dashagram Satishchandra Sarbarthasadhak Shikshasadan. The school acts really as a messiah to create awareness among the students and the communities for which the school celebrates different days like- Earth Day, Environment day, water day, with the awareness lectures. The school arranges anti-tobacco camps, anti-drug camps with the involvement of both the teachers, students, and the community. Creation of an Eco Park, preserving rare species of fishes in 4 ponds of the school, cultivation of rice (black rice), vegetables, fruits, poultry farms are some of the initiatives taken by the school.
For cleaning the surroundings, at first bio-degradable and non-biodegradable wastes are separated, and after that bio-degradable wastes are used as natural fertilizer in the garden or sometimes accumulated in a place to create compost fertilizer which is also used for cultivation. The school is trying to become a plastic-free zone as much as possible, to encourage the recycling of plastic in collaboration with Dr. Shantanu Bhowmik, an eminent scientist who invented techniques to produce tiles for the roof from plastic, the school has used that plastic roof shade. Thus, the school is trying to combat different issues like- plastic pollution, scarcity of groundwater, extinction of endangered species, and creates in learners the values like- dignity of labor, cooperation, sensitivity to nature, protection of the environment that are very necessary for sustainable development. Seminars are arranged to make the students aware of Thalassemia. As most of the members of the community depend on farming for their livelihood, the school also organizes programs for farmers to alert them how to minimize the use of pesticides, insecticides during cultivation or how to increase the productivity of the crops by using scientific methods of cultivation which contributes to achieving the goals of sustainable development.

Many eco-friendly initiatives like- rainwater harvesting, solar on the grid, sapling plantation, uprooting the poisonous parthenium shrubs are also taken every year. To bring quality education, the school has created an active alumni group. They arrange career counseling programs every year and the established ex-students bear the educational expenses of the poor and needy students. Case 2

Kanaknagar Shristidhar Institution, from Hingalgange, Sundarban, West Bengal, India is doing pioneering work for creating a sustainable school. To ensure quality education the respected headmaster, Pulak Roy Choudhury has developed the proper infrastructure i.e. electricity, sitting arrangement, colorful attractive walls, and sanitation facilities. Besides, ICT integrated classrooms, providing experiential learning, teachers’ training programs, etc. are ensured. The headmaster and his team provide all necessary supports to the at-risk students. As a result, the number of students is increasing notably day by day and the dropout rate is decreasing significantly in this school.

For managing the emerged wastes, marvelous initiatives have been taken up like- the water used for washing of vegetables in the mid-day meal and hands after taking the meal is directly connected to water the garden which save the wastage of water. Rainwater is preserved in the particular tanks and they are linked with the girls’ toilet. Bio-degradable wastes are accumulated to produce compost fertilizer and they play a vital role in the abundant production of fruits and vegetables that develop the quality of mid-day meals which contributed significantly to increasing attendance and decreasing dropout rates.

After the great storm, Umphun, to sustain the position of the natural environment, 1700 trees are planted in the boundary of the School. The school had arranged a relief fund for 5300 Umphun affected families. Even, they had collected 28 bags of plastics from the sea-beach which had been been given by other sources in the name of a "helping hand" and they were sent to the recycling center.
During the lockdown period, to empower the women, they were given sewing training of jute bags to replace the plastics and also to provide economic independence to the girls so that they can support their families which are mostly below the poverty line. 147 impoverished families during lockdown were given repeated ration to their houses by the students with the support of the school teachers.

Medical camps are organized from time to time to identify different types of diseases like- skin diseases, psychological disorders, gynecological problems not only among the students but also among their parents and community members under the guidance of famous, experienced doctors.

To develop different values among the students, the school has invented a new process of putting "Friendship Box", where students who have extra things e.g. pen, color pencils, clothes, books, they donate and also the students who need those things write an application and put that inside the box, one council of students is formed to manage the box so that the needy students get whatever they want from the box and thus the values like- helpfulness, empathy, fellow-feelings develop among the students.

Case2

The school, named Bhadutala Vivekananda High School from Paschim Medinipur, West Bengal, India is also included in this list for its noteworthy works and activities. Their main motto is "Hungry people hold book - it is your weapon". The school headmaster, Dr. Amitesh Choudhury, and his team take various initiatives like- Jain Book Bank for providing books to vulnerable children, Educational Development Monitoring Committee (EDMC) has been created with the teachers who regularly inspect the locality so that dropout students come back to the school. Thus, they saved a child labor from the town area with the help of the District Magistrate Department. Regular meetings of the Parent Teachers’ Associations (PTA) are held on the school premises to inform the parents about the detailed progress of their children. Even sometimes guardians have to present in oath-taking and self-declaration ceremonies against early child marriage and child labor. Kanyashree club is also there to prevent girl child marriages. A courageous girl Bristi Das bagged a district-level award for her contribution to stop child marriage.

Besides, they sometimes organize moral education camps, debates, quiz competitions, free coaching classes, and computer training programs, educational excursions from time to time in various places like- Science city, Archaeological Survey of India, Nalanda to facilitate experiential learning.

The school authority also arranges training programs for teachers like- School Leadership Development Training, Disaster Management Training, so that they could develop their skills and competencies to serve their profession better.

There are also several clubs and centers like- NSS, Acharya Jagadish Chandra Bose Eco Club, Rural Eco-development center who celebrate each year World Environment Day, Nirmal Bangla
Mission, organize cleanliness program, Swachh Bharat Abhiyan, nurture school nursery and take part in tree plantation program. Thus, this school got Nirmal Vidyalaya Puraskar in 2013 and Shishu Mitra Puraskar in 2019 for its untiring endeavor. Anti-corruption week, Legal Awareness camp, programs and campaigns on national integration are also arranged in the school to make the students alert about their rights and encourage them to fight back against social evils.

ANALYSIS AND INTERPRETATION OF THE DATA

The analysis of the cases has pointed out that the particular goals of sustainable development have been reflected a great extent through the activities which have been included in their school curriculum. The reflections of those certain goals are described in the following ways:

1. **No Poverty (End poverty in all its forms everywhere)**

   **Activities of the Schools**

   A regular monitoring committee visits the localities of the students and according to their necessity, books, financial support have been provided from the school community. During lockdown female students are encouraged to take part in sewing training to make the fashionable jute bags in the replacement of plastics. Some meritorious students have been helped financially in the personal as well as in the academic field by the students of the alumni group.

   **Impact of these activities on the learners**

   School-going attitude has been developed among the students. Dropout rates because of poverty have been decreased and passing rates of these schools have been increased. Girls are motivated to be self-sufficient economically and they also help their families to end poverty.

2. **Zero Hunger (end hunger, achieve food security and improve nutrition and promote sustainable agriculture):**

   **Activities of the Schools**

   The teachers make the students understand the need for sustainable agriculture to combat hunger and the strategies to overcome that. The students are involved in school gardening, cultivation of rice, vegetables, fruits, poultry farm, fishes under the supervision of the teachers to develop the quality of mid-day meals.

   **Impact of these activities on the learner**

   The students can easily apply this knowledge of sustainable cultivation to combat hunger and to promote sustainable development. Students become more interested because they are given the chance of getting out of their bookish knowledge and become more practical and close to nature and thus they can apply this knowledge in their day-to-day lives. Regularity and attentiveness in
the school activities and intense love for everything related to school are automatically augmented among the students because of these activities.

3. Good Health and Well-being: (ensure a healthy life and promote well-being for all at all ages)

Activities of the Schools
Every year important days like- World Health Day (7th April), International Yoga Day (21st June) are celebrated on the school campus where significant lectures are delivered on the theme of getting healthy life. To make the students physically fit, multi-gym Centre, physical education classes are arranged and for the good health and hygiene of the female students' napkin vending machine is also made available in these schools. Anti-tobacco camp, Anti-drug camp, Dengue and Malaria awareness campaign, Thalassemia camp, Self-defense camp-- all are organized by the students under the guidance of the teachers. Free health check-up camps are also organized two times a year to identify several minor or major diseases by the famous experienced doctors and even after identification, school communities provide as much support to the family of the students.

Impact of these activities on the learners
A holistic understanding of the life of health and well-being and its related values, beliefs and attitudes are effectively formed among the learners. Students not only become aware of the various types of diseases but also they imbibe in their feelings of unity, mutual understanding, leadership qualities.

4. Quality Education: (Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all)

Activities of the Schools
For creating an attractive session, a digital classroom has been designed and the walls of the schools are filled with motivational speeches of the social reformers. Career counseling programs, remedial classes, free coaching, computer classes and moral educational sessions are also available in these schools. Regular meetings of parent-teacher associations are conducted and even at the time of admission, oath-taking and self-declaration ceremony of guardians are organized to stop early child marriage and child labor. Educational excursions and winter camps are also arranged by the schools which intensify connection with the nature.

Impact of these activities on Learners
The learners understand their responsibility for the betterment of their life in particular for employment and entrepreneurship. By connecting learning to life, the significance of experiential learning is perceived by the students. The students can tactfully utilize their knowledge in everyday situations to promote sustainable development.
5. Clean Water and Sanitation: (Ensure Availability and Sustainable Management of Water and Sanitation for All)

Activities of the Schools

During NirmalVidyalayaAbhiyan, to make the students aware of waste management, they are engaged in garbage cleaning programs and extension lectures are also organized for them. For saving the wasted water, rainwater is preserved in the particular tanks and they are linked with the boys' and girls' toilets. Again, water used for washing vegetables is directly used to water the school garden. Drinking water tanks or pipes are regularly cleaned and observed by the concerned authority. All the biodegradable wastes are used in the garden and other non-biodegradable wastes are accumulated and sent to a recycling center. By organizing Farmers Awareness Programs, people are taught how to minimize the use of pesticides or insecticides without compromising with the production.

Impact of these activities on the learners

The learners understand the importance of the quality and quantity of water and its causes and consequences related to water pollution. By realizing the necessity of water scarcity, students learn the proper utilization of water in every sector. Students become aware of the healthy living environment to protect the natural resources (such as surface, water groundwater, soil).

6. Industry, Innovation, and Infrastructure: (Build Infrastructure, promote Inclusive and Sustainable Industrialization and Foster Innovation)

Activities of the Schools

In-service teachers are provided School Leadership Development Training (SLDP), disaster management training. Students are undergone through Vocational Training and the concerned school authority supports them to secure placement. Solar on-grid is there to minimize the consumption rate of electricity. Agni Nirbapan week is organized to instruct the students about their do's and don'ts during fire outbursting.

Impact of these Activities on the Learners

Learners easily understand the activities taken for the overall benefits for societies especially regarding disaster risk reduction. They also become skilful and competent enough to earn their livelihood using vocational training.

7. Reduced Inequalities (reduce inequality within and among countries)

Activities of the Schools

To remove gender equality in these schools, boys, as well as girls, are given equal opportunity of participating in the football tournament, cricket team, hockey team, cultivation and other domestic activities.
Impact of these activities on the learners

Students easily understand the ethical principles concerning equality and equity. They become aware of psychological processes that administer discriminative behaviour and decision-making.

8. Climate Action (Take urgent action to combat climate change and its impact)

Activities of the Schools

Every year, schools celebrate Earth Day (22nd April), Environment Day (5th June) with valuable awareness lectures. Eco Park has been created inside the campus by protecting biodiversity through the nurturance of the tree, organic herbal plants, and the cultivation of rice, vegetables, fruits, poultry, fish, and animals.

Impact of these activities on the learners

The students realize that the protection of global climate is an essential task for everyone and re-evaluate their everyday behaviour with this consciousness. Familiarity with the consequences of climate change and its impact makes the learners responsible to protect the environment.

9. Peace, Justice and Strong Institutions (promote peaceful and inclusive societies for sustainable development provide access to justice for all)

Activities of the Schools

The schools arrange a Legal Awareness Camp to discuss human rights. Consumer’s Protection Camp is organized to make the students aware of being cheated by the salesman. During Anti-Corruption Week, an oath-taking program is also arranged for the students to remove corruption.

Impact of these activities on the Learners

The learners understand the importance of the International Human Rights framework and based on it try to reflect their roles in decision making on the issues of peace, justice and inclusion.

10. Partnership for the Goals (strengthen the implementation and revitalize the global partnership for sustainable development)

Activities of the Schools

Programs and campaigns on national integration have been arranged from time to time in these schools. Friendship Box is also invented for the students to donate their excessive things which are delivered to the needy. This process is carried on with the collaboration of the nearby schools. Suggestion and Complaint Box Operation is also there to make learners, parents and community...
members realize that they are very significant contributors whose collaboration is very necessary to attain the goals of sustainable development by making the schools instrumental for this.

**Impact of these activities on the learners**

The learners experience a sense of belongingness to common humanity, sharing values and responsibilities based on human rights. During the teamwork, feelings of cooperation, sympathy, empathy, mutual understandings are developed among the students. The learners become a change agent to understand the Sustainable Development Goals and take their roles as active, critical and global and sustainable citizens to attain those goals.

**FINDINGS**

- Activities like the proper utilization of water, waste management, use of renewable energy, nurturance of trees and plants, cultivation of vegetables and rearing animals, Nirmal Vidyalaya Abhiyan Programme, are effective to promote Ecological Sustainability among the students.
- Activities like legal awareness camp, consumer’s protection camp, program on national integration, anti-corruption week, physical training, educational excursion, parent-teacher association, awareness camps of several diseases like- malaria, thalassemia, and dengue are helpful to develop Social Sustainability among students, teachers, and community members.
- Activities like vocational training, job placement, agricultural workings, various awareness programs related to supply and demand, costs, prices are effective to develop Economic Sustainability among the students.
- When teachers, students, parents, and community members work together it has a positive impact to achieve sustainable development goals.

**CONCLUSION**

To conclude it can be said that when the learners are actively involved in different activities and the schools take initiatives to work in collaboration with the parents and community members it has a tremendous impact on creating a positive attitude and necessary values like- sympathy, cooperation, mutual trust and confidence, understanding, empathy among students, teachers, and community members that are instrumental to achieve the goals of sustainable development.
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INTRODUCTION

Undoubtedly, the Covid-19 pandemic significantly affected education in Brazil and worldwide, and one of the consequences was Emergency Remote Teaching, in which physical presence in the classroom was replaced by presence in the digital environment and educational content had to be adapted to the new scenario. Researchers and educators are concerned, then, with establishing actions that minimize the negative impacts generated, mainly, by the need for social distancing.

Among the projects aimed at this purpose, stands out the Online Learning and Fun (OLAF) of the Open University (OU) of the United Kingdom, which involves several Higher Education Institutions (HEIs) in Brazil and Europe, with the objective to raise research that address fun in education, based on the demands generated by the Covid 19 pandemic. OLAF is based on the Responsible Research and Innovation (RRI) methodological approach (EC, 2016; OKADA; SHEEHY, 2020) – Research and Responsible Innovation – created by the European Commission with the objective of promoting research and innovation based on inclusion and sustainability. Such an approach aims to ensure that research products meet social needs through close engagement between researchers and citizens.

The Pontifical Catholic University of São Paulo (PUC-SP) joins the OLAF project in carrying out studies that promote a better understanding of students' needs, their values and beliefs about learning, as well as their views on fun in the educational process. Thus, it aims to contribute to the formulation of educational recommendations and strategies that generate greater student involvement with their learning process in Brazilian institutions.

Our objective here is to examine, among undergraduate students at PUC-SP, whether, in their opinion, fun should be part of learning; how they perceive fun online learning and to what extent it is linked to motivation and involvement. In another stage of our research, to be developed in the future, we will present viable teaching strategies for an efficient online education, based on the results obtained in this study.
FUN IN LEARNING

In the educational field, studies on entertainment are still, in general, strongly associated with the effectiveness of early childhood education; there are several researchers who treat fun as an essential strategy for the development and learning of children (VYGOSTKY, 2002; PIAGET, 1978). In adult education, however, the theme is still little explored (OKADA; SHEEHY, 2020).

When the subject is fun in learning, divergent and antagonistic positions soon emerge: for some, the two elements are inseparable, as learning in a fun way helps the student's development. This is the case, for example, of Santos (2007, p. 12), who states:

The development of the playful aspect facilitates learning, personal, social and cultural development, contributes to good mental health, prepares for a fertile interior state, and facilitates the processes of socialization, communication, expression and construction of knowledge.

For others, fun learning can be a downside. When dealing with the use of computer games in higher education as an activity that generates fun, Whitton and Langan (2019, p. 7) observe that games are not always motivating and can even be a form of exclusion, proving to be a not very practical activity in involving students in their learning process. According to them, “some learners, particularly mature students, may feel that fun and games are a frivolous and irrelevant 'waste of time'”. Such views obviously stem from the adopted concepts of fun and education.

The word entertainment has a broad meaning and takes on different meanings in the contexts in which it is used. For Melo (2018, p. 4), it is associated with creativity and, in learning, it generates student involvement with the construction of knowledge, based on social interaction and on strategies that relate theory and practice, in an interdisciplinary perspective. The author emphasizes that creativity is often overshadowed by social patterns reiterated at school that has the duty to awaken the creative sense of students.

In a humanist approach to the process of teaching and learning, Freire (1985) highlights joy as an essential element to be considered, as well as Snyders (1995). Assmann (2004) relates fun to feelings of satisfaction and joy, promoted by educational activities that instigate curiosity and discovery. In this perspective, Vieira and Almeida (2017), with a focus on higher education, emphasize the importance of social meaning and personal meaning in the academic education of students and, thus, reiterate the need to renew the university itself as well as university teaching.

Such considerations lead us to briefly address motivation and involvement in the educational process.
MOTIVATION AND INVOLVEMENT IN THE EDUCATIONAL PROCESS

Motivation and demotivation are themes constantly discussed in the school environment, closely associated with student performance, contributing to greater or lesser involvement of the student in the educational process.

Camargo, Camargo and Souza (2019, p. 599) emphasize that motivation results from curiosity and promotes involvement in learning. They define it as “an inner force that stimulates, directs, and mobilizes the person to act with enthusiasm”. This force is better defined by Lieury and Fenouillet (2000) as a set of biological and psychological mechanisms that lead to the performance of an action. For them, motivation can be intrinsic or extrinsic, the former being inherent to the individual, who performs an activity exclusively for the pleasure it generates. Extrinsic motivation, on the other hand, stems from external elements that lead to recognition or reward, that is, it stems from external aspects, such as, for example, economic, social, political, cultural aspects, among many others.

Focused on the relevance of the active, motivated and engaged participation of the learner in educational processes advocated by psychologists (ROGERS, 1971; GARDNER; LAMBERT, 1972), educators (ALVES, 2015; SANTAELLA, 2012; WATANABE, 2015; CANI et al., 2017) and neuroscientists (DAMASIO, 2018; IMMORDINO-YANG; DARLING-HAMMOND; KRONE, 2018), course planners have sought to explore resources and strategies aimed at ensuring that these feelings are aroused, making the teaching and learning process more fun, pleasurable, motivating and effective.

Joining the aforementioned authors, we understand that, in the educational field, both entertainment and other emotions evoked so far should not be neglected in the globalized world, where everything is dynamically connected, generating new knowledge at all times.

METHODOLOGY AND PROCEDURES

As mentioned, this research is of a quali-quantitative nature and is part of the Online Learning and Fun (OLAF) project of the Open University (OU) of the United Kingdom. Data were collected in a questionnaire containing 25 closed and 5 open-ended questions, applied to Brazilian students, professors and course planners. Closed questions were structured on the Likert scale, in which participants expressed their opinion according to the following gradation: Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree. Only one of the closed questions (Fun in learning is...) was not listed or structured on the Likert scale, but with multiple alternatives in which the participant should select the one that best reflected their definition of fun in learning.

Based on the established objectives, for data collection we selected, in this first stage of the study, seven closed questions and one open-ended question, as explained below (Table 1):
<table>
<thead>
<tr>
<th>Objective 1 – Verify, among undergraduate students at a Brazilian university, whether, in their opinion, fun should be part of learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed questions</td>
</tr>
<tr>
<td>- Q 23 – Learning must involve fun</td>
</tr>
<tr>
<td>- Q 24 – Fun activities can hinder student learning</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 2 – Verify how undergraduate students perceive fun online activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Closed questions</td>
</tr>
<tr>
<td>- Question not enumerated or structured on the Likert scale: Fun in learning is: waste of time; pause for distraction; joy with friends; feel motivated; feel good; achievement of success; self-improvement; another thing</td>
</tr>
<tr>
<td>- Q 20 – Fun is part of curiosity and discovery</td>
</tr>
<tr>
<td>- Q 21 – To learn, students must be happy while learning</td>
</tr>
<tr>
<td>- Q 22 – For effective learning, students must enjoy learning</td>
</tr>
<tr>
<td>- Q 25 - Learning online is not fun</td>
</tr>
<tr>
<td>- Open-ended question</td>
</tr>
<tr>
<td>- Q 26 - What is online learning that pleases you (fun); what would be the features?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 3 – Reflect on possible relationships between fun, motivation and involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intertwining responses</td>
</tr>
</tbody>
</table>

Table 1- Selection of questions for data collection

Regarding the closed questions, we quantified the answers based on the categorization of the Likert scale. As for the question not enumerated and not structured on the Likert scale, given its defining nature, we quantified the responses of each item selected by the participants. In the answers to the open-ended questions, we used the Content Analysis technique (BARDIN, 1977; LEITE, 2017) for the objective, systematic and quantitative description of the content presented in the answers obtained. According to Bardin (1977, p. 42), content analysis is defined as:

a set of communication analysis techniques, aiming to obtain, by procedures, systematic and objective of description of the content of the messages, indicators (quantitative or not) that allow the inference of knowledge related to the production/reception conditions (inferred variables) of these messages.
The content analysis steps, also established according to Bardin’s considerations (1977), consist of:

- pre-analysis – in which we selected excerpts from the answers obtained that would lead us to a systematization of categories for investigation;
- material exploration – in which we explore the content of responses based on the systematized categories;
- data processing, inference and interpretation – in which we quantitatively organize the units of the categories found and interpret them based on the objective to be achieved.

In selecting the data for analysis, we considered the following aspects indicated by the author:

- homogeneity – we look for homogeneous data in the participants’ responses;
- completeness – data were exhaustively collected in each of the answers;
- exclusivity – each data was classified in only one analysis category;
- relevance – the selection of open-ended questions was carried out based on the objectives established in this work.

In the universe of 153 respondents to the questionnaire in Brazil, 71 are undergraduate students. Of these, 69 are students at PUC-SP and represent our object of study, due to our role as professors at this institution. Graph 1 shows the distribution of respondents by age and shows that 55% are between twenty-two and thirty-five years old and 44% are twenty-one years old or younger.

Graph 1 – Age of students at PUC-SP

FUN, MOTIVATION AND INVOLVEMENT: THE PERCEPTION OF UNDERGRADUATE STUDENTS

The descriptive analysis of the quantitative data collected in the closed answers to the questionnaire reveals that, among undergraduate students at PUC-SP, subjects of this research, 78% consider that learning should involve fun (Graph 2) and only 7% consider that fun activities hinder learning (Graph 3). Based on the studies by Whitton and Langan (2019), we infer that the age of participants can be a factor that promotes fun as an important element in the educational process (most are under 35, as shown in Graph 1 above). According to the authors, younger...
students are more likely to consider the playful nature of this process. The more mature, in turn, tend to see fun in learning as something negative and irrelevant.

**Graph 2 – Learning must involve fun (Q 23)**

- **Agree**: 78%
- **Do not agree**: 16%
- **Neither agree nor disagree**: 6%

**Graph 3 – Fun activities can hinder student learning (Q 24)**

- **Agree**: 86%
- **Do not agree**: 7%
- **Neither agree nor disagree**: 7%

Most students state that having fun is a motivating and engaging factor (Graph 4). 96% observe that having fun stems from curiosity and discovery (Graph 5), which is in line with the considerations of Camargo, Camargo and Souza (2019, p. 599), who point out that motivation results from curiosity and promotes involvement in learning. We consider that such feelings can be defined as forces that stimulate and mobilize the person to perform an action with enthusiasm and should be taken into account in the formulation of teaching strategies – object of study in the next stage of this research, to be carried out in the future.
In Graph 4, we highlight that feeling good and having fun with friends were also mentioned as a possible definition for fun. Although the percentage of participants who highlighted these items is, broadly, not very significant, we noticed that happiness and satisfaction in learning were considered fundamental for an effective learning process (Graphs 6 and 7). Based on studies by Freire (1985), Snyders (1995) and Assmann (2004), we point out that fun can be related to feelings of satisfaction and joy, generated by carrying out activities that instigate curiosity and discovery.
Although the data collected show that most students believe that fun should be associated with learning and relate fun learning to activities that promote motivation and involvement, online learning experienced in the period of social isolation was considered fun by only 27% (Graph 8). Considering the important role that fun can play in the learning process, this finding reiterates the need to reframe dynamics as well as pedagogical strategies at the University (SYDERS, 1995; VIEIRA, ALMEIDA, 2017).

Graph 8 – Online learning is not fun (Q 25)

As mentioned, in the answers collected for open questions, we selected, in the pre-analysis, excerpts that would allow us to visualize how the undergraduates at PUC-SP perceived a fun activity. Then, in the exploration of the content, we systematized the categories based on ideas and/or recurrent expressions, which we consider relevant to understand how students perceive fun activities. At this stage, we verified that the collected answers circulated around the following categories: learning, teaching-learning resources, activities, class and teacher.

As an illustration of each of the categories, we highlight the following excerpts taken from the answers to Q 26 – What is learning that pleases you (fun); what would be the characteristics?

[1] student-centered learning, which seeks to know their contexts and the baggage that this student carries about the topic and, with this, promote the engagement of all people involved in the construction of meaningful knowledge that can be applied in the practical life of the learner. [Qualifying unit of learning category]

[2] An enjoyable online learning would be one that integrates audiovisual resources - such as slides - and technology - such as the internet; which involves the student through the application of films, series, books and other tools; that seeks to integrate other areas of knowledge and demonstrate the application of concepts in reality; that stimulates debate, avoiding the idea of imposing or just expository classes; which proposes activities,
both individual (a point of great relevance) and in groups, which develop critical thinking and the desire in students to seek knowledge on their own; between others. [Qualifying unit of teaching-learning resources category]

[3] They would be more interactive activities with quizzes, videos, group activities that would be forms of interaction with the teacher and classmates. [Qualifying unit of activity category]

[4] Class not very long, didactic and able to attract the student’s attention. [Qualifying unit of class category]

[5] Didactic teacher who manages to involve the class and convey all the content in a way that makes sense and is clear. [Qualifying unit of teacher category]

In the stage of processing the results, inference and interpretation, we quantitatively organized the qualifying units of the categories (Table 2), that is, words, expressions or ideas related to the mentioned categories. At this stage, we grouped units that, in our analysis, led to the same direction, such as captivating / engaging, which seemed to be synonymous in the context of the responses. Furthermore, we observe that some units do not have a clear sense, as is the case, for example, of short learning, in: Learning that motivates, is short, and manages to captivate the student. The meaning of the word short in this answer is unclear. However, such occurrences do not prevent us from understanding how participants perceive learning fun.

Table 2- Categorization of data collected in open-ended question Q 26

<table>
<thead>
<tr>
<th>Category</th>
<th>Category Qualification Units</th>
<th>Number of units identified in participant responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning</td>
<td>Interactive</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Engaging</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Dynamic</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Short</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Relaxed</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Competitive</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>With fixed time</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>With images</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Motivating</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Focused on the student, on their prior knowledge</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>In which knowledge construction is applied to practice</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Pleasant</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Adapted to the social context</td>
<td>1</td>
</tr>
<tr>
<td>Teaching-learning resources</td>
<td>Creative</td>
<td>1</td>
</tr>
<tr>
<td>----------------------------</td>
<td>----------</td>
<td>---</td>
</tr>
<tr>
<td>Inclusive</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Total units: 16</td>
<td>Total occurrences: 47</td>
<td></td>
</tr>
<tr>
<td>Resources that encourage discussion/interaction</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Technological/audiovisual resources (ex.: applications, software, cameras, microphones, movies, series, etc.)</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Consistent/well-explained/dynamic theoretical content</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Relation of content with current facts/reality</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Resources that encourage competition</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Immersive dynamics</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Stories/fun plays</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Interesting examples</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Slides with little text</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Resources that encourage reflection</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Resources that stimulate curiosity</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Oriented study</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Total units: 12</td>
<td>Total occurrences: 40</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activities</th>
<th>Interactive</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Games</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Not imposed/non-intimidating</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Engaging</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>That encourage student autonomy/responsibility</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Cases</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Consistent</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Dynamics</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>That stimulate competitiveness</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>That stimulate logical thinking</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>That allow for behavior change</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
The table above summarizes, in a synthetic way, students' perception of fun online learning, and some qualifications stand out. The most prominent recurrences in each of the categories\(^1\) allow us to infer that fun online learning, for them, is the one that privileges interaction, both in the conduct of classes, in the proposed activities as well as in the pedagogical resources adopted. It must be engaging and dynamic and, accordingly, the use of technological and audiovisual resources is essential, as long as they encourage the participation and integration of students. Activities that challenge or test students to some extent, such as quizzes and games, can provide motivation and engagement as they encourage some competition among students. Classes must be short, non-expositive and interesting and the teacher must be engaging, welcoming and didactic.

\(^1\) We consider the most prominent recurrences to be the qualifying units that appear at least four times for the Learning, Teaching-Learning Resources, Activities and Lessons categories and at least twice for the Professor category.
As mentioned, most undergraduates at PUC-SP participating in this study perceive fun as a factor of involvement and motivation (Graph 4). From content analysis, it is observed that, to qualify learning, learning resources, activities, classes and the teacher, the following qualifiers stand out: interactive, audiovisual dynamics, short, interesting, engaging. Thus, we reiterate the importance of introducing elements/strategies that make the classes challenging, thought provoking, diversified, in a welcoming environment, potentially more conducive to intellectual work.

**FINAL CONSIDERATIONS**

If, on the one hand, there is currently a need to transform radically the school culture with its practices, including teaching practices, and, for this, studies, technological and pedagogical resources are abundant and in constant evolution, on the other hand its implementation still does not seem to reflect effectively in the classroom.

Given the limitations on first stage of this study, including the restricted number of participants in the research, the fact that only 27% of the students surveyed considered that online learning in the period of social isolation was fun means a warning for professors, course planners and managers, as it suggests that the university needs to improve its welcoming humanist dimension at a time when humanity is going through great suffering.

This situation is far from the precepts of so many scholars – educators, psychologists, neuroscientists, language scholars – among which we highlight the immortal Paulo Freire.
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INTRODUCTION AND BACKGROUND

The flagship of school education in India, the National Council of Educational Research and Training (NCERT) as early as 2009 had initiated steps to address issues related to teacher training. One year later, the National Curriculum Framework for Teacher Education (2010) proposed that Teacher Education “needs to orient and sensitize the teacher to distinguish between critically useful, developmentally appropriate and the detrimental use of ICT” with a view to developing professional teachers and improve the quality of education. (p14) Taking the cue, syllabuses for teacher education in universities in India were refined with the inclusion of a core paper on Information and Communication Technology.

In 2020, when the Covid-19 pandemic ravaged the country, educational institutions were closed and teachers were directed to engage classes online. Within days, leading news agencies devoted special columns /slots on the state of education during Covid-19 in India. Dhankar writing in ‘The Hindu’ reported that Covid-19 has rendered the education system “extremely biased and faulty”. Gowda in the News18 website listed down a few pros and cons. The cons in online learning in India include inaccessibility, absence of interaction, difficulty in adapting, and over exposure to screen. BBC News in its website included a write up with a descriptive title: ‘India coronavirus: Online classes expose extent of digital divide’.

Applying the hierarchy of needs to education and learning, Maslow (1970), suggested that before a student’s cognitive need can be met, his basic physiological need must be met. A hungry student will find it difficult to learn; to reach one’s full potential. Students need to feel physically and emotionally safe; and for this the teacher should create a supportive environment. Studies have shown that during the spread of the Corona virus pandemic, there was a steady rise in stressors causing distress in the population. (Brooks et al., 2020). In India, lockdown, pay-cuts, unemployment, quarantine and fear of getting infected have had a depressing psychological impact on the population and their physiological needs became profoundly disheartening.
THE PROBLEM

During the peak of the Covid-19 pandemic, the investigator - cum- teacher educator was assigned to teach online a batch of student teachers of the two-year Bachelor of Education (B.Ed) programme. Almost all the student teachers were found to face psychological and physiological needs and initial interaction revealed lower levels of motivation. In addition, accessibility and affordability issues related to internet and digital tools for online instruction threatened to hamper transaction online of the syllabus of the B.Ed course. So identifying appropriate digital tools and strategies to continue online instruction that basically addresses student teacher needs became imperative.

RATIONALE FOR THE STUDY

For almost five years, the investigator had been pursuing MOOCs both for own professional development and for improving the quality of instruction in own academic setting. During that period, the investigator was serving as a faculty in a government run college of teacher education where academically brilliant student teachers hailing from low socio-economic backgrounds were given subsidized education. Then, the investigator attempted to transact the B.Ed syllabus integrating select content from MOOCs pursued earlier for own CPD to provide quality instruction. When the Covid-19 pandemic struck, there was an immediate shift to online pedagogy and providing quality instruction became a matter of concern and necessitated identification of an affordable and sustainable tool for online pedagogy. So the investigator, transacted the B.Ed syllabus using the sustainable and affordable digital tool, WhatsApp to continue education and help student teachers acquire to an optimum level the instructional objectives of the teacher education programme. The author hopes that the novel strategy employed during the time of the crisis will provide pragmatic solutions that may be emulated by teachers and teacher educators struggling to cope with online pedagogy.

THE OBJECTIVE OF THE STUDY

The main objective of the study is to identify the scope and possibility of employing affordable and sustainable digital tools to transact the syllabus in a college of teacher education during the Covid-19 compelled online pedagogy.

KEY THEORIES INFORMING THE STUDY

A. Maslow’s Hierarchy

Basing on research on human motivation, Abraham Maslow half a century ago posited a hierarchy of human needs grouped as deficiency needs and growth needs. To Maslow, an individual is ready to act upon the growth needs if and only if the deficiency needs are met. The hierarchy ranges from more concrete needs such as food and water to abstract concepts such as self-fulfilment.

Motivation, educators agree, is a key factor in student learning. So in commencing online learning, the teacher is expected to ensure that the basic needs of learners are addressed, particularly, the physiological needs.
B. Sustainable Education

Sustainable education is a term emphasizing a cultural shift in the way we see education and learning. It implies systemic change in thinking and practice, informed by what can be called more ecological thinking and values – essentially a new paradigm emerging around the poles of holism, systemic thinking, sustainability and complexity. It is an attempt to develop qualities such as adaptability, creativity, self-reliance, hope and resilience in learners. It is education that is responsive to the new systemic conditions of uncertainty and complexity characteristic of our times. (Sterling, 2008)

The key to sustainable education lies in envisioning the change and taking realizable and practical steps in our own working contexts. This is clearly articulated in the UNESCO report (2002): just as we have learnt to live unsustainably, we now need to learn how to live sustainably. Such learning for responsibility requires educational systems, institutions and educators to develop response-ability – that is, the competence and will to address the considerable challenge and opportunity that sustainability presents.

KEY SIMILAR PREVIOUS STUDIES CONSULTED

A. Maslow’s Hierarchy

Working on the assumption that the hierarchy is a great analogy for many things, Shewell (2020) adapted Maslow’s hierarchy of needs to illustrate the essential needs for successful online learning. The equivalents identified by Shewell include: 1. Equipment needs (Hardware, laptop, tablet, smart phone, internet connection) 2. Environment (Quiet, calm, lack of distraction) 3. Community/Interaction (Student-to-student, student-to-teacher) 4. Self-reliance (Autonomous learning, problem solving, local support) 5. Creativity (Projects, assignments, activities, outside audience)

B. Sustainable Education

The Sustainable Development Goals decided by the United Nations include a goal centred on learners gaining the necessary knowledge and skills to promote sustainable development. (UNESCO, 2015)

Technology in lieu of print have been explored in recent times. For instance, Dan Childers, a senior sustainability scientist and professor of Arizona State University as early as 2013, used a modelling software to teach fundamental ecosystem concepts. He has this to say: “…there is no one-size-fits-all approach when it comes to using technology to educate…I think we should not be afraid of technology…I think we should be more keen on and capable of using it. There is no common solution that could or should be implemented in each pedagogical situation.” (ASU, 2013)
C. On Problems Faced by Teachers During Online Pedagogy

Studies have also reported that conducting online practical classes proved rather difficult as it required a systematic demonstration of the whole process in the student’s presence. (Loknath et al., 2020)

Augilera & Flores (2020) attempted an analysis of 134 empirical studies about online teaching and learning practices. The analysis highlighted the need to relook online education that integrates technology to support teaching and learning.

D. On Problems Faced by Students During Online Pedagogy

Economic effects, delays in academic activities and effect on daily life was found to affect participants’ anxiety symptoms as per a study on psychological aspects of Covid-19 on colleges students. (Cao et al., 2020)

E. On Teacher Education During Covid-19 Pandemic

Ling’s (2017) perception of teacher education as an iterative and complex process that needs to look ‘backwards, forwards, inside-out and outside-in’ to respond to the evolving needs of a world that is ‘moving, blurring and shifting’ in the context of the Covid-19 pandemic indirectly reaffirms the need to look at the problems teacher educators and students are currently facing.

F. On Teaching with Technology

Doucet et al., (2020) affirms that as far as online learning is concerned, there is no one-size-fits-all pedagogy. It varies with subjects, learner needs, and age groups. The challenges with regard to teaching with technology include e-learning accessibility, affordability, flexibility, learning pedagogy, life-long learning and educational policy. (Murgatrotd, 2020)

G. On Using MOOC Content for Teaching

A study on blending MOOCs with traditional courses recommended that sourcing several interesting MOOCs for students and allowing them to choose one they are most interested in, will positively affect motivation. (Bralić and Divjak, 2018)

The investigator had in 2019, attempted to adapt MOOC content for transaction of the B.Ed syllabus and it was found to be useful by the student teachers. The digital content adapted included among others videos, animations, PDFs, and PowerPoint. The findings of the study were presented at a conference. (Praveen, 2019)

H. On using WhatsApp for Teaching

A study undertaken by the author of this paper in 2015, utilizing WhatsApp for content revision was treated as a success story and best practice in the field of education during the International Conference on Educational Management and Administration. (Praveen, 2021) Woztell found a commercial possibility with WhatsApp with its ability to establish communication between...
institutions and students and in sharing audio lessons, PPT materials or documents such as Word, books and video content. The possibility to make free calls and video calls and facility for virtual meeting is an additional advantage.

A study on the use of WhatsApp by Barhoumi (2015) found that it encourages students to insert text and messages to easily share information and knowledge related to the course taught face-to-face, making learning collaborative. Students can discuss different topics related to the course taught face-to-face in the classroom.

**METHODS APPLIED**

To cope with the travails of quality curricular transaction in resource deprived academic settings and non-availability of avenues for own professional development, the investigator-cum-teacher educator registered for MOOCs offered by leading universities for own CPD and for resource mining for compilation of useful content related to the Bachelor of Education programme for adaptation and use in own classroom. Since 2016, the investigator had been regularly adapting and utilizing MOOCs employing an eight step process: 1. Exploring MOOCs available 2. Identifying MOOCs related to content assigned to teach 3. Accessing the MOOC either by paying the prescriB.Ed course fee which aids in own CPD or accessing the content in the free audit mode. 4. Compiling useful MOOC course content which includes reading materials, PowerPoint slides and videos 5. Relating the compiled content to the B.Ed syllabus assigned to teach 6. Refining the material to suit student teacher level and need 7. Transacting the compiled and refined MOOC content. 8. Reviewing the usefulness of the material transacted through informal interviews with student teachers and review of course-end performance. This is more or less akin to the phases in the choosing of teaching and learning resources proposed by Bušljeta (2013) which included the first phase of selection and initial evaluation, the second phase of presentation and interpretation and the third phase which involved final evaluation.

The population comprised student teachers pursuing the two-year Bachelor of Education (B.Ed) course offered by universities in Kerala State, India. The sample comprised student teachers in government-run colleges of teacher education pursuing the English optional (B.Ed) Course, where the investigator-cum-teacher educator served as faculty. The student teachers were in the age group 22 and 26 and were top scorers for their Post Graduate and Under Graduate courses and a majority hailed from a low socio-economic background.

Data for the study was collected through informal interviews and course-end performance in both theory and practical examinations. From the commencement of the B.Ed course, the student teachers were invited to a specially created WhatsApp group for ice-breaking, connecting with peers, to share select multimedia digital resources related to the B.Ed course, to continue instruction in a blended mode, engage in collaborative tasks and develop a community of learners. The use of a sustainable tool like WhatsApp was deliberately chosen to cut down on use of print related materials, continue instruction with minimum utilization of environmental resources. Then, the investigator attempted a participant observer Action Research with scope for feedback and revision of choice of instructional materials based on usefulness from 2015 to 2019. When
the Covid pandemic led to the closure of colleges of teacher education, and immediate shift to online instruction, drawing on previous experience of adapting and using MOOC content, the investigator transacted select content of the B.Ed syllabus to a batch of English optional teacher trainees exclusively through WhatsApp in a synchronous and asynchronous mode.

**FINDINGS**

*Problems identified during compelled Online pedagogy in teacher education (Lessons from Covid-19)*

For decades, teacher educators have been teaching in the face-to-face mode and had no prior experience of teaching Online. The Covid-19 compelled virtual training necessitated the availability of a plethora of digital resources and compatible digital tools for transacting the content. This required a familiarity with sources from which digital resources could be mined and also the skill of adapting the mined resources to match the instructional need of the learners and the instructional goals of the B.Ed programme.

Experienced educators know that teaching skills are best practiced through modelling by the teacher educator, followed by student teacher imitation and refining through supervision in the brick and motor classroom. But the abrupt shift to virtual training created a lacuna in the training programme and teacher educators did not know how to make up for this loss through virtual training where student teachers were geographically isolated but connected synchronously. This led to improper transaction of procedural knowledge by teacher educators.

Practising teaching skills such as the skill of questioning, stimulus variation etc. and the important ability to manage a classroom requires children in the classroom. But with schools shut, when it was decided to replace actual classroom teaching with online peer teaching, teacher educators were unable to properly assess the ability of student teachers to manage a class. More significantly, student teachers had to be familiarized with online assessment practices.

The student teachers had no prior experience of learning online and in most cases limited internet accessibility and the rising cost of getting a high-speed broadband connection, brought affordability issues to the fore.

Parental job loss and the financial constraint that followed, negatively affected the fulfilment of physiological needs of learners.

The implementation of quarantine, restriction in movement, absence of campus life, inability to meet peers and engage in regular outdoor activities began to affect the mental wellbeing of student teachers.
DISCUSSION

In 2018 and 2019, when the state of Kerala was ravaged by flood, the educational institutions were shut in order to accommodate families affected by the flood. When the Covid pandemic struck in 2020, colleges of teacher education too were indefinitely shut. High levels of performance with clear vision of teaching are expected learning outcomes of teacher training programmes aimed at delivering quality instruction. Closure of educational institutions resulted in loss of allotted instructional hours. During the indefinite closure of colleges of teacher education, reaching out to student teachers, transacting relevant knowledge and skills necessitated identification of appropriate online tools and strategies. Here, the strategy employed by the investigator-cum-teacher educator to use WhatsApp for face-to-face and blended learning for connecting with students and teaching in the flipped class mode utilizing MOOC content turned out to be extremely useful to continue education. Incidentally, Hew (2014) following a study of three top rated MOOCs across disciplines identified features that promote student engagement which includes among others instructor accessibility and passion and the use of helpful resources.

The investigator drew on decade long experience of teaching with technology for transacting the B.Ed syllabus using WhatsApp. Studies have shown that teachers who were experienced in technology and used it frequently beforehand, could easily adapt to distance education. (Alea et al., 2020)

The investigator had attempted to identify appropriate digital tools and strategies for transacting different kinds of knowledge. And for adapting content the investigator had broken down content into small digestible chunks and delivered in small doses. Those who attempted to teach online have suggested that instructors should not plan delivering their normal length lectures as students may lose focus and turn away from the class. (Arnaud, 2020)

The use of WhatsApp as a tool for synchronous and asynchronous learning was not only novel but addressed the issue related to affordability which many student teachers were facing. It has been found that the understanding of ICT and the criterion employed for selecting ICT will directly affect the process of implementing distance education. (Jatileni & Jatileni, 2018)

Using the mined resources, activities for individual work, group work and week end tasks were integrated with video related tasks for instructional purposes. The flipped class mode was also used occasionally. The teacher’s role in online teaching has been studied by several researchers. A study by Lyons as early as 2004 found that the greatest responsibility of teachers is in making the course interactive and an exciting experience.

Teaching online after an informed identification of physiological needs of learners was absolutely essential particularly during the pandemic when lower levels of motivation were beginning to affect not just transaction of the content of the B.Ed syllabus but also the wellbeing of student teachers. The use of a sustainable and affordable digital tool like WhatsApp to continue online...
instruction, the 24X7 connectivity and scaffolding by the teacher educator particularly during the pandemic created a positive impact on student learning.

The use of adapted high quality MOOC content benefited the student teachers tremendously and to a great extent enabled the teacher educator to realize to an optimum level, the learning objectives of the teacher education programme.

Limitations

There are limitations to the present study. The sample size is small and so generalizing the findings of the study is not fully possible. Further, data collected for the study is qualitative in nature and how exactly individual learners benefitted from the instruction couldn’t be identified through rigorous statistical analysis of scores obtained by student teachers. Face to face interviews with learners to identify the real nature of learning difficulty if any felt by individual learners, such as forced sharing of learning devices - smart phone and laptop with siblings was not possible owing to the Covid-19 imposed restriction in travel and prevailing social distancing norm.

Implications

Providing professional development opportunities for teacher educators to mitigate the challenges which they experienced in delivering remote instruction is essential. To address the digital divide and issues related to accessibility and affordability, authorities have to make available free or subsidized internet facilities and supply learning devices such as tablets and laptops. Philanthropists too could step in and provide financial assistance to help the education sector to tide over the crisis. Further, institutional leaders may adopt strategies that basically address Maslow’s hierarchy of needs with relation to the education of not just learners but teachers too especially because pay cuts were implemented in several educational institutions during the Covid pandemic.

Future Research

It has also become imperative to conduct research and identify best practices in virtual training in teacher education. Specific area focussed research on online pedagogy, developing a community of learners, identification of alternatives for field experiences such as virtual practice teaching, sustainable teaching methodologies, and ways of addressing the wellbeing of teacher trainees may be attempted. Even the scope and usefulness of utilizing MOOC content for teacher education programmes is worth exploring.
CONCLUSION

The study has identified the nature of challenges faced by teacher educators and student teachers and proposed strategies for continuing online teacher education during the pandemic, using a sustainable tool like WhatsApp. When educational institutions were closed during the Covid-19 pandemic, teacher educators in particular, found certain intricacies in transaction of the syllabus of Teacher Education in the virtual mode. Drawing on own decade long experience of transacting select content of the B.Ed course through online digital tools, the investigator attempted to teach student teachers using an affordable and sustainable tool like WhatsApp. Though a few suggestions are made they cannot be blindly implemented as individual learner background, teacher educator competence in using digital tools and resources vary widely. Yet, the pragmatic approach proposed can be perceived as practical solutions for teacher educators struggling to cope with virtual training owing to the prevalence of the Covid pandemic even during the current academic year 2021-2022. Perhaps it would only be appropriate to conclude this write-up by quoting from the United Nations Policy Brief (2020):

“... the education disruption has had, and will continue to have, substantial effects beyond education...Governments and stakeholders should build resilient education systems for equitable and sustainable development...remove barriers to connectivity ... strengthen the articulation and flexibility across levels and types of education and training”.

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EDUCATIONAL SUSTAINABILITY – HISTORICALLY LINEAR PERSPECTIVE AND ITS TECHNO FADS IN REALITY

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EDUCATION IN THE ANCIENT CIVILIZATION

“The aim of education is gaining knowledge, not of facts, but of values” –William S. Burroughs. This is not new. A Sumerian maxim also ascertains that "he who would excel in the school of the scribes must rise with the dawn."

Several forms of writing systems evolved in ancient civilizations around the world from 3500 BCE. Proto-Sinaitic, the earliest known alphabet, is considered to be the shared ancestor of the Ancient South Arabian script and the Phoenician alphabet. This cleared the path for the current alphabets, notably the Greek alphabet, to emerge. Other scripts that were used include the Chinese oracle bone script, Pre-Columbian writings, and Mayan scripts from the third century BC, followed by Sumerian scripts.

Roman education was modeled after the Greek system. Ancient Rome's educational system evolved from an informal, family system in the early Republic to a tuition-based system in the late Republic. Greek slaves or freedmen served as private instructors. The Romans' methods and curricula laid the groundwork for subsequent Western civilization's educational institutions. After the Punic Wars, the ancient Roman system of education directed by the paterfamilias was destroyed. The Romans laid the groundwork for the new educational system, as did important Greek and Hellenistic centers of study such as Alexandria. Thus, was born and established a literary educational system.

THE WESTERN WORLD'S HIGHER EDUCATION HISTORY

Since the dawn of civilization, education of governing, religious, and military elites has existed. The system that we now refer to as a university dates back to the medieval era. Universities began in Bologna, Italy, and in Paris, France. Students from around the Western world were to be honored by the presence of William of Champeaux, the Paris archdeacon who subsequently instructed at St. Victor. Williams' protégés were Hugh of St. Victor, Bernard of Clairvaux, John of Salisbury, and Peter Abelard.

These universities' success paved the groundwork for the establishment of institutions like Oxford and Cambridge. They were crucial to the "late Middle Ages intellectual debates." Similarly, universities sprung up during the next centuries in France, Italy, Spain, Portugal, and Germany. Universities offered a diverse range of academic programs and staffed them with specialized research faculty. Additionally, it opened the path for the establishment of state-funded/regulated...
institutions. Once acknowledged effective, these evolutions were reproduced throughout almost all Western institutions.

INDIA'S HIGHER EDUCATION- PAST & PRESENT

India's oldest educational institutions placed a premium on Vedic education. The ancient Indian Gurukulam System transmitted the teachings orally. Education was viewed as a continuous process throughout a learner's life. The education process consisted of three steps: Shravana (hearing) – acquiring knowledge through listening to the Shruts; Manana (reflection) – forcing students to think, analyze, and draw inferences – critical thinking skills; and Nididhysana – teaching students to apply the knowledge in their daily lives.

Following them were educational institutions like Nalanda, Takshashila University, Vikramashila University, Valabhi, Somapura, Jagaddala, Odantapuri, and Pushpagiri. Historians think that these institutes mirrored the much later European medieval colleges. The early education system in India rapidly deteriorated as a result of crusader invasions, resulting in widespread chaos. Islamic influences dominated traditional learning institutions, and the Indian education system encompassed the subjects of Geography, Administration, Law, and Arabic Mathematics. The British created a systematic system of higher education, and additional subjects such as languages, literature, history, and philosophy were added.

The primary objective of these educational institutions was to produce English-speaking working-class individuals for the British administrative services, army, and commerce. British cultural colonialism opened the path for university education in India, originally through the East India Company, then through the British parliament, and, finally, directly under British authority. The British East India Company established some schools of higher study, such as the Calcutta Madrasa/Aliah Madrasah in 1781, the Asiatic Society of Bengal in 1784, Banaras Sanskrit College in 1791, and Fort William College in 1800. Through the Charter Act of 1813, the British Parliament recognized Indian education to be one of the state's responsibilities. The same legislation authorizing missionary activity in British India also resulted in the creation of the Serampore College of Evangelism in 1818.

Lord Macaulay's contentious Minutes on Schooling (1835) revealed his mindset and advocacy for a Western approach to knowledge over our Oriental education. In 1857, the first three recognized universities were established in Bombay (Mumbai), Calcutta (Kolkata), and Madras (Chennai). These universities were inspired by the University of London and emphasized English and the humanities.

Even after 77 years of independence, India remains a long way from achieving universal literacy. It is abundantly clear from the number of unemployed graduates that the quality of higher education has yet to be improved. Higher education portals have evolved into a potent instrument for establishing the knowledge-based information society of the twenty-first century. However, the history of modern instructional technology is littered with unfulfilled promises. The first
component that must be addressed is a lesson in awareness or a theoretical debate. The second is to employ education as a means of attaining sustainability. While some educators say that the word "for" implies indoctrination, others believe it implies a goal. The reality is that all education is necessary; otherwise, a community would not invest in it.

Higher education's with technological fads such as overhead projectors, slide projectors, reading accelerators, B.F. Skinner's "teaching machines," film strips, instructional television, videotapes, multimedia CDs, Second Life, PowerPoint presentations, chat rooms, and clickers have attempted to change the pedagogy in education and the influence was highly evident during the lockdown. Covid 19 caused a stir among educators and forced most of them to adapt and get adept. Despite the superseded activeness in technological innovations, some setbacks such as data security, privacy concerns, social isolation, work overload, manipulation of digital media, job insecurity, plagiarism and copyright, fake personas, excessive reliance on gadgets, addiction, second-hand living, organization and storage, longevity, and social alienation are rampant, and the need for a bulwark was discussed via webinars.

Given this background, even the most common intellect is skeptical. Is today's tailored adaptive software, virtual and augmented reality making a difference in terms of education and daily life sustainability?

That is not the case, since technology must be applied differently. Technological aid must improve the quality of inquiry, foster cooperation, foster experience-based learning, and, most importantly, provide students with an opportunity to develop projects through human contact and get substantial feedback.

Formal and informal education are effective when learning techniques such as value-based indicators, active learning using pictures and objects, social innovation, and Looking for Likely Alternatives (LOLA) are used. These are now the most desired aspects of a sustainable way of life. Parental engagement is regarded as troublesome for any educational institution's long-term aims and mission. Behavior difficulties, low self-esteem, and language users are all deemed problematic.

English is extensively utilized, except in a few regions, for Web content access. The Indian government previously took steps to make low-cost tablets available to Indian students and instructors, according to a 2012 Press Information release. However, a project serving a big student population is inherently complicated.
EDUCATION FOR SUSTAINABLE DEVELOPMENT

“Education for sustainable development must be centered upon the development of an individual’s knowledge, skills, understanding, and values and, actions required to create a sustainable world that rests upon environmental protection and conservation, social equity and, encourages economic sustainability.” Agenda 21 of United Nations Conference on Environment and Development (also known as the Earth Summit) in 1992 outlines educational sustainable development as quoted above.

It must be developed with an interdisciplinary and holistic institutional perspective in mind. Values and principles should be shared, critical thinking skills should be developed, problem-solving skills should be confidently honed, and educational methods, particularly reading theatre techniques found in literature, arts, drama, and debate, should expatiate the processes with students and generate innovative and creative fruitful thoughts that could be incorporated into the design of a curriculum.

However, when it comes to the pedagogical approach (which is always based on Bloom's Taxonomy), a new paradigm shift toward active, participatory, experiential, and exponential learning approaches is emphasized for educational sustainability. It must interest the student and significantly improve their comprehension, reasoning, and capacity to act.

A skilled workforce is a necessary component of every rising economy. “It is crucial to connect skills learned through Higher education and the learned skills must connect and be relevant to the aspirations of the society” (Future of Jobs, 2016). The growth in information technology raised the demand for technical courses during the previous few decades, resulting in a supply-demand imbalance and a large number of unemployed competent students. The gig economy sector anticipates a mix of subject expertise in research, technology, social science, analytics, and finance. However, due to specialization, no field is self-contained. (2015, New Vision for Education).

CHALLENGES IN THE CURRENT INDIAN HIGHER EDUCATION SYSTEM

The challenges confronting today's colleges and universities are not new. Yale's 1828 report on higher education was the first of its type. It was sometimes misinterpreted as a justification of a limited and dormant classical curriculum. The study proposed an alternative to the religious and classically based curriculum through vocational education. While the student body of higher education has become increasingly varied, the main goal of colleges has deteriorated. The doctrine in the loco parentis concept has become outdated.

The majority of institutions have a fragmented curriculum that places little emphasis on assisting students in identifying a vocation or prodding their aesthetic, ethical, and intellectual dimensions of social development. India relies heavily on high-tech sectors to drive the country forward, from vaccine production to computers and their associated peripherals. Academic freedom is valued, and the burdensome structure should be simplified. Youth make up just 10% of students enrolled...
in India's higher education websites, indicating a lack of uniformity. Eventually, none of India's institutions will be able to maintain a stable position at the top.

According to Albert Einstein, "Everyone is a genius." However, if you assess a fish only based on its ability to scale a tree, it would spend its whole life feeling that it is stupid.” The Indian higher education syllabi aren’t self-sufficient in preparing the students for the world of skilled labor and increased salaries. The disparities in a student's ability, aptitude, and interest, along with societal demands for expertise and specialization, as well as standardized testing, have created a lacuna between the elite and non-traditional student communities.

David F. Labaree has claimed that the fundamental characteristics of higher education are their diversity, decentralized nature, and relative lack of central coordination. The higher education ecosystem has become distorted by the proliferation of institutions – academies, schools, engineering institutes, research universities, liberal arts colleges, religious colleges and universities, and community colleges – each with its own distinct identity, mission, student profile, donor base, and business strategy. However, there is cause to be concerned about the rankings, the quest for prestige, and the competition for emulation, which have harmed the capacity of many schools and institutions to adapt to India’s unpredictable environment. Academic independence and academic sustainability are sacrificed to get an IRP (Institutional Rating Point). Numerous established institutions in India have broken free of the constraints that have characterized higher education for the last century. They have even attempted to fundamentally reimagine curriculum designs, class schedules, and the academic experience in general. However, this could only be accomplished via autonomy. This is not just due to fear of losing status, but also due to inertia, entrenched interests, and emerging technology.

Over the last century, works such as Higher Education in Crisis (1995), The Education Crisis (1988), Campus Unrest (1970), The Big Squeeze: Campus Crisis (1946), and Crisis on the Campus (1946) have been published and witnessed (1900). However, the concepts have been shelved.

As economist Irwin Feller has indicated, the critical question is whether this time is different or whether the convergence of certain variables has fundamentally jeopardized the viability of higher education. Tuition and institutional costs have increased at an alarming rate. The complete intellect of the learner is at risk. Due to uneven economic sustainability, familial debts have grown beyond their repayment capacity. Alternative sources such as part-time work and political objectives threaten higher education's monopoly on educational credentialing in unprecedented ways. India's first-generation learners and the poor have received exposure but have been unable to maximize their use of the resource due to a variety of impediments.

It is unavoidable to have trust when one advances in any subject. Similarly, reminiscing shall be regarded as naive. Neither colonialist nor declension histories adequately portray the history of Indian institutions and universities. It is because higher education has historically been more institution-centered than learner-centered. The previous style of education stressed memorization and even corporal punishment or humiliation was used to motivate students to
achieve. This subsequently became centered on talks. Simultaneously, it resulted in the establishment of specialized, professional, and departmentalized faculties. Regrettably, the consistency with which information and knowledge were acquired in the past has resulted in a generation of passive pupils who reflect quantity rather than quality. Numerous schools and universities view students as consumers who should be aggressively recruited and handled with care. Some have adapted to industrial manufacturing processes. However, a learner-centric approach is necessary for the current climate. Student/stakeholder involvement and dedication to mastery in creating curriculum, learning and engaging experiences, introducing pedagogical approaches and modalities of delivery must thrive and be centered on the mentor-mentee connection.

However, full-time teachers and administrators have shirked their responsibilities at the price of students' educational requirements. Typically, curricula, timetables, pedagogies, assessments, and workload regulations reflect a department’s vested interest rather than what we know about teaching and learning, students' developmental requirements, or the problems confronting today's expanding population of non-traditional students.

It reaffirms the need for ongoing innovation, experimentation, and a holistic approach to student development. Today, the student population’s fastest-growing groups include non-traditional students: low-income students, full-time employees, working adults, parents, and those pursuing continuing and professional education. Higher education should strive to adapt to suit the requirements of students who are markedly different from their forefathers.

Significant concerns include changes in the composition of the student body and student discontent. Extracurricular activities have become popular in response to varied physical and mental needs. Students founded and ran fraternities and sororities, competitive athletics, literary and debating clubs, and other organizations. However, these eventually fell under the institutions' jurisdiction and supervision.

As a result, the emotional, social, and intellectual growth of the student is jeopardized. Colleges were positioned as the primary vehicle for individual progress, upward mobility, economic prosperity, and social fairness in society. However, it has not yet accomplished the objective. Regrettably, the majority of schools/colleges were not built with non-traditional students in mind, particularly those from low-income and marginalized groups. This is exemplified by the difficulties encountered by students during the covid 19 lock downtimes. Numerous schools/colleges continue to provide an education that lacks the flexibility and support mechanisms required of many non-traditional students. Meanwhile, the fastest-growing sector of the market continues to be neglected. It has been established that a country's total growth is mostly determined by its people and resources., Education must play a crucial role in molding individuals and a critical role in technical advancements, and the transmission of diverse occupational skills, values, and awareness. It was formerly believed that increasing a country's literacy rate would result in a lower
unemployment rate and faster GDP development. However, it necessitated a reversal of the natural order of things.

RECENT INITIATIVES BY THE INDIAN GOVERNMENT

While recent government initiatives in policy and execution represent a sea change in the sector, a huge leap to the forefront is necessary.

AISHE, GER, RUSA, UGC, Unnath Bharath Abhiyan, MOOC platform, GYAN, ATAL, NAAC, annual national high ranking accredited institutions as Category I institutions, inter-disciplinary experiential active learning (IDEAL), and the mandate of Ph.D. qualification are all examples of how the government has a direct and broadened impact on the operations of educational institutions. However, complications exist in the permission, affiliation, academic, and accrediting processes of the higher education system (Agarwal, 2006). It is believed proper education eliminates crime, poverty, unemployment, and sickness. It positively promotes peace and prosperity in a society. Nations have highlighted the value of education, and one of the Millennium Development Goals (MDG) is to ensure that all children get an adequate basic education. However, the consistency is in the disjunction. Apart from promoting GDP growth via education, the new implementations should also prepare students to be self-sufficient.

India's capacity to embark on a road of success would be highly dependent on its understanding of human capital. Due to the magnitude of the obstacles, it is critical to pick proven tactics that result in genuine, harsh, and long-lasting effects. While recent government measures are to be applauded, their implementation must be hastened. The contemporary competitive economy, worldwide demand, and environmental issues necessitate studies. This would ensure that Indians have a foothold on the global market, enabling our country to become a developed nation in a shorter amount of time. The five traits needed for youth empowerment are Education, Excellence, Employment, Entrepreneurship, and Export. If funneling and efficacy from government, public, private, and international sources is in vogue, it shall accelerate a nation’s prosperity and escalate a nation’s individuality.

Education must foster students' views toward farm production, health, construction, the environment, vocational training, and moral values. It must assist students with a transition in their lifestyle with a minimal impact on their present habits. To err is human, and it is necessary for education and experimenting, yet erring results in a terrible way of life and a chaotic society. Let education be founded on Baconian experimentation—the truth is discovered empirically and inductively—which liberates us from all mimetic isomorphic clutches. It must foster an overall informed and sustainable mentality that is more concerned with the welfare of others than with self-interest. The education process practiced during the Gurukul system without any form of bias might help the students to get them incorporated into the innovations claimed by the Western World in the education sector and thereby create sustainable living.
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INTRODUCTION

To have the privilege to thrive on a wondrous planet for generations together, seventeen SDGs were adopted by all UN Member States in 2015. When we examine these goals, we notice that they are interconnected, and action in one area will affect the outcomes of others. The most important action area is undeniably goal no. four - ‘quality education.’ The identified goals have their roots deeply embedded in the ‘Declaration of the United Nations Conference on the Human Environment,’ 1972 Stockholm. It provided the first agreed global set of principles for future work in the field of the human environment, and out of the 26, ‘Principle 19’ stresses the need for ‘education in environmental matters’ to ensure responsible conduct. If we are determined to achieve the goals by setting up an ambitious deadline, then we must revamp our education system first. In connection with quality education, it has been rightly advised that “by 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and culture’s contribution to sustainable development.” The focus of education should be to inculcate values that would train children to appreciate the limits and remain committed to the needs of others. Proper dissemination of knowledge and sensitization of future citizens may not reverse the incalculable damage caused to the planet through human developmental activities. But it would surely result in the prudent implementation of eco-friendly technologies in future, which would not cause harm to the world, society or the denizens.

PURPOSE OF STUDY

When we scan the internet, we find an unimaginable repository of articles on sustainable development. We have the data staring in our face that force us to take note of the impending threat. (increasing population, depleting resources and degradation of the environment). Therefore, we have strategized our plans, amended laws and policies and circulated a universally accepted framework for a sustainable world in the form of SDGs. Even the NEP 2020 is in alignment with the objectives of SDG (goal 4), aimed to bring a transformation in the education system. It is of utmost importance that we start addressing the pressing issue with prudence. Before we familiarize students with the concept of eco-consciousness, it is important to nurture

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their values first, bring about a change in their attitude and enable them to comprehend existence as co-existence at all levels.

**METHODOLOGY**

Four case studies were chosen to analyze the behavioural changes observed among school children in India when introduced to a sustainable way of life through experiential learning. The empirical research was conducted with the help of secondary resources, primarily the websites of the schools, NGOs and research materials. Given the limitations of time and pandemic situation, it was not possible to independently verify all the information available on the web by directly contacting the schools in all the cases.

**THE EDUCATIONAL SCENARIO IN INDIAN SCHOOLS**

**The Past and the Present**

The modern education system that was brought to India in 1835 by Lord Macaulay, made the students a part of a cut throat competition without actually imparting any practical skills and life lessons. There was a total absence of personal grooming, ethical training and creation of moral conscience. It was a fallacious system where students were pitted against each other to prove themselves better. Instead of transmitting a balanced holistic education, it aimed at the commodification of knowledge. One cookie cutter to shape all students and transfer information (knowledge), irrespective of their needs, personalities, life perspectives and career goals! We are still in the very early stages of educating our young people on all values of life, mindfulness, culture, and harmony. However, the latest changes made in the Education Policy 2020 is a balanced combination of academics and extracurricular for the overall personality development of a child. The Government has said that under the NEP 2020, traditional Indian values including *nishkam karma* and *seva* selfless service would be included in the school curriculum.

**Environmental and Sustainable Development Education**

The goal of EE is to motivate the young to think green and develop a sustainable mind. The Honourable Supreme Court of India in 1991 made environment education compulsory at all levels of education. According to the order, every educational institute must educate each Indian student about the importance of the environment and sustainability. The NCERT framed the curriculum that served as the guideline to develop textbooks for schools from 2004-2005 onward. The introduction of these topics is key to addressing India’s many ecological problems (polluted air, contaminated water, lack of sanitation, etc). Apart from restructuring the curriculum, it is important to equip the teachers with adequate training and take lessons beyond the classroom. Dr Biswajit Saha, Director (Training and Skill Education) at Central Board of Secondary Education (CBSE) emphasised on sensitising the teachers to take the message of sustainable development to students. He acknowledged the magnitude of the problem, saying that there was no awareness about SDG’s or sustainability even among the school teachers. “Only about one lakh
teachers knew about ESD or SDGs out of the 11 lakh teachers in CBSE,” he said. Various NGO networks, including the Centre for Environment Education (CEE), in partnership with different academic institutions, carry out teacher training in EE. However, inflexible and overloaded curricula, time constraints and a conventional approach to teaching are roadblocks in the integration of SDE. It is yet to gain momentum.

CASE STUDIES

Case study 1: The Free School Under the Bridge.

It’s a private school adjacent to New Delhi.

What they do

Pupils tend to a medicinal herb garden, make bags from discarded newspaper to supplant plastic ones and gain hands-on experience on a sustainable way of living.

Outcome

They impress upon their parents to conserve electricity and water. “They are going to grow and become professionals, leaders, so if you ingrain these principles when they are a kid, I’m sure it stays with them,” says Anumita Roychowdhury, research and advocacy director at the Centre for Science and Environment in New Delhi. While it is hard to quantify the impact educating young people has on the environment, sometimes the results are clear, says Roychowdhury, of the Centre for Science and Environment. Children in the 1,000 schools her group works with have learned how widespread firecracker use on the Hindu festival of Diwali worsens already toxic air pollution in many cities. “It’s a religious event, it’s a social event,” she says. “These things have to be done through awareness.

Impact

The kids have gone and told their parents, ‘We are not going to do fireworks.’ So that’s where you really see change.”


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3 https://indiacsr.in/call-for-integration-of-education-on-sustainable-development-in-school-curriculum/

4 https://www.smithsonianmag.com/arts-culture/india-teaching-300-million-kids-sustainability-180956494/
Case Study 2 Teach for Green, a not-for-profit organisation: the DIY approach

In the year 2016, ‘Teach for Green’ was started by three friends Ajay Kumar, Abhishek Chanchal, and Pratibha Baveja. They aim to sensitise students about environmental issues in their community and encourage them to think of unique solutions. The children will learn, and at the same time, implement solutions to solve practical problems.

What they do

The organisation asked students to bring in used plastic bottles and other discarded plastic products from their houses. These items were upcycled and used as accessories for gardening, pen stands, and house decor, among others. They are not only teaching students how to make solar lamps and torches from discarded waste to creating awareness among urban and rural communities on environmental issues, Teach for Green is educating the youth to go green for a better tomorrow.

Outcome

This activity led to a sharp decline in plastic consumption in every student’s home. According to the organisation’s survey, the plastic waste generated from each home came down from 450gm to a mere 220gm.

Impact

The impact was seen in all the 1,200 homes of the students who had attended the workshop. They minimized the use of plastic and regenerated the plastic waste.

Case study 3: CEE Centre for Environment Education

Urja Chetana is an environmental sustainability education programme being implemented for generating awareness and actions amongst students, teachers and the community about the environment and sustainable development. CEE East is implementing the Urja Chetana programme since 2012 supported by Calcutta Electric Supply Corporation Limited (CESC Ltd.) as part of their CSR initiatives. The programme has been implemented in around 50 government and private schools till now in and around Kolkata through eco-/energy clubs. What they do The programme provides a platform to the schools to undertake action projects through community outreach, helping children to share and expand their understanding, thereby bringing about change that has significantly reduced wastage of energy, rainwater, manage waste and nurture plants.

5 https://teachforgreen.org/
**Outcome**

The students propagate their knowledge gained under the programme to the nearby communities by conducting series of community outreach and awareness campaigns, rallies, clean-up drives, tree plantation with senior citizens etc on the issues related to environmental conservation.⁶

**Impact**

Through the action-oriented learning, students have emerged as *change agents* and contributing towards the attainment of a sustainable world.

**Case Study 4: Swarovski water school**

The main objective for Swarovski Waterschool India is to ensure sustainable water supplies while educating schoolchildren on water conservation and environmental protection. Students in grades six to eight participate in five-day learning programs and have the opportunity to participate in workshops at the National Chambal Sanctuary. They believe global water challenges must be addressed by empowering children with the knowledge and resources they need to lead change.

**What they do**

The Swarovski Waterschool Program follows three interconnected core principles that focus on educating children and communities on sustainable water management, sanitation and providing water and sanitation facilities. It is also working to create teams of “Young Environmental Leaders,” who would engage with communities for sustainable projects, and to generate small-scale solutions for local water supply and sanitation facilities.

**Outcome**

The students recognize the importance of water. They train classroom teachers to empower children with the knowledge and skills necessary to take local actions and improve local environments. The students become agents of change in school, their families and communities.

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⁶ https://www.ceeindia.org/education-for-children
Impact

It has empowered the students and teachers to share important messages in the community and beyond. Its success demonstrates how the power of education can transform lives and tackle environmental issues.\(^7\)

The above case studies point out the fact that there was a remarkable behavioural change and shift in the perspective of children who were familiarized with the problems and asked to come up with solutions.

CSR AND SUSTAINABLE DEVELOPMENT AT CORPORATE LEVEL

At Corporate level in India, Corporate Social responsibility was made mandatory legally under section 135 of the Companies Act 2013. It was an attempt to redirect the economy-driven developmental model towards an equitable one that would strike a balance between societal needs, economy and the environment. The corporate undertake various activities for the wellbeing of society. They act responsibly towards the company’s shareholders as well as all other stakeholders by integrating environmental and societal concerns with business operations. The future should hold promise with the efforts that are being put in all possible sectors.

Unfortunately, according to a report published in EconomicTimes, India, some companies are using on hire, charitable trusts to fabricate CSR spending, at least two sources who have helped craft and execute such transactions said. They spoke to ET on the condition of anonymity.\(^8\) The statutory corporate social responsibility (CSR) norms introduced two years ago were expected to revolutionise funding of social causes, but some sections of India Inc may now be abusing these for laundering of black money, according to sources privy to such transactions. Value crisis is one of the major reasons for the failure of CSR.

CHALLENGES AND FUTURE DIRECTIONS

I was in the middle of my “Human Values and Professional Ethics” class, updating the 2\(^{nd}\) year engineering students about the core responsibilities of professionals. I told the class that a professional practitioner should contribute first towards the development of the environment, the society and the stakeholders, his organization and himself. A young boy got up and pointed out that nothing as such was ever told to him in his formative years. He further told that he was always (mis)guided to focus on his goals, to secure a seat in some prestigious College with a good

\(^7\) https://www.swarovskiwaterschool.com/locations/india

placement record. Here I was preaching selflessness to someone who has been always taught to be selfish throughout his school life! It’s not a stray case. Often students question me, why all these things are not taught in schools? I have no answer. Children are often asked to ‘submit’ projects in the name of Environment Education and they scurry to the Humanities department with the project files unsure of who to submit! To cut the long story short, amendment of laws, revision of policies, opening up new departments, enforcing eco-consciousness into school and college curriculum will die their natural death if there aren’t honest people at the helm to implement them. We cannot ignore the fact that in Indian school’s science subjects like physics, maths, chemistry prevail over social science subjects. In management schools and other higher institutions, the scenario is not very different. This is primarily because it is not linked to employment. In India, the technical colleges and medical schools have revamped their curriculum to meet International standards but teacher training colleges are stuck in a time machine going back 20 years or even more. How can we expect a change in the perspective of the educationists if they have been trained through the rote method? If we are serious about attaining our SDG’s then we must focus on schools first and students must be made stakeholders in the process of social responsiveness. There should be a change in the technique of teaching a subject. The teacher must know how to ignite young minds who are the repository of innovative ideas and instead of cramming them with bookish knowledge they should be redirected towards ‘DIY’. Educational institutions are the laboratories of ideas and self-learning must be encouraged at any cost.

We need to reflect upon the following:

I. There should be a perfect balance between academics and co-curricular activities. Physical education and value-based education should be made an integral part of the curriculum to enhance the intellect and personality of the students. Value-based Education has now been made a part of the New Education Policy. The five universal values specifically mentioned are “Truth, Peace, Non-violence, Love, Righteous conduct”, based on previously identified values in other government reports. The sixth core human value which must be added to the above is “sustainable conduct.”

II. We must aim at character building, and positivity should be given equal importance. The age-old education system rooted in ‘survival of the fittest’ sows the seed of animosity in young minds. It manufactures confused and insecure instead of confident and empathetic citizens. Can we expect them to ethically respond to problems when they have always led a cocooned life? The traditional Gurukul system practised in ancient times cannot be revived at present but the Gurukul system of a sustainable way of living can be incorporated into the present system. The teacher and the taught should share a friendly relationship as the bearing of a teacher leaves an indelible mark on the mind of the students.

III. There is no dearth of books or NGOs devoted to the cause. But the approach should change from learning to imbibing. If we have policies in place, then we must have also
morally conscious people who would rise to their levels beyond their self-interest. The CBSE has tied up with RK Mission to impart a holistic code of living through value education. Unfortunately, the implementation of the programme is voluntary. Unless it is made compulsory we may not be able to expedite the process of becoming and get desirable result.

CONCLUSION

Undoubtedly, in a country like India, it is a bigger challenge to provide education to all and check the percentage of dropouts. Such problems rarely have a single readily deducted solution. The renowned Irish poet William Butler Yeats wrote, ‘Now shall I make my soul/Compelling it to study/In a leraned school’. An environment has to be created to lure students to school. The mid-day meals aren’t enough! Apart from books, different art forms, drama, dance- ‘learning through doing’ strategies could be adopted to make lessons more interesting and create a life of enduring values. The New Education Policy has restructured the curriculum to plug in the problem and included subjects like ESD and VBE into the curriculum. What we need is right understanding and right feelings which would culminate indefinite human conduct.

We need to think, if we are creating professionals who can move people towards morally valuable goals? For the survival of this world, we need people who can think ethically and it is a fundamental part of judgement and decisions. An ethical decision is concerned especially with the quality of the decision – a collective responsibility towards the environment and society. And also towards those who would be affected by the decision. This responsibility needs to be balanced with the economic well being of an organization. The sustainable drive is neither anti-technology nor anti economy. We need to grow and flourish where there would be space for every living organism. We must strive to live in harmony at all levels-individual, family, society, nature and its existence. For this, a professional has to develop a personal value system where he wouldn’t conserve nature based on its usefulness but because animals, plants and other components do have a standing beyond it. Personal values cannot be separated from societal and organizational values as these are intricately connected. For, it impacts the comprehensive moral attitude of a person that helps him decide his ethically acceptable course of action. Therefore, we need to ‘catch them young’, sow green seeds in their hearts and nurture them with sustainable values. Then there would be ‘no poverty’, ‘no hunger’ and ‘quality education’ imparted through ‘peace, justice and strong institutions would create ‘decent work’ and promote ‘economic growth’. People would become conscious of ‘responsible consumption and production’ and take necessary ‘climate action’ to conserve ‘life below water’ and ‘life on land’. ‘Affordable and clean energy’ would give a green facelift to ‘Industry, innovation and infrastructure’. People would aim at ‘reducing inequality’ and attain ‘gender equality’. ‘Sustainable cities and communities’ would be provided with ‘clean water and sanitation’ which will result in overall ‘good health and well being’.

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https://www.swarovskiwaterschool.com/locations/india

INTRODUCTION

‘If we want to eliminate [students' personal characteristics], we’d have to become really impersonal. ... As courses become more impersonal and remote from human interaction and knowing who we are, it would be more difficult for [them] to succeed’ (Kramarae, 2001) - this is what a 45 years old female technology coordinator stated about her own point of view about online course. With the undeniable fact that mass education has to be shifted to online mode of instruction whether it will be still in the verdict of pandemic or not, there is no alternative of physical interaction in education. What is meant about ‘physical interaction’ is not only the classroom conversation and individual assessment but in the context of third world country it can go beyond the formal education system and a teacher might be engaged to educate her students about the uses of sanitary napkins also. It cannot be denied that educators play a pivotal role in shaping the community by teaching values that create a society and it is a continuous process. Now, due to pandemic with limited accessibility and resources, it is inevitable that there will be more difficulties to the students, particularly female ones. The devastating impact of pandemic on economy has forced people from remote location to lead a day to day life where survival is the main argument rather than luxury of educating their children. Female students from colleges often express the sense of leaving study and getting married as they feel they are now burden on their parent’s shoulder. ‘Personal growth and sense of community’ are often considered as key influences behind women’s participation in online education (Robinson and Ally, 2010). Sometimes their families are not capable of arranging proper support for them to study online. Also there are provisions for other challenges from the male dominated society where a female candidate can be considered sexually and objectified, which may lead her to absent her classes. Lack of female students’ participation in education system does not cater to the goal of sustainable education. In a plural society, members from all gender need to produce equitable rate of literacy to achieve social equilibrium. In many country institutional advocacy are seen to give basic education to their citizen whereas society need to give importance and enact to reduce social injustice in higher education process; so that there can be a future generation who believes in equality and fraternity. And to address the major space of social development education system from all over the world need to provide online accessibility to all its stakeholders and consumers without any discrimination. Only this can achieve a shared space of sustainable education.

The present study is based on these questions and argues between the participation of females in education and the accessibility of online education system with an objective to narrow down
the key factors so that it would be possible to address the emerging ratio of female dropout and develop a better online class environment.

MATERIALS AND METHODS

2.1 Nature of Study
The present study is a survey based qualitative study.

2.2 Samples

![Age Distribution Chart]

A total of 80 female students were chosen for data collection through simple random sampling technique from various colleges and universities of India. The age range of the samples was from 19 years to 32 years.

2.3 Tools used
For the purpose of the study a questionnaire on ‘Online Education: Participation of Female Students and Gender Equality’ in Google Form format was distributed among the samples.

2.4 Data analysis
The collected data was analysed through the Google Form Response Diagrams through qualitative method.

RESULT

**Km Table 3.1: Distribution of Samples according to Age**
From the table 3.1 it can be seen that the age range of the respondents is from 19 years to 32 years. Indicative participants were not consulted or intimidated about the purpose of the survey. Also the survey did not provide any kind of conditions that could manipulate their free will and freedom of expression. This survey was administered anonymously to avoid any kind of institutional influences.
Table 3.2: Proportion of Samples according to Habitat

<table>
<thead>
<tr>
<th>Habitat</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Area</td>
<td>60 (75%)</td>
</tr>
<tr>
<td>Rural Area</td>
<td>21 (26.3%)</td>
</tr>
</tbody>
</table>

Table-3.2 denotes that among the samples 75% resides in urban area and 25% resides in rural area of India.

Table 3.3: Response on Participation in Online Class

From table-3.3 it is clear that all the participants have attended online mode of education.
Table 3.4: Response on Feeling of Comfort in Online Class

From table 3.4 it has been portrayed that 75% of the respondents feel comfortable in attending online classes but 25% of the respondents do not feel comfortable in attending online classes.

Table 3.5: Response on Family Support in Online Education

Table 3.5 denotes that 83.5% families support online mode of education whereas 17.5% families do not support online mode of education.
Table 3.6: Response on Family’s Thought about The Future

Table 3.6 shows that 10% of the families think that there is no future left due to pandemic and that the girls should get married whereas 90% of the families think the opposite.

Table 3.7: Response on Feeling Domination in Online Class

Table 3.7 shows that 97.5% of the respondents did not feel any kind of domination in online classes.
Table 3.7 shows that 97.5% of the students have not felt any kind of domination in online classes while expressing their views or asking questions. But 2.5% of the students have felt domination while expressing their views or asking questions during online classes.

**Table 3.8: Response on Gender Equality in Online Class**

![Pie chart showing 60% Yes and 40% No for gender equality.]

Table 3.8 clearly denoted that 60% of the respondents feel that online classes support gender equality whereas 40% of the respondents feel online classes do not support gender equality.

**Table 3.9: Response on Gender Discriminating Comment in Online Class**

![Pie chart showing 97.5% Yes and 2.5% No for gender discrimination.]

Table 3.9 shows that 97.5% of the students have not faced any gender discriminating comment in online classes.
From table 3.9 it can be said that 97.5% of the female students have not faced any gender discriminating comment in online classes but 2.5% of the respondents have faced so.

Table 3.10: Response on Experience on Sexual Abuse during Online Class

Table 3.10 shows that 98.8% female students have not experienced any sexual abuse during online classes but 1.2% of the respondents have faced sexual abuse during online classes.

Table 3.11: Response on Wish to Continue Online Class

From table 3.11 it is clear that 81.3% female students wish to continue with the online mode of education whereas 18.8% do not wish to continue with it.
DISCUSSION

From the survey in can be seen while all the female respondents are participating in online classes from both rural and urban areas, significant number of them are not comfortable in online mode of education. The reason behind it can be unavailability of logistical support in rural areas, on the other hand the present survey shows that the students are not getting proper environment to study. These are extremely vulnerable situations where education becomes compulsion without self motivation. Previous studies have supported this fact that education system and provided lessons are not appealing to female students in comparison to male students (Farmer, 2008).

It can also be seen that a major part of the respondents who are uncomfortable to study in online classes are not getting support from their family. Significant family members feel that there is no future and their girl child should get married rather motivating them for higher education. While Robinson and Ally (2010) argued about the sense of community, the present study found that female students are isolated in education system as society feels that there is no use to educate them. Engaging to a conversation female students often use ‘references to others, self-reference, supporting references, and emotional discourse’ (Jaffe et al. 1999), but due to lack of cooperation they are forced to express their content as an idle one. These are the factors from family background from where they belong and there is no escape from this. In third world country, students are economically dependent on their parents and thus these thoughts have severe impact on their mindset. Also these might increase the dropout ratio.

There is another aspect where female students face the patriarchal domination in online classes where they are not encouraged to speak freely or to express their views. Previous researches have supported this fact that female students are likely to ‘initiate discussions and share information’ (Farmer, 2008) in online classes, but present study shows that there is considerable amount of negligence to encourage them. So, when they say that there is not enough gender equality in online lectures that means they are facing sexual discrimination either from the text or in the attitude of her fellow students and instructor. These leads to sexual abusive situations where another person takes the liberty to use discriminatory signs and languages without any fear as there is not enough physical evidence. In earlier researches, studies have argued about possibility of few factors like ‘sexist use of language, presentation of stereotypic views of women, and instructors favouring male students’ (Crombie et al. 2003) that can engage the educational atmosphere to harass a female student. The present study found these factors legitimate and respondents have ascertained to it. Having said that, cyber crime laws are now tightened enough to deal with these kind of situation but in practice, a grievance occurred in online class need proper record to produce. As it has been found earlier that there is lack of logistical and family support, most of them are reluctant to complain and simply leave the education system in silence. Thereafter, the present study shows that significant number of respondents who faced this kind of situation is not willing to continue their study in online mode. While there are many more reasons behind this, this study is focused to gender based experience and limiting its discussion to the facts indicating numbers.
Unwillingness of participation can be reduced by the age old practices by forcing law for compulsory minimum educational standard but that will not change the tendencies and attitude towards female stakeholders in the education system. One can find from the present study that after not getting proper environment, noncooperation from family members, institutional sponsored male dominated ambience, and sexually abusive experiences, female students have still participated in all the online classes. Though they are uncomfortable and might wish to get back to the physical classroom where they can confront ideas and presence of domination. With unreported and adjusted sequence of abusive experiences in online classes education system should address these hindrances to provide parallel value system to sustainable development. In order to achieve a developed and educated society education system needs to have certain sustainability that can postulate a redressal system where arguments from the present study can be debated.

**IMPLICATION**

From the present study, there is further scope to investigate the reason behind future dropout in online mode of education which is not limited to sexual harassment or gender based discrimination but to a broad area of engagement. This study shows only the indicative numbers of occurrence whereas in each and every online class, instructor or teacher should accept the responsibility to arrange proper value based atmosphere where not only female but all students should feel comfortable. Also, the government as well as institutions should feel to express the necessity of youth to be educated in online mode to the parents so that there can be a mutual understanding. In the curriculum students need to learn using self reference to communicate or engage to a conversation with fellow members. This will form a sense of identity which is not as isolated as virtual presence, and it will create an environment where students irrespective of gender will be able to evaluate and credit each other’s expression. The present study provides scope for future researchers to test all the possible intermediate hypotheses from beginning with unsupportive atmosphere to unwillingness in participation of female students in online classes. Also there is space for future academic investigation to evaluate each and every student’s process of participation to achieve the goal of sustainable education.
REFERENCES


HEUTAGOGY: AN APPROACH TO EMPOWER LEARNERS

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INTRODUCTION

In the world of technological advancement, superabundance of information & knowledge and digital & e-learning platforms, a person of any age group can enhance skills and competencies to adapt to meet personal, social, economic and professional needs. Since centuries, different conventional and formal educational techniques, such as andragogy, pedagogy etc. have been in practice to inculcate various life and career growth learning skills to survive in a competitive environment. In daily life, everyone comes across different opportunities to enhance their personal and professional skills. Many institutions conduct several training programs to equip their employees with transferable and innovative skills. COVID-19 and work from home culture has put pressure on every person to sharpen their soft and technical skills to cope up with digital changes. No doubt before COVID situation, technology had already been in workplaces but every employee or student is not well versed with digital capabilities. In earlier times, learning was primarily focused on primary, secondary and tertiary levels of learning and revolved around predetermined curriculum and formal classroom teaching. Even in organizations, people resist changes and innovative techniques rather than gaining new ideas and concepts. With development of technology, advancement and in the presence of dynamic environment, learning is not only restricted to formal way of education but can also be acquired from the environment in informal ways. Learning is a never ending process depending upon the aptitude and ability of learner. The 21st century educational pedagogy is basically a shift from passive learning to development of higher skills to meet the complexity of a fast changing world. Among all such learning methods, Heutagogy approach is the most relevant in a COVID – hit world as it enables people from all age groups to flexibly and independently gain knowledge in a complex, innovative, dynamic and digital world making them more capable and competent aiming at lifelong and formal way of learning. This approach can be visualized as an evolution from pedagogy to andragogy to heutagogy, symbolized by intensification in autonomy and learner control and decrease in teacher control. Heutagogy, having its roots in pedagogy and andragogy, is an innovative approach which is applicable not only in education sector but also in other areas of life. The term Heutagogy has its origin in the Greek word heuriskein and was used by Hase and Kenyon in 2000 emphasizing on self-learning without using formal methods of teaching. This learning method aims at learner’s potential, understanding, capabilities, skills, experiences and willingness to gain knowledge about any concept without any fixed time period. An educational institution, commercial organization, sports institution, NGO, retired persons or even illiterates can make use of Heutagogy approach. This approach helps in preparing the future generations more independent, flexible, capable, knowledgeable and talented. COVID-19 situation has changed patterns, experiences, relevance and methods of learning. In an unpredictable environment, this way of learning can prove to be fruitful, aiming at building the confidence and competencies of
learners of any age. One can discover higher potential through self-learning and overcome various digitalization demands of the complex and uncertain work place situations. Heutagogy targets on individual needs and enables the learner to access the best learning content resulting in the cost effective solutions to overcome complexities.

Heutagogy is considered a double loop and a self-learning approach in which a person develops solution for a problem by taking into action his/her own beliefs in familiar and unfamiliar work settings resulting in acquiring knowledge, bridging skill gap and improving confidence by taking appropriate course of action. Learners continuously reflect on learning process and life experiences, transform their thinking process and become more adaptive to the environment. Learners progress in maturity and autonomy needing fewer instructions and not depending on any particular curriculum and are willing to gain more knowledge at their own. Andragogy focuses on learning for adult learners enabling them to become self-directed personality & more growth oriented mind set and performance focused and problem solving. Knowles (1975) has attributed andragogy as a self-directed learning approach that emphasizes on learner’s initiative in recognizing learning needs, objectives, identifying resources, selecting learning strategies and evaluating learning outcomes. This method is based upon relationship between teacher / mentor and learner where instructor facilitates relevant information, resources and techniques (role playing, case studies, self-evaluation etc.) for problem-solving in real situations, making learners more self-aware and independent depending upon self determination to learn. Evaluation made by teachers helps the learners to improve in different areas by having more interactive and flexible sessions online or offline. Online resources such as notes, videos, quizzes, live sessions related to subject matter are available for learners. Pedagogy is a child focused approach where learner is dependent on teachers, focused on curriculum and structured way of learning. With the help of internet, mobile apps, social and digital platforms, Heutagogy — a way of autonomous learning - helps in active participation in learning, interactive discussions, creation of learner generated content, upgradation of communication & teamwork skills, working well with others, receptivity, creativity, inculcation of positive values, flexibility, reviewing of skills knowledge, preferred learning style, career path options, independence, expanding potential to overcome personal and professional challenges. Learner is aware of what to learn, when to learn and with whom to learn. Learners are becoming more independent day by day instead of following particular textbooks.

Lifelong learning goes beyond formal education boundaries and planned strategies.

In organizations, informal learning methods can be used for improving existing or senior employees’ skills for jobs, enriching work life and personal experiences. Employees having higher educational qualifications continue to improve their workplace skills and update themselves with new innovative techniques. Learning with work depends upon the interest of the employees, support from the organization, career and advancement strategies and restructuring of jobs. With
the use of ICT tools, on-the-job and off-the-job training methods are very popular to acquaint employees with e-learning and critical technologies.

NEED OF THE STUDY

Heutagogy is a revolutionary, pivotal and contemporary method of teaching that cultivates self-learning and self-observation with a great access to information in the digital world. Pedagogy and Andragogy approaches need to be reviewed to develop more practical ways to make learners self-sufficient in meeting the new age requirements. In pandemic situation, due to closing down of educational institutions, formal methods can be combined with digital technology in distance education for teaching and learning. Heutagogy approach has a potential to cater to the needs of every learner in complex and uncertain situations. In present education and knowledge system, learners can choose their goals, processes, resources, educational and career paths. In Heutagogy method, the objectives of learning are flexible and have more exposure to concepts and ideas from selecting textbooks to web activities, preparing the learners to face workplace complexities. This approach is very effective in remote working and learning. Students need to be lifelong learners, not to be restricted to academics but gaining behavioral and sustainable growth.

OBJECTIVES OF THE STUDY

- To study the attitude of working professionals towards developing learning skills and contribution of heutagogy approach/online learning in upgrading lifelong skills
- To study retired people’s interest in lifelong learning through heutagogy/online & offline learning

RESEARCH METHODOLOGY

The present study is based on primary data collected from 100 working professionals and 105 senior citizens/retired personnel with the help of a questionnaire based on general background of the respondents and questions were asked to know their perception regarding heutagogy approach/online learning to upgrade skills to meet complexities of changing environment. Data was analyzed with the help of percentages and inferences were drawn from the collected data.

REVIEW OF LITERATURE

- Natalie Canning (2010)

has recognized the heutagogy or self-determined learning in context of mature learners for acquiring higher education with a great deal of emotional energy. Mature learners have complex needs less focused on their ability to learn and more to deal with confidence, levels of self-belief and feeling good enough to learn. This article emphasizes on learner’s interaction with others, learning and teaching strategies for self-determined learning and development. The article has provided a description of students taking
control of their own learning and making use of early childhood concepts and putting them into practice.

- **Lisa Marie Blaschke (2012)**

  in her paper has found heutagogy approach for self-determined learning having its roots in andragogy. In this approach, emphasis is given on learner capacity and capability to prepare them to meet complexities of workplace. In this approach, learners are highly autonomous and self-determined. The approach has been recommended for emerging technologies such as social media, web 2.0 etc. in distance education practices, aiming at developing learner-generated content, information discovery and supporting the learning path. This article throws light on the concepts of andragogy and heutagogy and the role of Web 2.0 in context of heutagogical learning approach.

- **Nikoletta Agonacs & Joao Filipe Matos (2019)**

  have described heutagogy as an approach to online and distance education learning deriving its roots from andragogy. The study aims at understanding empirical evidences of putting heutagogy in practice, with pedagogy and andragogy in the field of research and to find out possible knowledge gaps. This study makes a significant contribution to identify the categories of capability development and application of heutagogy with online or digital technological components.

- **David William Stoten (2020)**

  in his article has highlighted the benefits of heutagogy approach with management education along-with andragogy and traditional pedagogy to develop capabilities of individuals in organizations. This article is based on a structured review of the literature relating to heutagogy and learning theory and has emphasized on the importance of heutagogic learning in various contexts such as undergraduate study, student centered learning, senior leadership positions, professional development of individuals within organizations.

**FINDINGS OF THE STUDY**

**A. Respondents (Working Professionals)**

The data has been collected from 100 working professionals from the field of science, management, commerce and humanities out of which 42% are males and 58% are females. Respondents are working in educational and industrial institutions and are aged between 23 and 56 years. Of these respondents, 65% use the internet for academic purpose while the rest use it for non-academic purpose.
<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Questions</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Awareness of the term heutagogy</td>
<td>48.5</td>
<td>51.5</td>
</tr>
<tr>
<td>2</td>
<td>Convenient with online learning with ICT tools</td>
<td>84.5</td>
<td>15.5</td>
</tr>
<tr>
<td>3</td>
<td>Usefulness of online learning or practicality of heutagogy approach</td>
<td>78.6</td>
<td>21.4</td>
</tr>
<tr>
<td>4</td>
<td>Availability of time to upgrade skills/interests after job hours</td>
<td>68</td>
<td>32</td>
</tr>
<tr>
<td>5</td>
<td>Enrolment in online courses for skill upgradation</td>
<td>45.6</td>
<td>54.4</td>
</tr>
<tr>
<td>6</td>
<td>Utility of online courses for current job profile</td>
<td>73.5</td>
<td>26.5</td>
</tr>
<tr>
<td>7</td>
<td>Organization/employer’s initiative to undertake online courses for employees’ skill enhancement</td>
<td>60.2</td>
<td>39.8</td>
</tr>
<tr>
<td>8</td>
<td>Relevance of heutagogy approach for pandemic/post-pandemic workplace</td>
<td>90.3</td>
<td>9.7</td>
</tr>
<tr>
<td>9</td>
<td>Need to upskill/reskill/multi-skill knowledge due to pandemic situation</td>
<td>91.3</td>
<td>8.7</td>
</tr>
<tr>
<td>10</td>
<td>Satisfaction from content of courses</td>
<td>82.3</td>
<td>17.7</td>
</tr>
</tbody>
</table>
The analysis revealed that different people interpret the term ‘learning’ differently such as empowerment through skill development and gaining knowledge, learning from surroundings and experiences in daily life, enhancing creativity, change in perspectives and attitude, growth, lifetime learning for professional and personal development, problem solving, self-learning with disciplined and focused mind, cultivating passion and constant introspection as learning is a never ending process. Majority of the respondents are comfortable with online learning and its content and get time in improving their skills as relevant for current job profile. Organizations are also keen in undertaking skill development courses for their employees. The survey shows that heutagogy approach is relevant for pandemic situation and present time is the time for developing multi-skill capabilities.

- **Barrier/challenges in online learning**

![Pie chart showing barrier/challenges in online learning]

34% of the respondents feel that self-learning is time consuming whereas 23.3% consider heutagogy as a threat to traditional way of teaching. 32% face no challenge in online learning and 10.7% consider it non-comprehensive.
• **Source of motivation for choosing a course**

![Source of motivation for choosing a course](image)

Majority of the respondents undertake courses for professional development rather than for cultivating their hobbies/interests (personal development). Only 1% of them consider these courses for overall development.

• **Affordability of courses**

![Affordability of courses](image)

46.6% respondents find these courses budget-friendly and around 22.3% prefer free courses to upgrade their skills.
• Learning outcomes

Most of the respondents are satisfied by learning through skill enhancement courses as it brings them contentment, improves their efficiency, makes them better learners, develop new pathways and is relevant to their jobs.

• Platforms/Apps for Enrolment of online courses

It was found that most of the respondents use platforms like Google meet, Zoom, Microsoft Teams, WebEx to upgrade their knowledge through meetings, webinars, conducted by their organizations or universities. Government sites (SWAYAM, MOOC, AICTE, ICT, iGOT etc.) providing free courses to enhance skills are more prominent than learning apps like Udemy, Coursera, LinkedIn learning, Unacademy, Udacity, Byju’s and Vedantu.

• Learning Hours along-with WFH

The survey shows that most of the respondents are able to spare only 1-2 hours for self-learning after job hours during WFH while some of them didn’t even have the facility of WFH.

B. Respondents (Senior citizens/Retired Personnel)

The data has been collected from 105 senior citizens from various places (Chandigarh, Punjab, Haryana, Rajasthan, West Bengal) out of which 48% are males and 52% are females. Of these respondents, 50% belong to (60-70) years age group, 37% belong to (71-80) years age group and rest belong to above 80 age group having graduate and post-graduate degrees. Their work experience ranges mostly from 20 to 40 years while some of them have no work experience. Respondents became aware of the term online learning through Google, newspapers and relatives. Approximately 60% of the respondents have access to mobiles and smartphones in addition to PC, laptops and tablets while 3% respondents don’t have access to any of these devices.
<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Questions</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Awareness of the term heutagogy</td>
<td>80.8</td>
<td>19.2</td>
</tr>
<tr>
<td>2.</td>
<td>Awareness and adaptation to internet based tools or techniques</td>
<td>51.5</td>
<td>48.5</td>
</tr>
<tr>
<td>3.</td>
<td>Dependence on others while accessing the internet</td>
<td>62.2</td>
<td>37.8</td>
</tr>
<tr>
<td>4.</td>
<td>Involvement in online learning/e-courses</td>
<td>17.8</td>
<td>82.2</td>
</tr>
<tr>
<td>5.</td>
<td>Learning anything new during the lockdown period</td>
<td>52.1</td>
<td>47.9</td>
</tr>
<tr>
<td>6.</td>
<td>Enrolment in in-person/ online sessions for learning purpose before COVID-19</td>
<td>20</td>
<td>80</td>
</tr>
<tr>
<td>7.</td>
<td>Lifelong learning enriches lifestyle</td>
<td>92.7</td>
<td>7.3</td>
</tr>
</tbody>
</table>

The analysis revealed that the respondents interpret learning differently such as gaining from experiences and experiments in life, enhancing knowledge through newspapers, life-long process, self-empowerment, general awareness, improvement, learning from peer group and multimedia, reading books and overall development. 73% respondents prefer offline learning and 27% prefer online learning.

- **Frequency of internet usage**

![Frequency of internet usage chart]
62.4% respondents use internet every day, 19.8% don’t use at all while rest use 1-2 times in a week and 15 days. 62.5% people use internet for browsing social media for interaction with others, 56.8% use it to keep themselves updated, 28.4% for personal development, 34% for facilitation of healthy ageing while 3% of them don’t use internet at all. Those who are involved in self-learning, online or offline, have described up-gradation of knowledge, learning about new things, handy learning material and fitness as their source of motivation behind undertaking e-courses and majority of them experience a peaceful environment at home while learning.

- **Barriers/Challenges in learning**

The challenges faced by the respondents include health issues (25%), non-availability of resources (10%), lack of motivation (13%) and uncomfortable with technology (37%) and 15% of them face no challenges.

- **Preference in e-learning course**

Majority of the respondents prefer videos and live sessions for learning novel concepts through online courses in pandemic period. Some also prefer explanatory notes and online comprehensive courses on different topics.

- **Time spent (in hours) to learn online about different things**

<table>
<thead>
<tr>
<th>Area</th>
<th>0 Hours</th>
<th>1 Hour</th>
<th>2 Hours</th>
<th>3 Hours</th>
<th>4 Hours</th>
<th>5 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-mail</td>
<td>32%</td>
<td>22%</td>
<td>7%</td>
<td>5%</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>Chat/Social Media</td>
<td>16%</td>
<td>25%</td>
<td>23%</td>
<td>8%</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>e-shopping</td>
<td>36%</td>
<td>15%</td>
<td>5%</td>
<td>6%</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td>e-learning</td>
<td>32%</td>
<td>15%</td>
<td>5%</td>
<td>5%</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>e-banking</td>
<td>31%</td>
<td>25%</td>
<td>5%</td>
<td>6%</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>Games</td>
<td>36%</td>
<td>20%</td>
<td>8%</td>
<td>2%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>Web Browsing</td>
<td>20%</td>
<td>17%</td>
<td>18%</td>
<td>10%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Online Medical Facilities</td>
<td>35%</td>
<td>20%</td>
<td>5%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Hobbies</td>
<td>20%</td>
<td>25%</td>
<td>14%</td>
<td>10%</td>
<td>2%</td>
<td>1%</td>
</tr>
</tbody>
</table>

The respondents have shown greater interest in social media, exploring activities as per their interest, e-banking, spending 1-2 hours. They devote one hour on e-mail, games, online medical facilities as well.
• Time spent (in hours) to learn offline through different things

<table>
<thead>
<tr>
<th>Area</th>
<th>0 Hours</th>
<th>1 Hour</th>
<th>2 Hours</th>
<th>3 Hours</th>
<th>4 Hours</th>
<th>5 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Print Media</td>
<td>10%</td>
<td>32%</td>
<td>22%</td>
<td>5%</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>Social engagements</td>
<td>12%</td>
<td>22%</td>
<td>25%</td>
<td>7%</td>
<td>0%</td>
<td>4%</td>
</tr>
<tr>
<td>Television</td>
<td>8%</td>
<td>20%</td>
<td>36%</td>
<td>10%</td>
<td>3%</td>
<td>5%</td>
</tr>
<tr>
<td>In-person Sessions</td>
<td>16%</td>
<td>20%</td>
<td>25%</td>
<td>5%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Others</td>
<td>18%</td>
<td>12%</td>
<td>14%</td>
<td>4%</td>
<td>1%</td>
<td>2%</td>
</tr>
</tbody>
</table>

The respondents spend 1-2 hours offline in updating knowledge through newspapers, interaction with others, watching television etc.

CONCLUSION

Heutagogy approach is the need of the hour due to digitalization of learning processes. This approach depends upon learner’s interest, goals to be achieved in career path, advancement in knowledge beyond specific and theoretical areas, competencies and capabilities. Due to Covid-19, remote learning through online mode can be done by designing own learning plans to meet professional and personal needs. Organizations can also take initiative by creating learning environment and motivating employees to upgrade their skills enabling them to access learning resources having complete trust in learners. In educational institutions, teachers can guide students not only to study curriculum but also to emphasize on exploring their creativity, potential & experiences along with others in complex situations and bringing solutions on their own.
REFERENCES


Santaniello Nick. (July 26, 2017). 5 Heutagogical Tips to Empower Lifelong Learners Online https://www.northpass.com>blog

INTRODUCTION

Education is the tool which provides information, knowledge, skills & attitudes; expands vision and outlook to see the world; helps to explore new ideas and develop creativity; develops the capabilities to fight against bad elements in the society such as violence, injustice and corruption and to become aware of the rights and duties of people toward their family, society as well as the nation. In today’s competitive world, well-structured education system is one of the main instruments for achieving sustainable development of a country as well as all over the world. Education is the key to promote human rights and equal dignity, social equity, greater justice, transformation of society, to eradicating poverty and develop sustainability and global solidarity. The society is changing day by day, that’s why education system must change according to the needs of the society. To protect the planet and global well-being of people and prosperity, the United Nations approved a plan of action- the ‘Sustainable Development Goals’ (SDG) in 2030 Agenda which seeks to strengthen universal peace, eradicate extreme poverty. It is “a plan of action for people, planet and prosperity”. This agenda comprises of 17 Sustainable Development Goals by encompassing economic, social and environmental dimensions. These Goals are: no poverty, zero hunger, good health and wellbeing, quality education, gender equality, clean water and sanitation, affordable and clean energy, decent work and economic growth; industry, innovation and infrastructure; reduced inequalities, sustainable cities and communities, responsible consumption and production, climate action, life below water, life on land; peace, justice and strong institutions; and partnership for the goals. The United Nations Sustainable Development Goal 4 (SDG4) is that goal which is related with quality education for all. This SDG4 aims to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.”

INDIA’S NEW EDUCATION POLICY 2020

In India, the National Education Policy 2020 (NEP 2020) was approved by the Union Cabinet on 29 July 2020. This NEP 2020 is the need of the hour to prepare all students to face the new challenges of modern competitive world. By replacing the previous National Policy on education of 1986, this NEP 2020 reflects the vision of India’s new education system. The aim of this policy is to transform the education system of India to an India-centric education system. The vision of the NEP 2020 is to transform our nation into an equitable, vibrant knowledge society and sustainable nation by providing quality education from elementary to higher education including vocational training to all. The NEP 2020 recommends to renaming the Ministry of Human Resource Development to the
Ministry of Education. The aim of India’s New Education Policy 2020 is to achieve the UN Sustainable Development Goal 4.

OBJECTIVE OF THE PAPER:

In view of the above background, the objectives of the present paper are

- to analyse how India’s National Education Policy 2020 will achieve Sustainable Development Goal 4 (SDG4),
- to do a SWOT analysis of India’s NEP 2020 for achieving Sustainable Development Goal 4 (SDG4).

METHODOLOGY OF THE PAPER

This paper is a theoretical paper which is based on secondary sources.

DISCUSSION OF THE PAPER

A) How India’s New Education Policy 2020 Achieves The UN Sustainable Development Goal 4

This section analyses how India’s New Education Policy is framed to achieve the SDG 4 on Education.

For achieving the targets of SDG 4, India’s New Education Policy 2020 proposes the following recommendations in various aspects related with the target goal of SDG 4 -

1) Target 4.1 of SDG 4 and India’s NEP 2020: Free Primary and Secondary Education

The 4.1 target of SDG4 is “by 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.”

The target of NEP 2020 is that by 2030, 100 percent Gross Enrolment Ratio (GER) will be achieved in school education. For this, the structure of the school curricula will be changed from 10+2 to 5+3+3+4 curricular structure.

- The 5+3+3+4 curricular design is as follows-
  - The foundation stage (5 years): Pre-primary school or Anganwadi and classes 1 and 2 (Age-3 to 8 years).
  - The preparatory stage (3 Years): Classes 3 to 5 (Age- 8 to 11 years).
  - The middle stage (3 Years): classes 6 to 8 (Age- 11-14 years).
  - The secondary stage (4 Years): classes 9 to 12 (Age- 14-18 years).
- In primary and secondary education, proper emphasis will be given to cognitive development, building character and developing creative thinking, experiential learning,
holistic, integrated, enjoyable, and engaging learning and well-rounded learners equipped with the key 21st century skills.

- There will be no demarcation between various streams such as science, arts and commerce, vocational and non-vocational or academic stream and curricular and extra-curricular activities. Students can choose subjects as per their choice.
- In schools, Sanskrit will be mainstreamed. Under the ‘Ek Bharat Shrestha Bharat’ initiative, every student of 6-8 grades will have to participate in a fun project/activity on ‘The Languages of India’ which will help them to enrich culturally, and developing values like national integration and unity.
- At the secondary level, to enrich global knowledge, mobility and to learn world culture, students will be offered foreign languages, such as German, Spanish, Portuguese, Korean, Japanese, and Russian, Thai and French in addition to Indian languages and English.
- The NCERT will formulate “National Curricular Framework for School Education” (NCFSE) by incorporating the principles of NEP 2020.
- There will be school examination in Grades 3, 5, and 8 and Board Examinations in Grades 10 and 12. A National Assessment Centre named as “Performance Assessment, Review, and Analysis of Knowledge for Holistic Development (PARAKH)” will be set up for student assessment and evaluation.

2) Target 4.2 of SDG 4 and India’s NEP 2020: Equal Access to Quality Pre-Primary Education

The 4.2 target of SDG 4 is “By 2030, ensure all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education.”

In India, the previous 10+2 education structure begins at age 6. The NEP 2020 includes ‘Early Childhood Care and Education (ECCE)’ at age 3. The NEP 2020 aims to promote well-being and healthy brain development and all round learning development of children from age 3. This policy also aims to provide quality early childhood development, provide care, and education for all including children from socio-economically disadvantaged backgrounds. The overall aim of ECCE will be to empower students with cognitive development, cultural development, physical and motor development, social development, emotional development, communication development, language development, development of literacy, and numeracy. For enhancing proper childhood care of below 8 years’ age of children, the NCERT will frame a “National Curricular and Pedagogical Framework for Early Childhood Care and Education (NCPFECCE)” which will be consists of two parts-one for 0-3 year-age children another one for 3-8 year-old children.

For universal access to quality ECCE, focus will be given to strengthen Anganwadi Centres with high-quality and child-friendly infrastructure with well-trained Anganwadi workers/teachers. In the preparatory class, the learning will be based on play-based method with a view to develop literacy, numeracy, cognitive, affective and psychomotor domains. The planning and implementation of ECCE curriculum will be carried out jointly by the Health and Family Welfare
HFW, HRD Ministry, Women and Child Development (WCD) and Tribal Affairs. ECCE will also be introduced in tribal-dominated areas.

3) Target 4.3 of SDG 4 and India’s NEP 2020: Equal access to Affordable and Quality Higher Education, Vocational and Technical Education

The 4.3 target of SDG 4 is “by 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.”

India’s NEP 2020 and Higher Education

- The NEP aims to increase the Gross Enrolment Ratio (GER) from 26.3 percent to 50 percent in 2035 in higher education including vocational education.
- For all the higher education, there will be a centralized single regulator named as Higher Education Commission of India (HECI) instead of University Grants Commission (UGC) and All India Council for Technical Education (AICTE).
- The National Testing Agency (NTA) will conduct a single common entrance exam for admission and fellowships in colleges/ higher education institutes. But this exam will be optional and not mandatory.
- **By 2030, it is targeted to convert** all higher education institutions to multidisciplinary institutions and **in every district there will be one large multidisciplinary college**.
- A four-year graduation will be introduced including vocational and professional areas. After completing 1 year in a discipline or field, students will get a certificate; a diploma after 2 years of study; after 3-years, students will be awarded a Bachelor degree. For getting a 4-years degree course ‘with research’, all students will have to complete research project within due time. After 4-years degree course, there could be a 1-year Master’s programme.
- **Regarding** the design of Master’s programmes, higher education institutions will have the flexibility- a) A student who have completed the 3-year Bachelor’s programme will have to pursue 2-year Master’s programme b) A student who have completed a 4-year Bachelor’s programme with Research, will have to pursue 1-year Master’s programme c) There will be an integrated 5-year Bachelor’s/Master’s programme. For pursuing Ph. D, students will have to do either a 4-year Bachelor’s degree with Research or a Master’s degree. M. Phil will be to be discontinued. Emphasis will be given to strengthen research and innovation in the country which is the most important to progress in this competitive world.
- **Regarding** higher education, multiple entries and exit system in the higher education sector. **the NEP 2020 proposes that there will be**
- **An Academic** Bank of Credit (ABC) will be established to store the academic credits digitally which will be earned by students. Students will be able to choose any course and can join back their courses after a period of time without losing any credits.
The NEP 2020 aims to promote India as Foreign Study Destination. Top 100 Foreign Universities will be allowed to establish their campuses in India. Many Indian students who are unable to go foreign countries will get global exposure in these campuses. This will increase stiff competition and improve our higher education system.

India’s NEP 2020 and technical Education

- As per the NEP 2020, all IITs will have to follow multidisciplinary education with arts and humanities and a more holistic approach.
- The NEP 2020 proposes that technical education will be offered within multidisciplinary education institutions. Focus will be given on to prepare students in various technical areas such as Artificial Intelligence (AI), biotechnology, neuroscience, nanotechnology, 3-D machining, machine learning and big data analysis for increasing the employability of the youth.

India’s NEP 2020 and vocational Education

The NEP 2020 suggests that

- All students will be taught vocational skills according to their choice from school level. From Class VI, coding classes will be taught to all students. From this class also, all students will have to do internships of 10 days.
- Along with humanities, science and mathematics, subjects like arts and crafts, physical education and vocational skills will be included in school curriculum.
- All students during Grades 6-8 will participate in a practice-based curriculum in which they intern with local vocational experts such as artists, potters, carpenter’s electrician, metal worker, and gardeners, etc. For this, 10-day bag less period will be encouraged to do activities outside the school.

4) Target 4.4 of SDG 4 and India’s NEP 2020: Relevant Skills for Decent Work

The 4.4 target of SDG 4 is to ensure that “by 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship”.

India’s NEP 2020 recommends developing the key skills of 21st century among all students. These skills are like creativity and innovativeness, communication skills, problem solving, computational thinking, logical reasoning, digital literacy, vocational skills, citizenship skills, fundamental Duties, gender and environmental awareness. Subjects like Environmental Education, Artificial Intelligence, and Global Citizenship Education (GCED) etc. at all levels of education will be undertaken for developing various skills among students’.
5) Target 4.5 of SDG 4 and India’s NEP 2020: Eliminate all Disparities in Education

The 4.5 target of SDG 4 is to ensure that “by 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations”

- The NEP 2020 proposes to provide quality education to girls for developing women education. For this purpose, the Government of India will constitute a ‘Gender-Inclusion Fund’. In all teacher education programmes, gender sensitization will be an integral part of training. Kasturba Gandhi Balika Vidyalayas, Jawahar Navodaya Vidyalayas and Kendriya Vidyalaya will be strengthened in disadvantaged areas.
- To eradicate the disparities in the educational development of SC and ST Tribes, special focus will be given to build special hostels for SC and ST students, to introduce bridge courses and provide scholarships for talented and meritorious students from all socio-economically disadvantaged groups.
- The Programmes of National Institute of Open Schooling (NIOS) and Open and Distance Learning (ODL) will be expanded to meet the learning needs of disadvantaged students including girl students.

Target 4.6 of SDG 4 and India’s NEP 2020: Universal literacy and numeracy

The 4.5 target of SDG 4 is to ensure that “by 2030, all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy.”

Achieving literacy (ability to read and comprehend basic text) and numeracy (ability to use Indian numerals and carry out basic addition and subtraction) is an indispensable prerequisite for lifelong learning. The NEP 2020 recommends that attaining foundational literacy and numeracy will be a national mission. Immediate measures will be taken for attaining universal foundational literacy and numeracy by 2025. The Ministry of Human Resource Development (MHRD) will set up a ‘National Mission on Foundational Literacy and Numeracy’. All State and UT governments will have to prepare plan including stage-wise targets and goals for achieving the aim of universal foundational literacy and numeracy by 2025.
6) **Target 4.7 of SDG 4 and India’s NEP 2020: Education for Sustainable Development and Global Citizenship**

The NEP suggests to include subjects like environmental education so that students will be aware various local as well as global environmental problems such as pollution, conservation of biological diversity, forest and wildlife conservation, management of biological resources and biodiversity, climate change, sanitation, waste management, sustainable development and living.

7) **Target 4.8 of SDG 4 and India’s NEP 2020: Build and Upgrade Inclusive and Effective Environment**

The **4.8 target of SDG 4** is to “Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all”

The NEP 2020 acknowledges the importance of promoting education of children belonging to all socio-economically disadvantaged groups.

- The NEP 2020 recommends that Special Education Zones (SEZs) should be declared to those regions in which large population belongs to socio-economically disadvantaged groups.
- From the foundational Stage to higher education, Children with disabilities will be able to participate in regular education process as per the Rights of Persons with Disabilities (RPWD) Act 2016.
- Hence, it is recommended that regions of the country with large populations from educationally-disadvantaged SEDGs should be declared Special Education Zones (SEZs).

8) **Target 4.9 of SDG 4 and India’s NEP 2020: Expand Higher Education scholarships**

The **4.9 target of SDG 4** is to ensure that by 2020, sustainability increases the number of scholarships in least developed and developing countries for enrolment in higher education including ICT, vocational, technical engineering and scientific programmes.

The NEP 2020 suggests that meritorious students belonging to SC, ST, OBC, and other SEDGs will be provided financial assistance through various measures. To support the students regarding scholarships, the ‘National Scholarship Portal’ will be expanded. Private Higher Education Institutions will also be encouraged to expand scholarships to their students.

9) **Target 4.10 of SDG 4 and India’s NEP 2020: NEP 2020 and Teachers : Increase the Supply of Qualified Teachers**

The **4.10 target of SDG 4** is to ensure that “by 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small Island developing States”
• Regarding teachers, the NEP 2020 proposes that to become a teacher by 2030, the minimum requirement needed is a 4-year Bachelor of Education. Teacher Eligibility Tests (TETs) will be conducted at every stage.

• By 2021, ‘A National Curriculum Framework for Teacher Education ‘and by 2022, a ‘National Professional Standards for Teachers’ will be framed by the ‘National Council for Teacher Education’ (NCTE).

B) SWOT ANALYSIS OF NEP 2020

The five pillars of NEP 2020 are Access, affordability, equity, quality and accountability. By aliening SDG targets into NEP 2020, it paves a way for more inclusive and holistic kind of learning. The role of Indian federation will be more crucial for proper implementation of this policy to achieve the fruitful results (Singh, 2020). It is very important to do a SWOT analysis of India’s NEP 2020 for achieving Sustainable Development Goal 4(SDG4) so that we can be better prepared to face the challenges as well as embrace the new opportunities that it has to offer.

STRENGTHS

• The strong point of this policy is the well designed school curriculum (5+3+3+4) which will provide a lot of flexibility and convenience for holistic development of the students at each stage of education.

• Inclusion of Gender sensitivity in the curriculum and inclusion of various need based subjects like environmental education, organic living, designs thinking, artificial intelligence, holistic health and Global Citizenship Education (GCED) at school curriculum will strengthen the education system of our country for achieving Sustainable Development Goal 4(SDG4)

• No demarcation between streams, curricular- extra-curricular, vocational and academic in secondary education will provide more flexibility to students.

• More focus on rich cultural heritage, inclusion of the ‘Classical Language’, teaching in the mother tongue at the primary level for promoting learning ability of students, focus on 21st century skills like critical thinking, problem solving etc. instead of rote learning process, quality of teaching at every stage of education, provision of suitable infrastructure development to create a conducive environment at all educational institutions are the strong agendas of the India’s NEP 2020 for achieving Sustainable Development Goal 4(SDG4).

• Having a single regulatory body to analyze and monitor the higher education system, multiple entries and exit system, the multidisciplinary nature of educational institutions, strong emphasis on research and innovation in the country are the most important steps in this competitive world as well as for achieving Sustainable Development Goal 4(SDG4).

• One strong point of the NEP 2020 is that it aims to achieve 100 percent GER by 2030 for school education and 50 percent by 2025 for higher education.
• This policy recommends to club 3 years of preschool with the first two grades of the primary school and will provide universal access to education for students belonging to category between 3 and 18 years. It expands the coverage of the Right to Education act, 2009 which provides universal access to education for students belonging to category between 6 and 14 years.

• The NEP 2020 aims to ensure that the teacher recruitment process will be made transparent and strengthened so that professionally trained, motivated, well equipped, passionate and highly qualified teachers will teach all school students at all levels of education.

• Teachers will be provided Continuous Professional Development (CPD) programmes for self-improvement and advancement related with their professions and learning latest pedagogies in teaching learning process.

• Today’s global world, we all are interconnected. That is why Global Citizenship Education (GCED) is urgent need of hour. The NEP 2020 proposes to empower our students to become aware of the various global issues as well as to become a global citizen for promoting inclusive, peaceful, tolerant, secure, and sustainable societies.

• Regarding vocational education, the NEP 2020 gives a special focus on enhancing the practical skills of the students by promoting skill-based education. The NEP 2020 will help India to become self-reliant.

WEAKNESSES

• The policy has not mentioned any specific provisions regarding the methods of mobilizing funds for investment in education.

• According to NEP 2020, in higher education, students can complete their diploma degrees in two years which might encourage them to leave the course midway. A student will not wait to complete 4 years if he receives a diploma in two years.

• This policy has not shown how to face present or upcoming pandemic related challenges.

• The cost of providing quality education as well training of teachers will also require more time, energy, resources and proper infrastructure. This policy has not mentioned about the funding for teachers training.

• India’s NEP 2020 has not addressed the role of the private sector in school education. The policy recommends that in government schools, students will be taught in the regional languages up to 5th standard. There will be some gap between private schools and public schools regarding various aspects.
OPPORTUNITIES

- This new policy focuses on three domains of learning: **cognitive, affective and psychomotor** domain which will ultimately help the students to understand the various aspects of life.
- Recommendation on setting up of foreign universities campuses in India will provide more research-based options for higher education as well as for more research based education.
- The academic credit stored in a digital locker will be act like a bank credit. With the help of this digital locker a student will be able to resume education after a break in higher education system.
- The National Educational Technology Forum (NETF) will provide a platform for using technology to enhance learning, planning, assessment and administration at school and higher education level.
- The NEP 2020 will provide more autonomy to the educators in various aspects of pedagogy in teaching learning process.

THREATS

- Implementation of this policy is not so easy. The three-language formula is not supported by many states like Tamil Nadu, Andhra Pradesh and West Bengal which may create problems in proper implementation of NEP 2020.
- There is urgent need to build a huge digital infrastructure for providing digital education in India. Creating digital atmosphere is not easy without proper digital infrastructure.
- Lack of proper digital infrastructure will bring threats to a huge number of human resources. Creating job opportunities according to the courses will be a difficult task. The NEP may lead to mismatch between the vocational skill imparted in educational institutions since secondary education and jobs available in these fields. Some vocational careers are not financially stable carrier in India.
- Privatization in Higher Education may create some problems in achieving the aims of this policy.

CONCLUSION

To conclude, the new National Educational Policy may have a few minor loopholes, but the policy is revolutionary. The Education system of a country is a true indicator of its economic strength. The reforms of the NEP 2020 will certainly help India to convert into the top three economies of the world. It is expected that in the next 10 years NEP would transform the education sector of our country because this policy focuses on making education accessible, equitable, and inclusive and achieving the targets of Sustainable Development Goal 4. The main challenge is to implement the highly comprehensive NEP 2020. The NEP 2020 will play an important role in creating the future of the country. It’s success, however, lies in uniform and transparent implementation at all
levels, with an equitable distribution of resources. There should be 100 percent cooperation and collaboration between the Central, State Government and the Ministry of education for successful implementation of NEP.

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TARGETED EDUCATION FOR SUSTAINABLE DEVELOPMENT

‘IS THE EDUCATION SYSTEM IN INDIA DISASTER/CALAMITY PROOF? ’
‘EDUCATION SYSTEM DURING THE PANDEMIC IN INDIA – A SPOTLIGHT

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INTRODUCTION

As defined by the Brundtland Commission, “Sustainable development is the development that meets the needs of the present without compromising the ability of future generation to meet their own needs.” This definition emphasises the fundamental principle of achieving equity between present and future generation. Education for Sustainable Development was United Nations’ program which defined education as something that encourages changes in knowledge, skill, values, and attitudes to enable more sustainable and just society for all. While this remains the truth but a flexible education system that accommodates the worst scenarios such as calamities, war, pandemic is still missing which is leading to a colossal problem called ‘DROPOUTS!’ How will education be sustained if a child is left uneducated for unsolvable reasons” Every year 12.6% of students drop out of school in India. The higher the class, the higher the dropout- College Dropouts

Source: news article in career360.com
The single most reason for dropouts has been students facing financial constraints that has resulted either from a bad economy, calamities, and other socio-cultural reasons. These dropouts have increased further with educated families throwing in the towel during the pandemic (2020-21).

<table>
<thead>
<tr>
<th>Country/City</th>
<th>Dropout rate/Numbers</th>
<th>Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syria</td>
<td>2.45 million</td>
<td>War</td>
</tr>
<tr>
<td>Yemen</td>
<td>1.2 million</td>
<td>War</td>
</tr>
<tr>
<td>Jammu &amp; Kashmir</td>
<td>50,000</td>
<td>Unrest</td>
</tr>
<tr>
<td>Indonesia</td>
<td>126000</td>
<td>Tsunami</td>
</tr>
<tr>
<td>South Africa</td>
<td>60%</td>
<td>Diseases/Poverty</td>
</tr>
<tr>
<td>India</td>
<td>30 – 60 million</td>
<td>Poverty/Pandemic</td>
</tr>
</tbody>
</table>

Source: savethechildren.org

UNESCO in a study across 180 countries mentions 24 million students may not return to schools due to the pandemic. This is in addition to the 258 million who had already dropped out. A large chunk of this belongs to South and West Asia.

Impact of the Pandemic

- Schools are closed, exams cancelled and there has been major disruption in the entire system, leading to massive dropouts in 2020.
- As per NEP 2020 (National Education Policy), India has about 25 crore school going children, out of which 6.2 crore between the ages of 6 to 18 years were out of school in 2015.
- The average attendance in secondary school is 50%, out of which only 25% to 30% go beyond class 10. The Minister, citing data presented in economic review stated that though dropout is reduced to 0.11% in 2019-20 compared to 0.22% in 2016-17 but access to higher education is still less due to delayed examination or no examination, poor economic conditions unavailability of computers, smartphones, or laptops to join virtual classroom.
- While India was always battling dropouts, but the pandemic increased this rate to a large extent taking the country back to the drawing board.
OBJECTIVE

1) Taking the pandemic as a case-study, this paper’s objective is to evaluate whether the education systems practiced in India is disaster proof or not?

2) Address the correlation of a disaster-proof education system with the issue of dropouts.

METHODOLOGY

Primary Data

- Questionnaire was framed and circulated among teachers and students
- Sample size: 30 students.; Teachers: 4

Secondary Data – newspaper, journals, and articles

Part 1 - Student & Teacher’s Opinion

– a questionnaire was done to examine what students felt about the Education System before and after the pandemic.

Author’s first-hand experience while taking online lecture in S.K. Rai junior college of Arts, science and commerce and the degree college.

Sample size 30 students and 4 teachers

Debate method was used to conduct the above study.

Questions asked – 1) What kind of education system do you prefer and why? Online or offline?

2) What’s your opinion of the method of assessment followed during the pandemic?

3) What’s your views on the NEP? Is it exhaustive?

Responses of Students for Questions 1 & 2

<table>
<thead>
<tr>
<th>For ONLINE (30%)</th>
<th>Against (50%)</th>
<th>Combination (20%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching through presentations helped</td>
<td>The teacher-student interaction often failed due to low connectivity. Subjects like Maths was difficult to understand.</td>
<td>A combination of both would have been better so that flaws in online could be filled in by offline.</td>
</tr>
<tr>
<td>Working students could attend work as well as make time for online</td>
<td>Unable to meet classmates and hangout was a big put off</td>
<td>While online teaching works fine but tests</td>
</tr>
</tbody>
</table>
lectures since workplaces has better connectivity

Convenience of exiting a session at will.  
In addition to fees, expenses go up for connectivity, /smartphones/laptop.

MCQ test is easier and improved scoring  
MCQ tests seemed frivolous

Most students were unaware of NEP and its advantages since it’s yet to be implemented in schools and colleges.

Response of Teachers to Q 1, 2 &3

<table>
<thead>
<tr>
<th>For ONLINE (10%)</th>
<th>Against (60%)</th>
<th>Combination (30%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convenience of teaching from home helped as travel can be exhausting.</td>
<td>Class discipline goes for a toss, salary is lower. No Job security.</td>
<td>Offline teaching combined with online assignments is preferable.</td>
</tr>
<tr>
<td>MCQ test is the quickest form of helping students understand what’s taught.</td>
<td>MCQ tests allows mass cheating. No technique to check if a group of students with multiple mobiles are taking the test or not?</td>
<td>-</td>
</tr>
</tbody>
</table>

- Teachers have sworn by the NEP but request intense training of teaching staff before being implemented.
- Teachers are of the opinion that NEP allows more avenues and new faculties will open up that would increase their pay and exposure.

Part 2 - the present system of education (before 2020) (Formal, Non-formal & Informal)

Present System of Education (Before 2020)

- Being a multicultural nation with 29 states, 7 union territories, 23 legally acknowledged section languages, India has its own unique system with wide range of education boards at National and State level. Presently the four primary education boards in India are the state boards, Central board of secondary education (CBSE) Indian certificate of secondary education (ICSE), Council for the Indian school certificate Examination (CISCE), Indian Baccalaureate (IB).
• All of the above, follow the Formal education, refers to a systematic curriculum – based teacher directed learning that happens within an institution such as a school, college or university. It’s mainly OFFLINE!

• Informal learning is not limited to classrooms and happens even without the intentions of learning. It’s largely environment based. For instance, learning music by attending a concert.

• Non-formal education is largely conducted by NGOs, government-run programs. It’s more based on skill-based training however the curriculum is based on the needs of the learner.
  o Open and Distance Learning system of education is referred to as Non-Formal type of education.
  o Similarly, Sarva- Sikshan Abhiyan, National Open school (NOS) & many more.
  o It’s a system that allows, School dropouts; Illiterates and semi literates; Unemployed youth; Differently able children/adults; Workers from unorganized sector; Marginalized people in society; and Those who do not fit into the formal education system.

<table>
<thead>
<tr>
<th>Year</th>
<th>Enrolment (in million)</th>
<th>Enrolment (in million)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Schools</td>
<td>Univs &amp; Colleges</td>
</tr>
<tr>
<td>2000-01</td>
<td>185.5</td>
<td>8.6</td>
</tr>
<tr>
<td>2001-02</td>
<td>189.3</td>
<td>9.5</td>
</tr>
<tr>
<td>2002-03</td>
<td>202.5</td>
<td>10.7</td>
</tr>
<tr>
<td>2003-04</td>
<td>212.1</td>
<td>11.2</td>
</tr>
<tr>
<td>2004-05</td>
<td>219</td>
<td>13.0</td>
</tr>
<tr>
<td>2005-06</td>
<td>222.7</td>
<td>14.3</td>
</tr>
<tr>
<td>2006-07</td>
<td>228.1</td>
<td>15.6</td>
</tr>
<tr>
<td>2007-08</td>
<td>237.3</td>
<td>17.2</td>
</tr>
<tr>
<td>2008-09</td>
<td>240</td>
<td>18.5</td>
</tr>
<tr>
<td>2009-10</td>
<td>241.6</td>
<td>20.7</td>
</tr>
<tr>
<td>2010-11</td>
<td>248.1</td>
<td>27.5</td>
</tr>
<tr>
<td>2011-12</td>
<td>258</td>
<td>29.2</td>
</tr>
<tr>
<td>2012-13</td>
<td>254.2</td>
<td>29.6</td>
</tr>
<tr>
<td>2013-14</td>
<td>258.5</td>
<td>30.1</td>
</tr>
<tr>
<td>2014-15</td>
<td>259.4</td>
<td>33.6</td>
</tr>
<tr>
<td>2019-20</td>
<td>269.0</td>
<td>43.0</td>
</tr>
</tbody>
</table>

Source: Table 1 Ministry of Statistics and Program Implementation

Note: No data is available to show the enrolment/participation of Non-Formal education in India.
A look at the Education System during the Pandemic

The pandemic hit India in March 2020 post which the following steps were taken after three months of lockdown -

- Schools and Colleges were ordered to follow online classes across both rural and urban sectors.
  - Zoom/Google Meet and Microsoft meets were used as the medium for teaching.
  - Tests and assignments were conducted on the basis of short-format tests consisting of multiple choice questions (MCQ) and auto proctoring was used to supervise efficacy of tests by assigning trust scores.
- State board, Central Board and Higher Secondary board exams were cancelled.
- 370 million students were affected.
- 130 million students were in 9th to 10th grades which comprises of the largest percentage of students in India.
- Only 50% of the teachers were trained in remote form of teaching. (ASER REPORT 2020)
- Around 18-32% of the children had no help from home during this switch to online medium.
- Smart phone usage went up by 68% but the users were struggling with low connectivity.
- 35% of the children received learning materials studying in government schools and 40.6% studying in private schools.

Impact on this arrangement of Education System

- Enrolment in schools and colleges reduced in the range of 17-25% in schools as per the UDISE report.
- College enrolments reduced by 20%.
- 179 professional colleges shut down business during the pandemic.
- Over 69,000 seats in 762 colleges have been reduced due to low intake or closures.
- Non-Formal education was largely affected since centres for ODL were shut, NGOs couldn’t reach out to students due to lockdown restrictions.

National Education Policy (NEP)

The National Education Policy 2020, approved by the Union cabinet of India on 2020, replaces the previous national policy of 1986, 1992, aims to transform India’s education system by 2021. Under the NEP 2020, the focus areas of the reform seek to cultivate, ‘21st century skill’ among students, including critical thinking, problem solving, creativity and digital literacy. Among the
major reforms, the 10+2 structuring in the schooling system has been replaced by 5+3+3+4 structure. It will include 12 years of schooling and three years of Anganwadi and pre-school.

The four parts of the National Educational Policy covers, part 1 School Education, part ii) Higher Education, part iii) other key areas of focus, such as adult education, promoting Indian languages, and online education part iv) Making it happen, which discusses the policy implication.

As per the NEP vocational training will gain full support ensuring students who want to drop out can take up skilled training so that they can get employed. NEP will also ensure all new teachers trained under the 4-year (Bachelor of Education) B Ed program are trained in holistic teaching.

Education is fundamental for achieving full human potential, developing an equitable and just society and promoting National development. Ambitions for education are essentially captured in Sustainable Development Goal 4 (SDG 4) OF 2030 Agenda.

The global education development agenda reflected in the Goal 4 (SDG 4) of 2030 Agenda for sustainable development adopted by India in 2015 with 17 goals seeks to ‘ensures inclusive and equitable quality education and promotes life-long learning opportunity for all by 2030.

The target of goal 4 (SDG)

1) To ensure all girls and boys to get complete free, equitable quality education with effective learning outcomes.

2) Eliminate all discrimination in education. And ensure equal access to all levels of education and vocational training etc.

The basic aim of NEP 2020 ought to create more employable Individuals. This employable option and flexibility were lacking in the present education sector. As much as 45.9% of graduates were employable in 2019. NEP guarantees a much higher percentage.

Findings

Evaluating the above facts and analysis, the following findings have been made –

- Enrolments have a clear correlation with educational facilities available which further affects dropout rate as seen during the pandemic.
- Offline education apart from ODL offers no flexibility to a student who’s unable to continue education. Dropping out seems the only alternative.
- Education falls prey to any kind of disaster since the priority shifts to save lives of children.
- NEP has great potential to fill the lacuna of students dropping out but its plans hasn’t been revealed to educationists in a full-fledged manner for them to see the benefits.
CONCLUSIONS

Being unprecedented times, no country was prepared to respond to a pandemic of this scale and the brutality of it, education is already resting on a fragile plane suffered the most.

- While, India followed global practices by introducing online teaching during the pandemic but it wasn’t innovative enough in implementing a disaster-proof plan that could control the dropout rate. Learning was compromised.
- Online teaching amongst both students and teachers wasn’t a success as observed in the sample study.
- Education levels clearly dipped to a new low with cancellation of exams and MCQ online tests.

RECOMMENDATIONS

India having the largest population and about 40% of its population being in the age group of below 18 yrs, it’s crucial that its Education model stand the test of time in case of any calamity or disaster. How can that be done? For instance, the NEP in its manifesto has introduced a system of tracing students who are low on attendance and bring them back into schools. But this consideration is during normal times. Private schools have been faster in adapting to the pandemic owing to facilities and high budgets. The author’s recommendation for an Education system -

- That’s flexible and adaptable.
- That’s easy and implementable.
- That’s accessible.
- That’s innovative and adjustable.

The ‘Recommended model’ aims factors in the dropout chaos created during the pandemic, (financial constraints, accessibility & connectivity). How can we address this?

Recommended model - THINK BEYOND OFFLINE – Build a system that can adapt itself to the following modes irrespective of private or government schools. Just like our phones have airplane mode, do-not disturb mode, we need that level of flexibility in our education system to–

- 100% offline during normal times
- 50% offline + online to accommodate dropouts unable to make it to school every day.
- 100% online – during calamities/pandemic/disasters with special focus on connectivity tie-ups between schools, colleges and internet providers OR
- Constant evaluation of students during offline classes could be registered and maintained so that it can be used in these times of crisis.
- 25% offline + 25% online + 25% practical training or home assignments + 25% class participation
- Home visits or Study Centre visits by appointing visiting faculty teachers who’ll visit student’s homes for teaching and evaluation. – this could account for 30%.

- Offline Education System including night colleges is at its Optimum level now which doesn’t need any changes except for the implementation of the NEP.

- Online Education in India is at its lowest- Government should start granting permissions to new schools and offline schools to open up this facility that combines internet connectivity options with its course syllabus. Merging Telecom providers as a crucial link between Students and Institutions.

- Spruce up infrastructure for Open and Distance Learning that was essentially for private students who work and study. The ODL centres are in selective cities. The government should use this program and expand the network in more cities as well as villages so that students from lower classes too can benefit from it (offline & online).
  - For instance, when examinations were being cancelled, teachers from these centres could be used to reach out to a group of students to conduct exams.

- Shorten syllabus and rewrite curriculums that’s faster to impart without compromising on standards of Education – this would mean more practical assignments.

- Maintaining a database of every single student so that in case of disasters, the education model can easily select options to switch to a new mode of teaching.
  The author guarantees an 15%-20% decrease in the dropout rate if the above is implemented.
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PAPER – 15

THE ROLE OF CHAKRA MEDITATION IN THE ENHANCEMENT OF LIFELONG LEARNING CONCERNING TO PERSONAL AND PROFESSIONAL GROWTH

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INTRODUCTION

Lifelong learning is a process of learning for the entire life. Lifelong learning is a kind of self-initiative training that concentrates on personal development ultimately it reflects on professional development. While there is no specific universal acceptable definition is available for life-long learning. Life-long learning has generally taken place outside of formal education settings. It does not limit to informal learning instead it is a continuous effort of an individual for the achieving of personal development. If an individual is pursuing professional ambitions or personal goals, lifelong learning can support us to achieve both personal and professional goals. Humankind has the nature to learn and explore new things to continuous improvement of self and quality of life which increases a sense of self-worth in an individual. In this process, the spiritual method of Chakra Meditation will help the individual for life-long learning. The objective of the paper is to understand the importance of chakra meditation in personal growth which ultimately enhances professional growth.

REVIEW OF LITERATURE

Lifelong learning is not constrained to formal school education and includes occupational training and also “learning to lead to self-development or self-actualization” (Ting, 2015). It depicts that self-awareness learnings help us to develop professionally as well as personally. Life-long learning for personal and professional growth is learning for the enhancement of new skills and knowledge about self for the personal development in terms of confidence and self-esteem through which fulfilment of professional goals. Development orientation needs uninterrupted lifelong learning, which leads to continuous improvement in personal and professional development (Tracy, n.d.).

The factor behind underachievement in a career is because lack of self-awareness and realization of their potentialities and competencies. The research reports in this area suggest that it requires about five to seven years of hard work for you to move to the top of your field with continued lifelong learning. Continuous life-long learning helps enhances personal and professional growth. “Nobody is better than you and nobody is smarter than you. If someone is doing better than you, it just means that they started their personal development on themselves in a certain way earlier than you did. And whatever anyone else has done, you can do as well. There are no limits except the limits you place on yourself with our own thinking” (Tracy, n.d.).
But, the majority of professionals are more bothered, worried about what colleagues and competitors are doing than self-comparison of their own performances of present and past years.

THE IMPORTANCE OF LIVING A LIFELONG LEARNER LIFESTYLE EMBEDDED IN SPIRITUALITY

The rapid growth in a career means we must regularly upgrade our knowledge, skills, and competencies. Each individual has their own way of learning methods and it’s left to the person to find out the best learning method for self-growth. Once an individual realizes this aspect, then he/she become more prevailing and whatever the goals they fixed for themselves in their minds, they can achieve it. “Lifelong learning is the basis for continuous personal and professional improvement in pursuit of self-actualization.” (Mungoshi, 2021). A lifelong learner possesses creativity and visualization. They expand their knowledge, skills and competencies to achieve life goals at both personal and professional levels. Age is inappropriately related to lifelong learning.

“When you make a conscious effort to become a lifelong learner, you open your mind to endless possibilities and fully develop your natural abilities” (Mungoshi, 2021). Self-esteem and confidence will increase through lifelong learning which makes an individual treasured, ultimately leads to self-improvement.

Lifelong learning supports identifying your real passion and purpose in life. “It brings you closer to like-minded people, you begin to see yourself in other people and how valuable everyone is. That leads to the betterment of humankind, love for nature and the universe” (Mungoshi, 2021). Lifelong learning helps to removing your emotional baggage, being comfortable with uncertainty, be less resistant, being optimistic, accepting of one’s positive and negative traits, developing self-awareness and intra-communication. Lifelong learning embedded in spirituality assists us to understand that mind, body and soul are interdependent, Hence, should be given equal prominence. “Lifelong learning enables a happier, longer and fulfilling life. It can aid in relieving stress, anxiety and depression by finding emotional balance. By learning practical life skills, you become increasingly confident and active in societal contribution. Lifelong learning helps us understand the world around and within.” Lifelong learning expands our perspectives from what limits an individual's advancing further.

METHOD

The present paper is based on a historic research design. The data collected was through the secondary method.

OPERATIONAL DEFINITIONS

Personal Growth

In this paper personal growth implies “Personal growth is a process of both understanding yourself and pushing yourself to reach your highest potential.” (Jackson, n.d.)
Professional Growth

In this paper professional growth implies “focuses on gaining new experiences and skills that will have a positive impact on your current position, as well as the role you would like to pursue next in your career.” (Indeedcareer, 2021)

Spirituality

In this paper, “Spirituality refers to seeking a meaningful connection with something bigger than yourself, which can result in positive emotions, such as peace, contentment, gratitude, and acceptance.”

Lifelong learning

“Lifelong learning is a form of self-initiated education that is focused on personal growth.”

Chakra System

“The chakra system refers to the energy centers we have in our bodies. There are seven major chakras, each in a specific location along your spine.” (Healthline, n.d.)

ROLE OF CHAKRA SYSTEM IN LIFELONG LEARNING

A chakra (pronounced “cha”- “kra” with a resounding “ch”) being originated from ancient India which is a center of energy. Originating from Sanskrit, it means “wheel” by association with its function as a vortex of spinning energy interacting with various physiological and neurological systems in the body. (Schweitzer, 2012). The chakra chart is simply a visualization of where each chakra is located and what roles it plays in our personal development. (Shamballa, 2019).

![Fig:1 The Root Chakra](image)

The first chakra is the Muladhara, or Root Chakra and is situated at the base of the spine of the human being. It is the foundation of our existence and creates deeper links with our physical
being and gives the feeling of connecting to the Earth element. This chakra is the representation of our sense of safety and security. “When the root chakra is open, we feel confident in our ability to face the challenges. When it's blocked, we feel insecure and threatened.” (Cameron, 2020).

**Sacral Chakra**

The Swadhisthana, or sacral chakra, helps to understand how we connect with our own emotions, balancing emotions and how we deal with the emotions of others. This chakra also manages creativity and sexual energy. The people who were blocked with a sacral chakra could feel a lack of control in their lives and carries emotional baggage.

**The Solar Plexus Chakra**

The third chakra is *Manipura* or solar plexus situated above our belly button. It is the energy point that is responsible for willpower, self-esteem and confidence. It allows us to develop a sense of willpower, and achievement, control over self and self-empowering. “If your solar plexus chakra is blocked, you might feel overwhelming amounts of shame and self-doubt. Those with open sacral chakra are free to express their true selves.” (Cameron, 2020)

**The Heart Chakra**

The Fourth Chakra is the *Anahata*, or Heart Chakra. It is the base of our deep bonds with partners, family and other vital relationships in life, self-love, calmness, generosity, kindness, sense of caring and respect. When the heart chakra is open, it can influence our ability to give and receive love from others and ourselves, increases empathy, compassion, open to change. If the heart chakra is blocked one will have a problem opening up and can observe a lack of flexibility in life situations.

**The Throat Chakra**

This *Visuddha* or throat chakra represents self-expression, communication by helping us to express ourselves completely. The throat chakra gives voice to the heart chakra and controls our ability to communicate at full capacity. The opening of the throat chakra permits us to express our true selves with clarity. A person with a blocked throat chakra will feel difficulty in finding the appropriate words to express how exactly they feel.

**Third Eye Chakra**

The *Ajna* or Third-Eye Chakra is connected to our consciousness. It connects to intuition and perception which facilitates awareness of the surrounding environment. When an individual’s third-eye chakra opens helps to achieve inner awareness, mindfulness, and a feeling of service. If the third–eye chakra is blocked the person will feel a lack of inner peace, clarity and vision.
The Crown Chakra

The seventh and final chakra is called the *Sahasrara*, or Crown Chakra. The crown chakra is located at the top of the head. It represents our ability to be fully connected with spirituality and with higher consciousness. The opened crown chakra represents trust, devotion, inspiration, harmony, compassion and a sense of oneness.

**DISCUSSION AND FINDINGS**

Chakra meditation helps balance both psychological and physiological health. When a chakra is low in energy, it is difficult in expressing the particular qualities associated with that chakra. If energy becomes blocked in one of the chakras, it triggers physical, mental, or emotional imbalance. For instance, emotional imbalances may lead to increased anger, sadness, fear, or indecisiveness as shown in table-1, Impact of Chakra imbalance on personality. Chakra meditation teaches us to be aware of what is happening in our body and mind in the present moment and open to it with curiosity and kindness. This allows you to explore beliefs, perspectives, and experiences in a new way that might lead to new insights for personal and professional growth as shown in table-1, the impact of balanced Chakras on personal growth.

Each chakra carries certain qualities which enhance personal and professional growth. Without personal growth, professional development is not possible. The practice of chakra meditation gives you in-depth relaxation. It is the simple way of putting effort into letting go of all stresses and receive relaxation and calmness in our mind and body. “The benefits of meditation are manifold - a calm mind, focussed attention, good concentration power, clarity of thoughts and feelings, balanced emotions in stressful situations, improved communication skills, the birth of new skills and talents, unshakeable inner strength, healing powers, ability to connect to an inner source of energy, relaxation, rejuvenation” (Shankar, n.d.). These benefits (showed in table-1) of chakra meditation help an individual to increase his or her personal growth which automatically leads to professional growth.

To be happy, satisfied, for peace of mind, for self-love one needs the power of chakra meditation practice. “The purpose of meditation is to make one calm, stress-free, free from pain, healthy and happy. Meditation helps in maintaining good physical health, mental health & emotional health.” (Shankar, n.d.)
<table>
<thead>
<tr>
<th>Chakras</th>
<th>Location of Chakra in the human body</th>
<th>Impact of Balanced Chakras on Personal Growth</th>
<th>Impact of Chakra imbalance on Personality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crown (Sahasrara)</td>
<td>Top of the head</td>
<td>Wisdom, selflessness, Clear purpose in life, humanitarianism, devotion, inspiration, values, ethics.</td>
<td>Lacking in adaptive to new situations, rigid thoughts, the constant sense of frustration, melancholy and destructive feelings</td>
</tr>
<tr>
<td>Third eye (Ajna)</td>
<td>Forehead, between the eyebrows</td>
<td>Insight, self-awareness, clarity on an intuitive level, Understanding of reality, intellect, emotional intelligence, Knowledge.</td>
<td>Lack of self-understanding, lack of clarity, fluctuating mood, lack of inner power, more in daydreaming than being in reality, non-assertive, too much attachment of materialistic life, Lack in ethics.</td>
</tr>
<tr>
<td>Throat (Vishuddh)</td>
<td>Throat</td>
<td>Cleared self-expression, good communication, Creativity, truth</td>
<td>Inability to express our thoughts lacks in verbal and written communication, lack of satisfaction.</td>
</tr>
<tr>
<td>Heart (Anahata)</td>
<td>Centre of the chest</td>
<td>Self-acceptance, empathy compassion, Forgiveness, unconditional love.</td>
<td>Lack of self-acceptance lacks in giving forgiveness, loneliness, difficulty in maintaining cordial relationships, jealousy, fear, and moodiness, pessimism.</td>
</tr>
<tr>
<td>Root (Mooladhar)</td>
<td>Base of spine</td>
<td>Sense of security, Materialism, abundance</td>
<td>Insecurity, fear, frustration, anxiety, crisis, the feeling of instability, self-doubt, distrust</td>
</tr>
</tbody>
</table>

Table 1 Source: Literature review
CONCLUSION

Chakras are energy centers within the human body that help to regulate all its processes, from organ function to the immune system and emotions. We can commonly count seven chakras positioned throughout your body, from the base of your spine to the crown of your head. Each chakra has its vibrational frequency, which is depicted through a specific chakra. If these energy centers get blocked, you may experience physical as well emotional issues related to a particular chakra which hampers personal and professional growth. The different ways to unblock or rebalance your chakras are by incorporating certain breathing exercises, yoga poses, a balanced diet and chakra meditation practices in our daily lifestyle.

REFERENCES


SWOT ANALYSIS ON A PROFESSIONAL COMMUNITY OF LEARNING IMPLEMENTING OPEN SCHOOLING FOR SUSTAINABLE DEVELOPMENT

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INTRODUCTION

Open Schooling is a novel concept promoted by the European Commission since 2015. A key issue is that there are still limited resources and tools for promoting this approach in schools. “Open schooling is where schools, in cooperation with other stakeholders (scientists, families…), become an agent of community well-being;” (European Commission, 2015).

To explore this issue, the team of the Regional Directorate of Primary and Secondary Education of Crete (RDE), has coordinated a collaborative production of open schooling resources involving science teachers and science professionals (researchers) from Museums and Research Centers, in the frames of CONNECT project.

This exploratory study aims at examining procedures and benefits to promote collaboration among teachers and researchers, as this team moves towards an open community of learning.
Qualitative data were generated by SWOT and “the most significant change” analysis based on a focus group video recording and the responses to a questionnaire given to the members of the team.

In the present article, the basic principles of structure and organization of Open Schooling and Education for Sustainable Development are presented. Furthermore, the fundamental characteristics of a Professional Learning Community are reviewed and analyzed. Finally, method and results are presented and followed by a discussion on how collaboration among the members of the RDE team consisting of science teachers and researchers could flourish as a community of learning.

**OPEN SCHOOLING**

According to the Open Schooling framework, schools in cooperation with other stakeholders, become agents of community well-being (European Commission, 2015); by building innovative ecosystems, where school projects meet the real needs of the community, for which leaders, teachers, students and the local community share responsibility, over which they share authority, and from which they all benefit through (…) the development of responsible citizenship (Sotiriou & Chevouris, 2017). Open schooling has a lot of dimensions and the most known indicators for monitoring are the following ones: science education, public engagement, open access, gender equality, ethics, governance (Okada & Sherborne, 2018). In our current project, Open Schooling was introduced mostly with regards to science education and public engagement; there was a strong collaboration between academic/research members (universities, museums, and research centers), non-academic/research members (schools & local communities) and teaching staff.

**EDUCATION FOR SUSTAINABLE DEVELOPMENT**

By the term “Sustainable Development”, the European Union defines the development that meets the needs of society without compromising the demands of future generations to meet their own needs (WCED, 1987). The term “Sustainable Development” not only includes the protection of the environment through the sustainable management of natural resources, but also economic strength, justice and social cohesion.

The main aim of Education for Sustainable Development (ESD) is the acquisition of sustainability skills by the students. The development of these skills is directly related to the selection of fields of action to be studied, as well as their content. The topics and content are fully defined by a range of scientific studies, societal experiences and related discourse. The Roadmap for Implementing the Global Action Programme on ESD lists the following key areas of sustainable development:
climate change, biodiversity, disaster risk reduction, and sustainable consumption and production (UNESCO, 2014).

The educational scenarios created by our team were within the framework of this theme: the “rewilding Britain” scenario, which was transformed into “rewilding Greece”, was characterized by the research subject of biodiversity. Additionally, the six open-ended scenarios created by the Greek teachers included the following subjects: Renewable Energy, Global Warming - Chemical Pollution, Polymer plastics, Plastics and food, Measuring CO2 for coping with pandemic Covid-19 aerosol transmission and using Map skills for problem solving.

PROFESSIONAL COMMUNITIES OF LEARNING

A Professional Learning Community (PLC) is a team working collaboratively promoting the learning of all professionals in the school community with the collective purpose of enhancing students’ learning (Bolam et al., 2005).

Even though PLCs can exist in many different forms both formal and informal, they share several key characteristics (Vangrieken at al., 2017):

a) They presuppose shared values, vision and goals and a common purpose with regard to the PLC.
b) They provide collective learning driven by teachers’ needs.
c) They break the teachers’ isolation by sharing individual practice and reflecting on it.
d) They constitute a supportive environment where everybody has a voice and contributes to the collective work.

Robertson (2007) highlights the value of developing a shared vision as one of the main benefits of teacher involvement in this context. The experience and understanding of alternative perceptions and perspectives, commitment to a common goal and the collaborative environment are key factors contributing to the progress towards a common vision. The collaboration of teachers as community members in these conditions develops a variety of learning opportunities.

Formal PLCs originate from institutional initiatives (the government, regional authorities e.t.c). There are often educators among the stakeholders, aimed at transferring knowledge. These facilitators can be subject matter experts, or researchers. The formal communities usually have pre-set goals and targets to accomplish which are planned for a certain time period. They can include teachers from more than one school and their participation can be either compulsory or voluntary (Vangrieken et al., 2017).

In a recent empirical study, Sgouros and Stavrou (2019) found that interactions in the context of a PLC are promising in reforming aspects of experienced teachers’ practical knowledge in order to implement innovation in school.
METHOD

The RDE team and its Procedures

The RDE team is consisted of 18 Science teachers and 4 science researchers all coordinated by 2 facilitators, who worked together to:

(a) recreate an educational scenario from “Rewilding Britain” to “Rewilding Greece”, for reintroducing marine and terrestrial animals that used to exist in several ecosystems of Greece.
(b) co-design five new scenarios for promoting sustainable development: Renewable Energy, Global Warming - Chemical Pollution, Plastics, Measuring CO$_2$ to cope with pandemic Covid-19 aerosol transmission and Using Map skills for problems solving, and
(c) implement these resources within 13 secondary schools of Crete to augment the science capital (Archer, 2014) of 336 students measured through pre- and post-implementation questionnaires.

The members of the RDE team followed three procedures: 1) discussion upon educational scenarios to address relevant issues for the community; 2) identification of links to formal and non-formal learning objectives, and 3) implementation of the “Open Schooling” framework of Care-Know-Do (Okada, 2019) for preparing activities to engage students with teachers, researchers and parents. These procedures were implemented through online workshops; five to prepare open schooling resources, four to organise the implementation and two to assess it. Along with synchronous online tools, asynchronous collaboration tools were also used.

The members of this team were the sample group of the study.

DATA COLLECTION

Qualitative data were generated by SWOT (Singh, 2009) and “the most significant change” analysis (Davies & Dart, 2005) on data provided by video recording a focus group with the members of the team and on data provided by the responses to a questionnaire given to the members of the team (Annex). A focus group data collection was preferred as it helped to understand the phenomena in context (Herguner, 2021).

DATA ANALYSIS

A content analysis was conducted on these data using two or three independent researchers for each question/topic (analyst triangulation) to ensure analysis validity and reliability (Barush, Gringeri & George, 2011) The final results were derived by the first author of the paper through a consensus approach among the results of the independent researchers.
RESULTS

Strengths

Our community consists of experienced people with specialized knowledge and each member has a clear and defined role as well as specific responsibilities. The guidelines and processes that we follow are clear, very well-organized and explained and at the same time flexible. The members of our community participate in regular meetings during which brainstorming and decision making are taking place. The communication and collaboration among the members of our team is excellent and is performed using the appropriate collaborative tools. We are committed to share our knowledge among us and furthermore to have this collective knowledge open to the community, engaging, also, the families of the students. We have gained emotional satisfaction from the whole project and the community has already attracted new members.

Furthermore, the collaboration and communication between teachers and researchers offered the most to students and teachers that pursue students’ science capital augmentation. Students had the opportunity to get familiar with the scientific method and to offer creative ideas, since they do not follow stereotypes in their way of thinking.

Weaknesses

Our community also faces some weaknesses: Not all scientists had the time to collect all the appropriate data for providing them to students and teachers. The members of our community need more experience in some topics, e.g. how to involve parents. In addition, our team needs more researchers as members in order to have closer collaboration with teachers, more time for scientists to communicate with students, and finally more time for teachers to implement the educational scenarios. The communication with students with regards to the questionnaires has to be improved and the questionnaires have to be further clarified. Finally, there is a need to present and share among us the educational scenarios we have created in a more detailed manner.

Opportunities

Our community functions simultaneously in two contexts: (a) the project and the consortium of Horizon2020 CONNECT and (b) the Greek national education system. In the CONNECT context we have the opportunity to give feedback and refine the pre- and post-questionnaires that measure science capital as well as bide more time for educational scenarios implementation in Year 2 and 3 of the project.

CONNECT gave an opportunity to students and teachers to set new goals in the context of schools working by distance. More specifically, covid-19 pandemic context acted as a motivation for a lot of students, parents, and teachers to come closer to new methods and technologies. Teachers
and researchers of the project used such technologies to communicate with their students and make them more enthusiastic about science issues.

It is also very important that family and the local community are engaged in science actions and this is an originality of the project CONNECT. CONNECT project and educational scenarios (science actions) implemented, revealed that researchers don’t always have the answers, nor do they have the solutions, but on the contrary they are continually seeking for them. As a result, students, parents and the local community understand the essence of the scientific process and that in this process the desired results are not always obtained. However, they understand (a) the importance of evaluating sources through the research process, (b) what to keep from all sources, (c) how to judge the validity and reliability of sources and finally (d) how to learn. All the above issues are basic elements of the scientific approach.

Threats

There is a need to refine the project tools (questionnaires, duration of implementation) and build a collaborative platform as soon as possible. There is a challenge of carefully selecting the science actions in a way that connects them to the curriculum and facilitates the collection of scientific data by researchers and teachers. Limited time in curriculum implementation and also lack of appropriate technology on behalf of the students are also considered as threats to our community of learning, particularly if distance learning is continued.

PROFESSIONAL DEVELOPMENT: A SIGNIFICANT CHANGE

All the project participants experienced significant changes and improvement in their professional development. Teachers became more effective in teaching and students more eager to learn science. The contact and collaboration with specialized scientists-researchers improved the scientific knowledge of teachers and students, highlighting the importance of cooperation with universities and research centers. The involvement of the parents increased the social impact of the problem solving possibilities. The approach "care-know-do" enhanced the participation of the students in proposing and employing solutions for the different problems.

DISCUSSION AND CONCLUSIONS: FROM COLLABORATION AMONG THE RDE MEMBERS TO AN OPEN COMMUNITY OF LEARNING.

RDE members act simultaneously in two different contexts: (a) the project and the consortium of Horizon2020 CONNECT and (b) the Greek national education system. Those two contexts both support or hinder their work. This was made clear in the Opportunities and Threats section of the paper. Furthermore, the internal factors of the collaboration affect the team functioning (Strengths and Weaknesses). As it has been made clear in Results section the team collaboration
can reflect on Strengths, Weaknesses, Opportunities and Threats in a way that (a) fosters the collaboration of its members, (b) makes the collaboration capable of pursuing the team goals with regards to the project CONNECT and (c) makes this collaboration capable to be transformed in an ongoing and open community of learning as values, vision and goals are shared among the members of the team (Vangrieken et al., 2017). CONNECT project gave us the opportunity to develop a) an open community of learning that benefits from the collaboration among science teachers and science-researchers, as well as from the open schooling approach of the project; b) an open-schooling approach where parents of the students and other stakeholders of the local community not only support the learning process of their students but also their community well-being, and c) a community of learning that benefits from new members joining the team as far as they share the same values, vision and goals. Finally, we conclude that a SWOT analysis as a means of self-reflection and evaluation in a group deliberating and working on common goals contributes greatly to developing a flourishing community of learning.

ACKNOWLEDGEMENTS

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ANNEX

Evaluating our Community (Focus Group, Individual questionnaire)

1. What does our Community of Practice (CoP) do well? (Strengths)
2. In what ways is our CoP lacking? (Weaknesses)
3. What external factors help facilitate our CoP's activities?
4. What external factors hinder our CoP's activities?
5. Do you feel that you have developed your professional development? If yes, (a) How? (b) Give us an example of a significant change in your school practice. (on individual questionnaire only)
INTRODUCTION

Education plays a vital role in transforming the socio-economic structure. Higher education is act as viaduct to link the early foundation education and enable the young generation to become productive citizens. Quality of higher education has a potentiality to cause a quantum jump in economic status of poorer families in a single generation. India’s education system is affirmed as one of the major contributors to the economic rise of India. The journey of Indian education system has growing substantially with 12% literacy rate in 1947 to 74% literacy rate as per 2011 census. India’s higher education system is the third largest in world in respect of the enrollment after China and USA. It is also noticeable that gross enrollment ratio has increasing in India as it was 24.3 in 2014-15 and in 26.3 in 2018-19. Present paper is on focus of higher education scenario in state Maharashtra. The state is always in forefront in evolving paradigm. The state is characterized by large youth strength; fast growing economy and emergence of knowledge play a significant role as an economic driver. In this growing economy knowledge is now an important factor which is dominating the global as well as the national scene. High scale application of technology is gearing the education system. We need to quickly align our education system to regulate with this changing world. This paper will evaluate how the state Maharashtra managing higher education system in respect of all encompassing quality higher education in India. It will evaluate the challenges, problems and opportunities in higher education in national context while focus on the diverse issues of Maharashtra.

METHODOLOGY

The methodology is mainly based on the literature review. Secondary data has been taken from previous research work and collected from books and internet sources. The pilot survey was conducted among the students under different higher education institution in Maharashtra to analysis the satisfaction level and perception about state higher education. The random sample method has been adopted and 350 sample size taken for analysis. The online Google form was the platform to conduct the pilot survey. The survey reports was analyses on excel format with different graphs.

The online survey method was adopted due to lockdown situation. Only students review was taken regarding the satisfaction level because students are the most significant stakeholders in education system.
RESEARCH OBJECTIVES

The main objectives of this research paper are as follows

- To understand the higher education scenario in India special reference to Maharashtra.
- To study the opportunities, challenges and weakness in higher education in Maharashtra.
- Provide some rational recommendation for betterment in higher education system.

BACKGROUND OF STUDY AREA

Maharashtra is the third largest and second populous state of India. The area covered 307,713 km² and located in western coast region. The capital of the state, Mumbai is the financial capital of the country.
We are in a period of rapid economic growth; therefore, knowledge is the booster to stimulate the growth. We need to adjust our education system to grow courage for innovation and entrepreneurship that empower students to develop solution to present problem and competently execute them for large society. Maharashtra has a tradition of constant commitment with the process of social reforms and empowered the people through education. Maharashtra is always being in forefront to take initiatives to reform the education system. The state is dominated by world’s largest young population and residents of large non-resident Indian Diasporas.

**India’s Journey of Higher Education from Ancient Times to Present Times**

India is the third largest country in terms of enrollment in higher education. After independence India has grown up extraordinarily in the field of higher education. Higher education starts in India from 10+2 (ten years consists of primary and secondary education and two years of senior secondary education). India has a glorious history in the development of higher education since ancient times. India had Nalanda, Vikramshila, Takashila and vallabhi were well known institution. Takshshila for medicine and Ujjain for astronomy. Among them, the Nalanda University being the largest educational center had all the branches of knowledge (Ponmelil, 2015). The same Nalanda University is considered to be a Model University by Professor Sanjay Dhanda, Director IIT-Kanpur (Ugra, 2010). The modern higher education system is originated in middle of 19th century in colonial times. British Colonial Administration in 1857 started civic Universities in Calcutta, Bombay and Madras. Sir Syed Ahmed set up Madrasatul Uloom Musalmanan-e-Hind in Aligarh in 1875. Pandit Madan Mohan Malaviya, founded Benaras Hindu University in 1916. Rabindranath Tagore started ‘Viswa Bharati’ in Bolpur near Calcutta in 1923 (later to become Viswa Bharati University in 1951). In 1920, to promote the Tamil and Sanskrit learning Annamalai University was established. Baroda College of Science started in 1881 and Osmania Medical College in Hyderabad in 1846 and so on. At the time of independence, the education system was diverse and mainly state sponsored affair.

After independence education was a ‘joint subject’ mentioned in Indian constitution. Central government, in fact had very limited role to play in higher education even with establishment of University Grants Commission in 1956. Though, the central government enthusiastically started highly selective institutes like Indian Institute of Technology (IITs), Indian Institute of Management (IIMs), and All India Institute of Medical Sciences (AIIMS) and also funding to many prestigious research institutes and central universities. World’s largest Open University system by student enrollment is Indira Gandhi National Open University (est. 1985) and there are many other open universities like Andhra Pradesh Open University, B.R. Ambedkar Open University, Chavan Maharashtra Open University, Netaji Subhas Open University etc provide inexpensive degree and diploma. As a result, Indian higher education system has developed very unevenly as with few highly selective well-funded central institution, widely varying quality, different academic freedom etc.
The Ministry of Human Resource Development is the authority at the centre related to the policy and direction for higher education. The states are empowered parallel way to operate, manage and execute their own policy and guidelines. Therefore, the structure of higher education in India is very complex.

In 2020 India has more than 1000 universities, with a break up of 54 central universities, 416 state universities, 125 deemed universities, 361 private and 7 institute under State Legislature Act, and 159 Institutes of National Importance which include IIMs, AIIMS, IITs, IIITs, IISERs and NITs among others (AISHE report).

**Maharashtra’s meeting the Higher Education Reform**

Maharashtra is always being in forefront in higher education expansion. As the state always lead with innovative structures and initiatives. The state had a tradition of constant engagement with process of social reforms and empowered the people with wider access to education. With largest young generation population, Maharashtra is exploring the substantial growth in higher education. University culture in the state lead by Mumbai, Pune and Nagpur and followed by Aurangabad, Kolhapur and other state Universities.

**Present Maharashtra Higher Education Scenario**

We need to understand the rapid change taking place in our education system in terms of education reform, implementation of technology, social reform and introduction of different skill-based and professional course. Therefore, it is necessary to recognize the present status of Maharashtra in higher education.

**Higher Education Statistics**

Higher Education Statistics (AISHE Data)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>2016-17</th>
<th>2017-18</th>
<th>2018-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Universities</td>
<td>49</td>
<td>54</td>
<td>62</td>
</tr>
<tr>
<td>Number of Colleges</td>
<td>4,286</td>
<td>4,314</td>
<td>4,571</td>
</tr>
<tr>
<td>Number of Standalone Institutions</td>
<td>1,959</td>
<td>1,950</td>
<td>2,262</td>
</tr>
<tr>
<td>Enrolment in Higher education (lakh)</td>
<td>40.16</td>
<td>41.31</td>
<td>42.30</td>
</tr>
<tr>
<td>Percentage of females</td>
<td>44.2</td>
<td>45.0</td>
<td>45.1</td>
</tr>
<tr>
<td>Enrolment in Universities &amp; Constituent Units (lakh)</td>
<td>9.40</td>
<td>9.43</td>
<td>9.43</td>
</tr>
<tr>
<td>Percentage of females</td>
<td>40.2</td>
<td>39.6</td>
<td>39.4</td>
</tr>
<tr>
<td>Gross enrolment ratio (18-23 years of age)</td>
<td>30.2</td>
<td>31.1</td>
<td>32.0</td>
</tr>
<tr>
<td>SC</td>
<td>30.1</td>
<td>30.6</td>
<td>31.2</td>
</tr>
<tr>
<td>ST</td>
<td>14.8</td>
<td>15.1</td>
<td>15.2</td>
</tr>
<tr>
<td>Gender Parity Index (18-23 years of age)</td>
<td>0.88</td>
<td>0.91</td>
<td>0.90</td>
</tr>
<tr>
<td>All categories</td>
<td>0.88</td>
<td>0.91</td>
<td>0.95</td>
</tr>
<tr>
<td>SC</td>
<td>0.65</td>
<td>0.69</td>
<td>0.75</td>
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<tr>
<td>ST</td>
<td>1.51</td>
<td>1.52</td>
<td>1.58</td>
</tr>
<tr>
<td>Number of teachers (lakh)</td>
<td>27</td>
<td>27</td>
<td>27</td>
</tr>
<tr>
<td>Pupil teacher ratio</td>
<td>27</td>
<td>27</td>
<td>27</td>
</tr>
</tbody>
</table>

Source: Economic Survey of Maharashtra 2019-20
The above table shows the higher education statistics on the basis of All India Survey on Higher Education (AISHE). There were 62 state University 4571 colleges, 2262 standalone institutions in 2018-19. The statistics explain considerable growth in higher education as number of Universities has increased from 49 to 62 in three years.

The Agricultural University System and Medical Health Sciences University along with the Women’s University (SNDT), have rounded off the specific purpose and focus needed by Maharashtra, in its wisdom of seeking to enable society through institution building in higher education.

**Self-Finance Universities in State**

The government of India economic reform has encouraged the change in policy making and inviting the private sector in infrastructural development related to higher education. Government of Maharashtra also invites the private sector participation to boost the access, excellence, inclusion and research in the field of higher education. State government has approved 20 self-finance universities in the state. MGM University was first self-finance University, started in Marathwada region of Maharashtra.

**Maharashtra under (RUSA)**

Rashtriya Uchchatar Shiksha Abhiyan (RUSA) is a centrally sponsored scheme, started in 2013 which vision in creating efficiency, transparency in higher education. In Maharashtra under ‘Enhancing Quality & Excellence’ component of the Abhiyan, Savitribai Phule Pune University has been sanctioned the grant of Rs. (INR) 100 crore and 25 Autonomous Colleges have been supported with the grants of five crore rupees each. The state taken initiative to start the cluster universities in the state and has established two cluster universities. In these universities Choice Based Credit System programme is available.

This research paper focuses on challenges, weakness, strength and opportunities in field of Higher Education in Maharashtra.

**CHALLENGES**

The state is facing many challenges in the pathway of higher education mainly expansion, inclusion and excellence. Expansion needs in terms of access of education for all. Inclusion is very important in terms of access to education as it should not be restricted to the privileged class. Excellence should be the prime significant for higher education to maintain the quality. Due to vast expansion of the information technology education paradigm is undergoing a transformation. As Maharashtra is providing higher education to mass communities therefore make them technological strong is a big challenge. In the last one-year sudden change of teaching learning process due to COVID 19 pandemic put tremendous challenges in higher education. Online mode of learning is not affordable by the most of the students. Mainly in the rural area it is foremost challenge to access the technology in higher education and in research.
Major challenge is to provide the education to students in assurance of livelihood. The employability rate should increase. The state provides higher education to large number of youth but the linkage between the prospective employers, development planners, industry association with affiliated colleges and universities in multiple level is not efficient. Therefore, knowledge content up to date is not sufficient to make the youth employable.

Quality and Quantity are both needed and thus, are an abiding challenge for state in higher education. In some of the institution the mainly in Mumbai student-teacher is very high (1: 120) since, providing a quality education to such a mass number is very challenging for any teacher.

Disparity also observed in terms of infrastructure, quality of teachers and related other facilities. Some of the esteemed institutes have a class one infrastructure with virtual class room, well equipped digital libraries, low student—teacher ratio and well-qualified teachers on the other hands most of the students are deprived of all these facilities. The higher education is dominated by the affiliated colleges. There is a noticeable variation in the quality of education imparted by these colleges.

Today’s Universities and colleges are overloaded with examination work and related activities. This causes a considerable distraction and affecting the quality of teachers as well as institutions. Higher education institutions are expected to be the centre of learning where knowledge is the media to explore the world with students and faculties.

**STRENGTH**

Considering that the population in most industrially advanced countries is ageing, our youth has opportunities not only in India but also in other countries across the world. The state is blessed with largest youth population. Since, Maharashtra has the supremacy to generate a productive youth to govern near future. Pune city is known as renowned educational hub. The city invites large amount of students from different parts of the country and abroad. Due to wide range of the institutes it is known as ‘oxford of the east’.

Apart from Pune, there are many other districts that are good platforms of education such as Aurangabad, Kolahpur, Mumbai, Ahmednagar, among others.

Maharashtra is among better placed states. There are some key steps that can be undertaken to achieve global standards. Recent efforts by the government such as development of Aurangabad Industrial City, the greenfield smart industrial city, can be observed as a progressive step towards establishing a sustainable infrastructure for industrial advancement in the region. Therefore, the region offers much job opportunities as compare to other state of India.
WEAKNESS

Opportunities for access to higher education in the state are somewhat unevenly distributed. A more even distribution is necessary particularly in the context of the strong linkage between higher education and development.

OPPORTUNITIES

Maharashtra has ample opportunities to explore the higher education with largest number of youth and better infrastructural facilities to higher education.

Survey Analysis

The researcher has conducted a pilot survey to understand the student satisfaction level and their perception about the higher education facilities in Maharashtra. 350 students have been surveyed from different arts, commerce and science institutes across the Maharashtra. Structured and unstructured questionnaire has been prepared for online survey.
The primary survey reveals the satisfaction level of the students. As the students are the prime and significant stakeholders of the education system. The survey report shows mixed view about the higher education in Maharashtra. As the 59% of the students stated that they do not have ICT enable class room and digital library. Most of the higher education do not have faculty exchange programme. All the institutes do not provide the placement facilities. Some amount of students stated that their syllabus is very old and not at all comparable to the international level. Overall satisfaction level also shows varied results as some are not satisfied about the teaching quality, infrastructural facilities and fees structure. Nearly 50% students are satisfied with institutional curriculum. Since, it can be concluded quality and quantity of higher education are not equally similar in everywhere of the state.

*Sources: Primary Online Survey*
LIMITATION AND SCOPE OF THE STUDY

The present study is only focus on Maharashtra higher education status as not compare with any other state. The survey is conducted among very small amount of students as it is not a replica of overall status of state higher education scenario and also perception about higher education from other stakeholders are not considered. Since, this is a rational attempt to enlighten the higher education status and study the opportunities, challenges, and weakness in higher education system of Maharashtra. It will encourage the researcher to further investigate and focus on weakness to overcome all the obstacles. The recommendation of the study will encourage the policy makers to rejuvenate the education system for a better tomorrow.

CONCLUSION

Today, in so called A3 (anyone, anywhere and anytime) connect society widest possible access to appropriate education is the urgent needs. India has grown up substantially in the field of higher education. Maharashtra is always in a forefront for any reform. In the field of higher education, it growth is significant. The state is bringing more and more youth under the domain of higher education. The main challenge for the state is to maintain the quality and quantity in higher education. The University system in Maharashtra is very flexible, open, learner centric and become capable of leading the country and its youth towards global leadership over a period of time. The recommendation should enable the educational structure to shift in a new pathway.

RECOMMENDATIONS

Higher education in Maharashtra has travelled a long way and established in a much higher position as compare to other state of India. But the state still needs some significant reforms in terms of governance, academic excellence, student employability and socio-economic developments.

- **ICT enable learning**: There is a strong case for greater use of ICT in delivery of education and in the evaluation process. With adoption of a harmonized flexible credit based modular curriculum, ICT can bridge the gaps between dual mode and open university models and make education more universally participative and student centric. With readjustment of the role of teachers, ICT can in fact lead to enhancement of both quality and access to affordable education.

- **Learning centric approach**: The higher education should move to a learning centric approach. The role of teacher in higher education move towards knowledge creator and learning facilitator.

- **Open Research Platform**: Creation of open platforms for research and problem solving that are well tuned to the needs of the neighborhood of a university with individuals and groups working and learning together, regardless of their geographical location, is now a distinct opportunity. Research in the field of Environmental Education (EE) have shown that teaching and learning outside the classroom as a part of extracurricular activities or
of non-formal educational activities provides opportunities to develop environmental awareness (Erdoğan & Uşak, 2009), environmental consciousness (Yerkes & Haras, 1997) and environmental responsibility (Matthews & Riley, 1995).

- **Flexibility in Higher Education**: Mobility of the faculty and flexible choice option should be introduced. More skill development courses should have introduced and inspire as well as recognition of curricular activities to the student must be provided in much larger scale.

- **Periodic Review of Colleges**: As disparities observed in the different higher education institutes. Needs periodic review of all the affiliated colleges to maintain the overall slandered.

- **Role of Affiliating Colleges**: An affiliated college needs to evolve their education, research and development in education in the context of emerging issues. More encouragement in research.

- **Reconstruction for Sustainable Learning**: Professional colleges as well as all the affiliated colleges should offer to every student more opportunities for academic and professional, technical and vocational courses. More engagement of private sector to reconstruction of education.

- **Welcome more Foreign Investor in Higher Education**: The state should take initiative to welcome more foreign investors to achieve the universal excellence.
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IMPACT OF DIGITALIZED LEARNING IN THE FIELD OF EDUCATION AMONG CHILDREN WITH LEARNING DISABILITIES IN THE PANDEMIC SITUATION: CASE STUDY

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INTRODUCTION

The uncertainty raised by the Covid-19 pandemic has a significant and adverse effect in every field without any course of action is taken. The coronavirus was initially identified in the country of China in Wuhan City, which has spread all around with no traces left apart on land. Physical health risk of humans has been increasing in the long run. This situation has created an emergence in shutting down everything leading to complete lockdown in 189 countries worldwide (Dhawan, S. 2020). This leads to the global lockdown in education, where all institutions have faced many challenges for continuing this academic year. its impact, both in terms of the actual illness and public health measures put in place to curb its spread, has affected individuals, groups, and communities to varying degrees (Bascaramurty and Alphonso 2020; Choi et al. 2020; Craig et al. 2021). The normal school-going children were introduced to the digital world where they have started attending their classes in online mode. The educational institutions have shifted to the online way of education, which was great defiance taken.

To an extent, this condition of providing education through online mode is favourable for normal children, but very little is talked about in Children with learning disabilities. As they have pre-existing issues, there is a dire need of protecting them more carefully in such a pandemic situation (Shah J.M. 2020). The online platforms adapted by normal children are not compatible due to significantly less acknowledgement of assistive technology is used by special educators. More physical contact was adapted in special schools where one special educator catered each child’s needs (Nelson, A., 2020). Children with learning disabilities are admitted into special schools mainly for learning social interactions and developing social skills, which cannot be taught in the current online education system.

OBJECTIVES

- To study the impact of digitalized Education among Children with Learning Disabilities.

1. REVIEW OF RELATED LITERATURE

"Experience of mothers of children and young people with intellectual disabilities during the first COVID-19 lockdown period" (NOV 2020): The researchers' has given insights about the coping of intellectual disabilities by mothers in the lockdown period. Eight mothers were interviewed, and a thematic analysis has been done. The results have shown the increase in work burden, stress levels
and embrace a change in the coming days. Very few have described a positive impact in the lockdown period by catering to their child's wellbeing and behaviour.

"Inclusion of Children with Developmental Disabilities in the Equation During this COVID-19 Pandemic" (August 2020): The researchers' reflections in the study discussed how pandemic situations need to be handled among children with developmental disabilities. These children are more vulnerable due to more healthcare needs and mental health issues. It is the responsibility of society to support these children and advocate for their requirements by giving them access to community intervention services and promoting mental wellbeing. Continuous support should be encouraged in the families of developmentally disabled children by making the resources available.

"A Review on Impact of COVID-19 Pandemic on Teaching and Learning" (2021). This study has provided a comprehensive report on the online teaching and learning strategies, their impact on the education system as an alternate way. For continuing education throughout the world, digital learning has become the only mode of education from the school level to the university level. This led to more access to internet facilities which mainly was not affordable in developing countries. Lack of online teaching skills was another challenging task faced by the teachers. Thus learners should be given access to internet facilities, and online teaching should be continued further in schools whenever possible so that teachers may get adapted in future ahead.

**METHODOLOGY**

**Purpose of the study**

The study showcases how the digitalized learning had an impact on the children with learning disabilities. This had direct impact on the children with special needs due to no face to face communication with their special educators.

**Sample**

The purposive sampling technique is adopted for the present study as most schools have stopped functioning due to pandemic situations. Very few schools dealing with Learning disabilities are
conducting classes virtually in the Telangana state. Fifteen school were identified by the researcher for this study. Out of which 8 schools have been shut down due to pandemic situation and four schools were not working due to lack of students not ready to attend schools. Three schools from the State of Telangana has participated in the study. Special educators and parents of children with learning disabilities have participated in the study.

Semi-structured interviews is taken as the tool for this study. Most of the students had learning disabilities of dyslexia, dysgraphia, ADHD, Autism and dyspraxia.

Procedures

The researcher has incorporated a qualitative research method with the case study approach. Based on the analysis, the researcher has chosen suitable special schools. The researcher has taken prior permission from the respected school management and teachers for the present study.

ANALYSIS AND INTERPRETATION

The whole world is in a critical stage where the pandemic has wholly disrupted the education field at every level, including the children with learning disabilities in delivering conceptual understanding. For seventeen months, the shutdown of schools has paved the way for the digitalized education, where the accessibility has increased and brought a paradigm shift. Shikshak special school, Learning centre for Autism and Bodha Special school from Hyderabad, in the state of Telangana in India, are few schools which are catering to the needs of children with learning disabilities. But digitalized education is catered only for the children with learning disabilities such
as dyslexia, dyscalculia, dyspraxia, dysgraphia and ADHD. Children affected with learning disabilities are continuing their learning in digital mode. Initially, it was very difficult to handle the children in virtual mode, and many challenges were faced by the special educators, students as well as parents. They are

**Lack of digital learning**

Skills among the children with learning disabilities was noticed, as they are new to the online mode of education. The trainers, as well as parents, are given training on how to conduct classes digitally, and training is giving to parents on how to attend the classes and support their children.

**Attention**

difficulty is noticed among the students, as a digital class was completely new to them. Sitting in one place for a longer duration with no physical contact became very difficult. The attention span of these children is very less, and this made the special educators a tough job in handling them virtually. A teacher could make the students attentive towards class in the traditional classroom. In comparison, it is too difficult in the virtual classroom due to lack of awareness and practical experience about digital learning. Normal children can learn to some extent to manage their academic functions. But it is challenging for children with learning disabilities because of their less span of attention.

**Absence of Reinforcement techniques**

has been considered completely vanished as student's work is incomplete due to the absence of face-to-face guidance. Reinforcement is one best strategy in the teaching-learning process to improve children abilities, and these reinforcement techniques play a major role in boosting their motivation in the little things they do. Moreover, it creates heed among the children. Nevertheless, while conducting online classes knowing strengths and weaknesses among the children is much difficult. It is not likely to follow the reinforcement techniques in the case of children with learning disabilities.

**Emotional Bonding**

between the students and the teachers is completely absent as social distancing was the primary protocol in this pandemic situation. Digitalized learning is just an opportunity to run the education system with limited facilities in the pandemic. Face to face interaction is necessary to know the emotions of children in any class. Emotional Bonding between the teacher and student will provide the expected learning environment. There is no scope to maintain emotional Bonding in digitalized learning, particularly to the students with learning disabilities.

**Less confined eye contact between the trainer and the child**

is observed in the online classes as this is a new environment for the students to get used to and continue with it for a period of time. This gradually decreased the one-to-one eye contact between
the child and the trainer. The learning environment becomes advantageous when the teacher has
eye contact with the student, which could help the teacher to understand the emotions. Eye contact
is compulsory in the case of children with learning disabilities for better learning. In the current
scenario, the learning process is quite different from having adequate eye contact with the child,
which shows a negative impact on the learning process during the pandemic with digitalized
learning. Children with learning disabilities are more suffering from learning loss in the digital era
due to less confined eye contact between the trainer and the child.

One to one attention

cannot be expected as children are not digital-friendly, and it takes a lot of time to grab the
attention of the children from the trainers. Families of young children with disabilities have already
experienced social isolation than other families before COVID. The risk of isolation has been
Children are completely restricted to their home, and there is no scope to interact with the peer
group. Especially the children suffering from learning disabilities are feeling academic anxiety due
to lack of one to one peer cooperation in the present pandemic.

Scope of personalized assessment is missing

every minute thing is being noted by the trainers, which helps in assessing the child's development
and progress. Through online learning, one can only see the visuals of the work done by the child,
which is not enough to draw conclusions about the child's progress. It is very vital to incase of
children with learning disabilities to observe them carefully in person for the progress of the child
which is completely absent. Personalized assessment is the most important aspect of teaching
special children. Individual assessment and feedback are the best strategies to understand the
issues among children with ADHD, dyslexia, dyscalculia and dysgraphia. But there are no provisions
to take personal care of children with learning disabilities.

POSITIVE IMPACT COVID-19 ON CHILDREN WITH LEARNING DISABILITIES

COVID-19 pandemic compelled us towards digitalized learning from primary to higher education.
The COVID-19 pandemic has enlightened both the teachers and students to be oriented on the use
of various online educational tools (Pokhrel, S .2021). It is compulsory for any learner, whether he
is a teacher or a student, to be updated with the increased technology opportunities in the
education system. Benefits of enhanced digital opportunities for both inclusion and exclusion
category of children have undertaken a positive impact after covid-19. However, the impact of covid
on children with learning disabilities is effective; there are few positive ideologies in continuing the
pandemic situations. They are

Rapport between trainer and students will stay intact

as there are no schools running in–person, through online learning, students will stay in contact
with the trainers so that it would be easy for them to continue the social pace after things return
to normal. Teachers and students can understand each other when there is a rapport between
them. Teachers need to be maintaining more rapport with the children with learning disabilities in
the digitalized learning process as they are unable to follow the instructions well when compared to normal children. Hence the strong rapport that takes place between trainer and students will stay intact to resolve their issues regarding mode of operation and as well as doubts regarding content of the respective subjects.

**Boosting the motivation of the students**

will make them stay on track, leading them to continue their studies ahead instead of sitting idle doing nothing at home. In general, children attract to electronic gadgets than other toy gadgets. The present pandemic conditions forced the students to be engaged with the gadgets like Mobile phones, laptops, tablets and desktops to continue their academic activities. The new way of teaching techniques such as an attractive PowerPoint presentation and content describing videos are boosting the children to motivate towards their academics.

**Keeping students engaged with activities**

Children are facing psychological problems like stress and anxiety during online teaching due to spending much time with mobile phones and laptops. Teachers are assigning the children various activities such as painting the picture, craftworks and project work during this pandemic to overcome the stress and anxiety among the children. These activities create more interest in young children with learning disabilities.

**Bondage between parents and students has increased**

due to which a healthy bond is building between the parents and children as they have ample time together in the lockdown period. The commendable aspect during the pandemic that has to be discussed is that the Bonding between parents and students. The children were used to spend more time in the school environment than home environment before the pandemic, whereas in the digitalized learning process, children are strictly restricted to home environments due to the threat of the novel coronavirus. The parent takes a vital role during this pandemic for effective learning. This is a golden opportunity to the parents not only for caring health status but also caring educational status. In this context, bonding between parents and students were strengthened.

**DISCUSSION**

The discussion mainly focuses on how the digitalized learning is affecting the children with learning disabilities. The researcher has visited fifteen special schools in the state of Telangana, India. Out of fifteen, only six are continuing their institutions through online digital learning, and the other nine special schools are providing home training only for the children who need personal attention. Mentally Retarded children are completely kept at home due to their health conditions and pandemic situations. Children with learning disabilities are given online classes every alternate day, so that they can be motivated in learning and understanding the concepts.

Shikshak special school, Learning centre for Autism and Bodha Special school for Autism participated in the study. Three parents and four teachers participated in the study. Most of the other trainers have lost their jobs as the school administration were not able to pay the salary. It
was observed during the interview that the teachers had committed to a significant challenge in teaching through online mode. It has taken time in getting adjusted to the digital environment but gave them motivation in staying connected to their students. They have faced difficulties in getting adjusted to the forty-minute zoom meetings but eventually understood the pattern of online meetings and scheduled the time slots, keeping in mind the interest of children.

Initially, parents were completely stressed out due to management of office work, household work and monitoring the child every time was very difficult. At later stages, they have come into a daily routine, were able to understand and support the child in attending virtual classes. Other family members support played a key role in adjusting to the vital changes without any dissatisfaction.

Overall, closures of special schools had a profound, largely negative effect on children with learning disabilities not only due to the loss of learning but also the loss of their daily routine, their access to therapies, the specialized sensory equipment. They have completely lost the social grooming with peers. There is a need to make the necessary adjustments for the wellbeing of the students.

**RECOMMENDATIONS**

Despite of profound changes taken place due to covid-19 since March 2020, very minute progress has been made in special schools due to the fear of getting affected from covid-19 or staying away from getting affected. Support from the schools as well as from the parents will make the children to continue their learning without piling a big gap till the situation settle down.

**Measures to be taken for continuation of learning are**

- The clarity in communication from the government to the teachers as well as the parents in planning the student-friendly online meetings on a regular basis.
- Keep the educational, counselling and medical therapies open so that they can easily be approachable for both parents and students. They can get guidance on how to go about with all the necessities and act accordingly.
- Intervention programmes have to be conducted for the parents by the special educators to support the child at home whenever necessary.
- A flexible Curriculum should be designed in such a way that more attention from the students is taken into consideration for their learning.
- Project-based techniques can be included in the assessment techniques, and child’s progress can be observed based on the outcome of their learning.
- Providing guidance for the special programmes is necessary after the reopening of schools so that care for the children with learning disabilities can be addressed. Additional guidance may be provided so that transmission of the COVID-19 virus can be prevented.
- In-home services are to be taken into considerations so that child care settings can be done at home without any risk. There is a need to ensure service delivery to all the families.

**CONCLUSION**

The study on the impact of COVID-19 on the children with learning disabilities concludes that there is a need to change the education system as the pandemic situation has paved a way to get altered...
to the digitalized conditions to progress ahead in conceptual learning without adhering to any further gap in carrying out the classes for the students. An alternate way for educating the children with learning disabilities need to be upgraded by flexible curricula, professional advancement among the teachers as well as parents and availability of learning resources should be given special consideration. Support from schools and teachers are very much necessary in building motivation and mental wellbeing among children with learning disabilities. This pandemic situation has taught a great and challenging lesson that orientation programmes should be conducted to the teachers and parents on the usage of varied educational online tools for continuing the studies and get enhanced in teaching and learning.

**REFERENCE**


SHOULD ‘MEANINGFUL’ ONLINE LEARNING EXPERIENCES BE FUN FOR HIGHER EDUCATION STUDENTS IN INDONESIA?

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INTRODUCTION

RUMPUS was developed as a research group to examine the relationship between fun and learning. At first glance this topic focus might appear unproblematic or even mundane. However, whilst in research with children and young people the notion and significance of fun is ubiquitous, arising across numerous research contexts, fun is rarely taken seriously as a topic and is side-lined in research (Tatlow-Golden 2021). Furthermore, within Higher Education the notion that fun merits research or has place in meaningful pedagogies is controversial. For example, Whitton and Lang (2019) found that

.. an ongoing debate about whether it [fun] is appropriate in relation to adult learning, and many believe that it is unsuitable in the ‘serious’ business of Higher Education.(Whitton and Langan 2019) p3.

RUMPUS is a multidisciplinary group who share an interest in understanding the nature of fun in learning and exploring its conceptualisation (Ferguson et al. 2020), expression, and application across different cultures and contexts (Budiyanto et al. 2017). One strand of this work is the large-scale Online Learning and Fun (OLAF) project which examines educational communities’ beliefs about fun in learning in different countries. It seeks to examine the contentious topic of fun in Higher Education pedagogy and within the context of online and distance education. In 2021 there were seven project partner organisations from five countries. The focus of this paper is on work carried out with the Universitas Negeri Surabaya (UNESA), Surabaya, Indonesia.

The Indonesian context

The provision of online learning in Indonesian Higher Education has been developing gradually over the last decade. There is a national platform Sistem Pembelajaran Daring-(Online Learning System) (Wintarti et al. 2019) and some universities have developed their own (Kristanto, Mustaji, and Mariano 2017), for the purposes of blended learning. This situation was profoundly impacted by the COVID 19 pandemic. The Indonesian Ministry of Education and Culture appealed to educators to accelerate the creation of wholly online programs and create ‘meaningful learning experiences’ (Hidayati and Saputra 2020) p4514.
Research indicates that ‘Almost all education managers have tried to follow the ministry policy’ (Hidayati and Saputra 2020, 4514), with 80% of institutions endeavouring to do this as the majority of their students had left their campuses (Nugroho 2020).

The global pandemic aside, the risk of students dropping out of their H.E. studies is significantly higher for those within distance education (Meneses and Marlon 2020). Given the global turn to the provision of online education, which is predicted to increase post pandemic (Lemoine et al. 2021), it is vital that managers and educators examine and develop ways to address the risk of drop out. Previous research has indicated two factors that appear to be important in this respect: students’ epistemological beliefs and enjoyment/fun (Alexandra Okada and Sheehy 2020a).

The importance of students’ epistemological beliefs in higher education

Students’ epistemological beliefs reflect their views about how learning occurs. Consequently, this influences how they approach their own studies and how they judge the worth of the teaching that they receive and the educational activities they take part in. For example, some researchers have grouped beliefs into Constructivist and Traditional conceptions.

Constructivist conceptions

- Effective teaching encourages more discussion and hands-on activities for students.
- Good teachers always encourage students to think of answers themselves.
- The focus of teaching is to help students construct knowledge from their learning experience
- Traditional conceptions
- The traditional/lecture method of teaching is best because it covers more information/knowledge.
- Teaching is to provide students with accurate and complete knowledge rather than encourage them to discover it.
- A teacher’s task is to correct [any] learning misconceptions of students right away instead of [allowing them to] verify them for themselves.
- Teaching is simply telling, presenting or explaining the subject matter.
- Learning occurs primarily from drilling and practice.

(adapted from Teaching and Learning Questionnaire (Chan and Elliot, 2004, cited in (Sheehy 2016, 234))

Epistemological beliefs such as these have been researched with regard to students in traditional face to face universities for over half a century (Richardson 2013) and there is a body of evidence to show the influence of these beliefs on students’ study strategies and their academic outcomes (Rodriguez and Cano 2007; A. Okada and Sheehy 2020). There appear to be cross cultural differences in these beliefs (OECD 2009) and there is some evidence that Indonesian students
and educators may hold social constructivist beliefs about learning (Sheehy et al. 2017). However, students’ epistemological beliefs remain under researched within online Higher Education in general and very few examples of Indonesian research exist (Rahmiati 2019). This lacuna in our knowledge has become more noticeable in the context of a global pandemic and the forced evacuation of learning (and learners) from the physical campuses of typical universities to a variety of online platforms and virtual resources.

**Indonesian conceptions of fun in learning.**

The second factor to consider is that of fun in learning. Ferguson et al (2020) highlight that the relationship between fun and learning is disputed and unclear. For some educationalists fun and learning are mutually exclusive entities, for others fun is a fundamental aspect of pedagogy (Ferguson et al. 2020). In reviewing the area, they conclude that ‘we are only at an early stage of understanding how this broad range of experiences and emotional responses relate to each other and to learning.’ (Ferguson et al. 2020) p11 and they emphasise the need to look

.. beyond the views of people based in the UK and the USA, and to take into account a wider, international range of perspectives on the relationships between learning and emotion (Ferguson et al. 2020, 11)

This current paper begins to meet this need this by examining this relationship within the context of Indonesia and the remit of the OLAF project.

It has been argued that a ‘western’ perspective sees happiness as separate, ‘a tool for facilitating effective education’ (Fox Eades, Proctor, & Ashley, 2013, 1). From this perspective fun is placed alongside or after learning, something that is a reward for ‘doing’ the learning or as a respite from learning (to allow the learner to refresh and then return to their learning). It can also be seen as a negative influence on learning. For example, with regard to school based learning, the Centre for Education Economics (CEE) is reported as stating ‘Making lessons fun does not help children to learn…. The widely held belief that pupils must be happy in order to do well at school is nothing more than a myth’ “ (Turner 2018).

Against this backdrop, Ferguson et al’s (2020) recommendation is important because relatively little is known about the social construction of happiness in Eastern societies, where there appear to be different conceptualizations (Jaafar et al. 2012). For example, western research tends to foreground individualism whereas other cultures foreground ‘harmonious relationships with other members of society’ (Jaafar et al. 2012, 550). This is reflected in the Indonesian language which has a greater degree (than English) of expressing emotions in social terms and has nuances that are different from those found in English (Shaver, Murdaya, and Fraley 2001). Our previous Indonesian research has pointed to the significant enmeshment of fun and learning within the teaching process (Budiyanto et al. 2017) and in discussions with teachers, we found that they saw
pedagogy within a social emotional network, in stark contrast to the notion of happiness or fun happening ‘alongside’ learning or being irrelevant to it. These differences in perceptions of the relationship between happiness/fun and learning are likely to reflects the difference in epistemological beliefs that between cultures and social groups (OECD 2009; Sheehy et al. 2017).

This current Indonesian study, within the OLAF framework (OLAF 2021), seeks to explore the relationship between online students epistemological beliefs, fun in learning and their enjoyment of their studies.

METHOD

A questionnaire was developed from a questionnaires by Okada and Sheehy (Alexandra Okada and Sheehy 2020b), which elicited responses to statements reflecting different models of learning: constructivist, social constructivist, banking and traditional transmission views, and beliefs about fun in learning and if they were enjoying studying online (see figure 1). There were also open questions concerning their studies and the impact of Covid, the analysis of which is the focus of a separate paper. Respondents indicated their agreement/disagreement with these statements using a typical five point Likert scale.

![Figure 1. Questionnaire items adapted form Okada and Sheehy (Alexandra Okada and Sheehy 2020a)](image-url)
ETHICS

The project was favourably reviewed by the Research Ethics committees of the researchers’ universities and study information was posted online at UNESA. Students could then choose, (opt in) to take part anonymously in a Qualtrics ™ survey.

PARTICIPANTS

Response 774 UNESA students who were studying online from geographically distant parts of Indonesia

FINDINGS

Examining the data indicated that a principal component analysis (PCA) could be carried out, and informed by a scree plot five components were extracted. A direct Oblim rotation, with a .35 cut off, was used to look at the relationships between the questionnaire items.

The five components are illustrated in figure 2

Component *Social constructivist and traditional pedagogies*

This component included items related to Figure 1’s social constructivist beliefs, which highlight the importance of collaboration and social interactions in learning. However unlike the
associations found within European research (Alexandra Okada and Sheehy 2020b) it also included statements 5 and 6: teacher led demonstrations of problems and the teaching using clear answers. This lack of differentiation between traditional and constructivist beliefs has been found in other research in Asia (Organisation for Economic Co-operation and Development (OCED) 2013).

What is notable here is that the majority of students agreed with the social constructivist items, and 94% agreed that *Meaningful learning occurs when students are engaged in social activities*, and also with statements 2, 3 and 4 (Figure 1)

Component. *Inclusive, collaborative fun for happy learners.*

This component reveals that beliefs about happiness as a pre-requisite for effective learning, are associated with teachers and students learning together in a way that can be fun.

Component *Taught by fixed abilities.*

This component is in conflicting with these social and fun views of learning. It reflects beliefs that academic abilities are innate and fixed and that teaching should reflect this, occurring though ‘streamed ability groups using a single teaching method. This constructs a picture in which learning is successful or not because of students’ innate abilities.

Component *Discovery is not fun, and reflection is unnecessary.*

This component sees the learner as passive in their learning process, disagreeing that teachers should facilitate students in the solving of problems. Furthermore, problem-solving and discovery [central features of constructivist approaches) are seen as ‘not fun’

Component *Online content delivery is not enjoyable teaching.*

Although the components were relatively independent and formed by distinctive groupings of the items, we have placed the component ‘*Online content delivery is not enjoyable teaching*’ centrally in Figure 2. This was partly of the large number of students who expressed that they did not enjoy their teaching (46%) or neither agreed or disagreed that they enjoyed it (45%) and partly because this experience seemed to be at the hub of reflecting the student’s epistemological beliefs in relation to pedagogy. This component brings together beliefs in the importance of thinking and reasoning over specific content and not enjoying studying online. This implies that the lack of enjoyment expressed by many students is associated an online experience that is a ‘traditional’ content delivery approach.
DISCUSSION

The findings of this research show that there are several reasons why students online learning might be neither meaningful nor fun.

Firstly, this research reveals that nearly all the students believe that learning occurs through social and collaborative processes. Furthermore, that it is through social activities that meaningful learning occurs. Not only are collaborative and social activities effective for learning, they are also fun. A caveat to this was an acknowledgement that some fun activities can get in the way of learning, which makes sense give the enormous range of activities that can be classified as being fun (Ferguson et al. 2020).

In relation to their epistemological beliefs, therefore the [majority of] students value learning activities that are social in nature and 70% agree that thinking and reasoning are more important that specific content. This implies that a significant factor in their dislike of studying online is that the pedagogy they receive does not match with these beliefs and highlights the issue of epistemic match (O’Siochru and Norton 2014). This concept refers to the complementarity between the beliefs students hold and those that underpin the teaching they receive. A mismatch here can have significant negative effects on students’ academic engagement and outcomes (Dai and Cromley 2014). Clearly, students with constructivist beliefs would dislike online content transmission approach, however those who hold fixed abilities beliefs would also dislike this approach because it would be a ‘one size fits all’, rather than differentiated by ability groups. A caveat to this argument is that this research occurred within a pandemic, and so there are other factors likely to influence students’ enjoyment of studying online. The next stage of the research will be to analyse the nature of the pedagogy across several course to assess the degree to which the epistemic match hypothesis holds up.

Secondly, the research offers insights into the relationship between epistemological beliefs and fun. They confirm previous Indonesian research that social constructivist views of learning are associated with a belief that fun and happiness are important for learning (Sheehy et al. 2017) and extend this into the field of online Indonesian higher education.

CONCLUSION

In answer to the question ‘should ‘meaningful’ online learning experiences be fun for Higher Education students in Indonesia?’, the findings of this research suggests that the answer is yes it should. This is because many Indonesian students hold a social constructivist view of learning, which is associated with collaborative activities which students believe to be fun. Furthermore, it is these social activities that students believe make their learning meaningful.

However, they do not currently enjoy their online experience and our findings suggests that the concept of epistemic math could be helpful in addressing this and contribute to improving
across academic engagement. Our findings suggest that making online learning meaningful for Indonesian students will also make it fun.

REFERENCES


THE CCS APPROACH AND FUN LEARNING: AN ANALYSIS OF RESEARCH DATA FOR INCLUSION

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1São Paulo State University, Unesp, 2University of Western São Paulo, Unoeste, 3&4Federal University of São Paulo, Unifesp, 5&6São Paulo State University, Unesp, Brazil

INTRODUCTION

The pandemic imposed emergency measures to prevent the widespread transmission of COVID-19, causing global severe disruption to social, economic, cultural and educational aspects and, above all, to the teaching and learning processes. Due to the suspension of face-to-face classes, the use of Digital Information and Communication Technologies (DICT) has become a mandatory condition for the development and maintenance of schooling worldwide. In addition, it has highlighted the importance of considering accessibility in pedagogical strategies, resources and actions in learning environments. In this sense, based on the experiences of the researchers of this article, it was observed that the Constructionist, Contextualized and Meaningful (CCS from the acronym in Portuguese) approach in the perspective of fun and learning principles would be a solution for the current and post-pandemic era.

In the most intense period of the pandemic crisis, data indicate that 1.6 billion students in more than 190 countries were out of school (UNESCO, 2020). Therefore, to ensure equity in learning environments, it is necessary to develop pedagogical strategies so that students enjoy learning, and have access to DICT resources that promote the participation of everyone from their experience, the pleasure of learning and with the appreciation of differences, the basic principle of inclusion.

The CCS approach (Schlünzen, 2000, 2015) has been successfully consolidated over the last 20 years, as it values diversity and focuses on the skills and potentiality of students to promote learning that emerges from their context, giving meaning to the content learned. This approach was developed from studies that aimed to identify strategies for playful learning, in which the contents could be formalized and grounded in the students’ experience. Based on the project-based learning (PBL) approach and using DICT resources, its design aims to contribute to the development of an inclusive culture and meaningful learning. Accordingly, students experience practical activities that favor the development of fun learning that can trigger the desire to learn more in search of autonomy, optimal flow, and emancipation (Okada & Sheehy, 2020), as well as enable their skills and competences to flourish (Schlünzen et al., 2020).
This study is innovative, relevant and aligned with the Sustainable Development Goal 4 (SDG4), whose scope is "to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (UNESCO, 2015, p. 14). In this perspective, the aim of this paper is to examine the perceptions of teachers regarding the relationship they establish between diversity, inclusion and fun learning in the context of education in the contemporary world. Data were collected from a questionnaire applied to a wide group of stakeholders through activities of the "Online Learning and Fun (OLAF)" project. However, for the purpose of this study, only the perceptions of participating teachers were included and the analyses were underpinned by the assumptions of the CCS and fun learning approaches.

CONSTRUCTIONIST, CONTEXTUALIZED AND MEANINGFUL (CCS) APPROACH

Based on studies carried out by Schlünzen (2000; 2015), the CCS approach favors the development of inclusive actions and facilitates the use of DICT in the teaching and learning processes. While it allows the emergence of the students´ interest, it motivates them to explore, research, describe, reflect, and refine their ideas. According to Papert (2002), the constructionist approach is grounded in the assumptions of renowned researchers that state that children would learn better if learning were truly part of the life experience, as claimed by John Dewey; children would learn better if they were truly in charge of their own learning processes, as in Freire’s (1996) statement, intelligence arises from an evolutionary process in which many factors must take time to find their balance, as in Jean Piaget's theory; and conversation plays a crucial role in learning, as explained by Vygotsky.

Schlünzen (2000) defines the core principles that guide the teacher in the construction of a methodology that includes technological resources to create a CCS environment, awakening the students´ potentialities and skills and using the PBL methodology as a strategy of teaching. Thus, according to the CCS approach, the environment is constructionist because students use the DICT to produce an artefact and build knowledge based on their interest. It is contextualized because the choice of the theme to be studied emerges from their own interest. Data, therefore, are constructed from the students´ contexts and the starting point of the learning process emerges from their experience and reality, through a central theme. It is meaningful, first, because during the development of the project, students are faced with new concepts and the teacher or the specialist, in this opportunity, performs the pedagogical mediation to formalize and systematize such concepts, giving meaning to the learning. Second, because each student can act according to their own skills and interests.

From the CCS perspective, Almeida and Valente (2012) argue that the actions performed by students move from the mere receipt of information to a process in which they perform activities using digital technology and learn from this experience. According to the authors, students shape an idea and transform it through doing, acting and thinking and, because this idea is built from
their interest, it is observed that students develop motivation and an affective involvement during the process of learning.

The CCS approach emerges from the necessity of changing the dynamics of the school system, it considers the DICT as important resources for accessibility, enables communication, favors the development of the cognitive, affective, emotional, social and political capacity of all, considers the skills of the students, and values human diversity. (Schlünzen, 2000, 2015). Based on this, it is proposed that students and teachers establish relationships using experienced situations combined with learning concepts and, in this way, build knowledge in order to contemplate the requirements for “survival” in the information and knowledge society.

FUN AND LEARNING

Often understood as a set of school strategies to entertain and contain students through playful activities, fun learning is applied in a reduced and distorted form as a way to control students and condition their behavior. Thereby, it is claimed not to help develop satisfaction and motivation in their own learning process significantly, remaining only at the level of promoting the pleasure of being at school - or, at least, avoiding boredom and extreme rejection of the educational environment. Contrary to this conception, this research considers that fun learning encompasses “feeling good (well-being) through critical consciousness” (Okada & Sheehy, 2020a, p. 593). The authors define the concept of “emancipatory fun” by relating it to the hope and confidence that students can have fun acting, reflecting and learning. They can search, search and solve problems and also identify and overcome obstacles” (Okada & Sheelhy, 2020a, p. 597).

The concept of emancipatory fun is achieved with the conscious reflection of praxis. In this concept, the teacher has the fundamental role of encouraging each student to go through experiences and reflection processes regarding practice in which fun is promoted within the flow, as proposed by Csikszentmihalyi (2015), where there are pleasant achievements within the proper balance between challenges and skills. In this relationship between challenge and skills, when the proposed activity is too easy, boredom is promoted. Otherwise, when it is very difficult, anxiety is heightened. In both scenarios, students can become frustrated and have poor learning performance.

Hence, fun in learning requires teachers to balance challenges with students' perceived skills, while encouraging spaces for reflection on practice. The challenges, in order to be meaningful, must dialogue with the context and individual and collective interests of the students, at the same time they must offer spaces for their autonomous and reflective actions. Thus, fun learning and the CCS approach come together and promote a new guideline on the central processes of education.
It is important to highlight that the theories of inner experience flow proposed by Csikszentmihalyi (2015) as well as the CCS approach proposed by Schlünzen et al. (2020) have their assumptions based on constructionism. That is, these approaches are underpinned by Piaget's cognitive development, which defends the social interaction, by Vygotsky's conception of the proximal zone of development (ZPD), which considers the social production of knowledge and by Freire's pedagogy of autonomy. These conceptions are consonant with meaningful and fun learning, as proposed and defended by Okada & Sheehy (2020).

**METHOD**

This study is part of the international research project OLAF, which explores fun, enjoyable and fruitful learning to build inclusive educational cultures, reinforcing the search for results in education, especially in the current scenario of the Covid-19 pandemic. In the general scope of the project, a self-reflective questionnaire was applied to 897 stakeholders in the area of education from November to December 2020. However, in order to reach the objective of this study, the data selected for analysis correspond exclusively to teachers (n=227). Among those selected, there are 79% female (n=179) and 21% male (n=48). In terms of teaching level, 63% are teachers of elementary education (n=144), 30% teach in undergraduate (n=67) level and 7% in graduate (n=16) phase. With regard to the country of origin, 95% of the teachers are from Brazil (n=216), 4% are from Angola (n=8), 1% are from Mozambique (n=2), and 0.4% are from Peru (n=1). The questionnaire was delivered and answered in Portuguese.

**RESULTS AND DISCUSSION**

For the analysis of this research, 13 structured statements were selected with five response options (strongly agree - SA, agree - A, disagree - Di, strongly disagree - SD, neither agree nor disagree - NAND). In order to achieve the proposed objective, the selected items were related to the themes of diversity, inclusion and fun in learning. Table contains the selected statements, their percentages and the frequency in each answer option.
6. Students should be allowed to think of solutions to practical problems themselves before the teacher shows them how they are solved

<table>
<thead>
<tr>
<th>Percentage</th>
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<tr>
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<td>(2)</td>
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7. All students should be taught in classes according to their intelligence

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8. Students and teachers must participate together in learning in diversity.

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<tr>
<td>2.6%</td>
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9. The learning environment should be a democratic space

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<td>(0)</td>
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<tr>
<td>3.5%</td>
<td>(8)</td>
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10. Learning occurs when students act and reflect on their own action for their transformation

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<td>(0)</td>
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<tr>
<td>1.8%</td>
<td>(4)</td>
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11. Fun is part of curiosity and discovery

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<tbody>
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<td>96.5%</td>
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<tr>
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<td>(1)</td>
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<td>(0)</td>
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<tr>
<td>3.1%</td>
<td>(7)</td>
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12. To learn effectively students must be happy

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<th>Percentage</th>
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<td>80.2%</td>
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<td>(0)</td>
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<tr>
<td>17.2%</td>
<td>(39)</td>
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</table>

13. Learning should involve fun

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<td>83.7%</td>
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<tr>
<td>0.0%</td>
<td>(0)</td>
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<tr>
<td>12.8%</td>
<td>(29)</td>
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</table>

Table – Self-reflective instrument about teachers’ conceptions related to diversity, inclusion and fun in learning.

Source: The authors.

From the perspective of participating teachers, 93% agree or strongly agree that students learn best through collaborative activities. Recent academic literature has shown that collaborative work favors the exchange of experiences, can contribute to the development of social-emotional skills and strengthen self-efficacy beliefs through vicarious experiences (Bandura, 1986). In this direction, according to Lévy (1998) and Schlünzen and Schlünzen (2004), collaborative activities facilitate learning and emphasize the importance of the teacher as a mediator of learning, creating appropriate learning situations for each level of development.

In relation to the statement that affirms that meaningful learning takes place when individuals are engaged in social activities, 81% agree or strongly agree. However, according to the CCS approach, meaningful learning occurs from two premises: first, students are faced with curriculum concepts during the development of their project and, at this point, the teacher mediates the formalization of such concepts, allowing students make sense of what they are learning and, secondly, learning is meaningful when students have the opportunity to act according to their abilities and interest in collaborating with the resolution of a problem according to what they most identify (Schlünzen et al., 2020). Given the above, social activities can favor meaningful learning, but they do not guarantee that it will occur and the teacher’s role in formalizing concepts and mediating learning is crucial.
Among the teachers who agree or strongly agree that teaching should be built around problems with clear and correct answers, 96% also agree that the teacher's role is to support students to develop their own questions and research. According to Pinto (2000), understanding that error is part of the learning process and that the teacher can organize teaching strategies based on contextualized parameters result in better learning. Consistent with the CCS approach, when students are encouraged to formulate their own research questions but cannot reach the expected result, the teacher must mediate the situation so that the "error" is an ally in the construction of the student's knowledge.

Conversely, the findings reveal that 64% of teachers agree or strongly agree that students learn best by finding solutions to problems on their own. Those who neither agree nor disagree add up to 21%. This controversial result demonstrates that this matter was not well understood or that the participants understood that these statements consider the teachers' role irrelevant when solving problems. Ausubel, Novak and Hanesian (1978) claim the teacher, by refusing to provide the information that students need, hoping that they will do it alone, can strengthen wrong habits. Thus, one of the principles of the CCS approach in the the perspective of fun in learning is that the teacher considers the students' prior knowledge as a starting point and challenges the students in a balanced and suitable way, according to the concept of flow (Csikszentmihalyi, 2015).

As for possible relationships between who should present solutions to problems first, students or teachers, 81% agree or strongly agree that students should be allowed to think of solutions to practical problems themselves before the teacher shows them how they are solved. In this regard, according to the CCS approach, if the teacher presents the solutions to the problems before the students have had the opportunity to reflect on them, the student will not be able to create their own strategies for solving the problem. By the same token, if teachers have the answers ready to offer, the process of formulating the problem will probably not have come from the students. Therefore, as long as the proposed problem is in accordance with the student's perceived knowledge and skills, teachers must give students autonomy, as well as consider their needs and act in the students' Proximal Development Zone (Vygotsky, 1984). In addition, students must have the opportunity to work collaboratively, so that their skills are highlighted and valued, and new opportunities to learn with peers enable the construction of an inclusive environment.

However, when verifying the possible relationships that teachers establish between teaching and the organization of classes in a homogeneous way according to the students' intelligence, it was found that 4.8% of teachers (n=11) agree or strongly agree that all students should be taught in classes according to their intelligence. Nonetheless, among these 11 teachers, 10 point out that students and teachers should participate together in learning in diversity. These controversial conceptions may indicate teachers have an incomplete understanding of inclusion in the domain
of teaching and learning, which also leads to the necessity to deepen the analysis of teacher training on inclusive education.

Of the total number of teachers who agree or strongly agree that students and teachers should participate together in learning in diversity, 97% also agree that the learning environment should be a democratic space. Thus, it is concluded that for the respondent teachers, the principles of inclusive education and democratic education are fundamental for the learning environment. The idea of school as a democratic space is defended by Paulo Freire (1996), a principle encouraged in the CCS approach, aiming at the creativity and autonomy of the student. According to the author, in a democratic learning environment, students have more autonomy to reflect and act. In this sense, 97% of the teachers indicate that learning occurs when students act and reflect on their own action for their transformation.

In regard to the statement “fun is part of curiosity and discovery”, 96% of teachers agree or strongly agree. As for the statement “to learn effectively students must be happy”, 80% of teachers agree or strongly agree, and those who neither agree nor disagree add up to 17%. In the same vein, 84% of teachers agree or strongly agree that learning should involve fun. However, the need to feel happiness cannot be a prerequisite for learning. Subjective well-being, receiving constructive feedback, social persuasion, and positive physiological and affective states are examples of information sources that strengthen self-efficacy beliefs and the feeling that one is capable of performing a certain task (Bandura, 1986, Csikszentmihalyi, 2015, Fluminhan & Murgo, 2017). Yet this requirement would be like discarding error as a way in which learning can also occur.

CONCLUSION

This study shed light on important elements related to the challenges faced by the complexity of education during and in the post-pandemic era. These elements are mainly related to pedagogical, methodological and technological issues for a more meaningful and fun learning in which the student is the active constituent in the teaching and learning processes. In this sense, in order to educate according to the CCS approach, there is a need for collective work and changes in the performance of students and teachers, in the curriculum, in the process of evaluating, in the use of technological resources and, consequently, in teacher education policies and provision.

Data revealed that teachers view that enjoyable and fun learning favors learning and can bring a new enchantment to the act of teaching and learning, however, it seems that the teaching work implemented by the participants does not enable the construction of knowledge in an entertaining and meaningful perspective. In other words, teachers understand the need for change but they may not know how to perform it. In addition, the results confirmed that teachers recognize the importance of personalized strategies to meet students’ needs, promote greater motivation, foster engagement with fun activities that value skills and abilities, facilitate the
development of skills according to the profile of each student and meet learning preferences. Nonetheless, this is practically impossible to achieve if the teacher continues with the content practice, professing information in the expectation that the student alone will transform the information given into knowledge. Thus, teachers must understand that in order to facilitate the construction of knowledge, it would be essential to enable experience, stimulate reflection, together and articulated with theory (content).

The pedagogical and methodological strategy developed by the researchers in this article is Project-Based Learning, in which students develop a project of their interest and teachers mediate the process to promote fun and meaningful learning, within the context experienced by their students, offering equalization of opportunities. However, according to data, it is possible to notice that professionals of education participating in this research do not work in a way to enable the construction of knowledge in an entertaining perspective. Besides, they do not consider that students' prior knowledge needs to be used to make this process meaningful, principles that permeate fun learning and are based on the CCS approach. Therefore, this study indicated the need to carry out teacher training according to the CCS approach, based on the expectations and experiences of teachers in the school settings, in order to bring their knowledge and prior information. Thus, it will be possible to mediate teachers’ training process for the recognition and appreciation of their own potential and, consequently, of students. When education is underpinned by the CCS approach, it is possible to consider the context of each person, enabling teachers to develop an understanding of how to promote inclusive education and allowing students to learn with pleasure and fun.

In short, the CCS approach presents a possibility to change the existing logic in training processes, in which teachers are trained for the university and not for the school environment, whereas students are trained to meet school standards, not for life.

FUNDING

This research was funded through the Coordination for the Improvement of Higher Education Personnel (CAPES) - Brazil.

ACKNOWLEDGEMENT

We would like to express our special gratitude to Dr. Alexandra Okada and Dr. Kieron Sheehy for making OLAF PROJECT data set available on OLAF PROJECT DATA SET.
REFERENCES


IMPACT OF COVID-19 ON SKILLS AND ATTITUDE OF SCHOOLTEACHERS IN RELATION TO TEACHING LEARNING RESOURCES

Ms Jovita Nathan¹, Ms Komal Gagare²
¹, ²Assistant Professors, School of Education & Research, MIT ADT University, Pune, India.

INTRODUCTION

The sudden outbreak of the pandemic has changed the educational system. “Transitioning to online in such a short period of time was tricky... traditional classroom teaching was replaced with a virtual teaching-learning process. It was a shift in attitude from offline learning to remote learning. Online learning and virtual classrooms became the 'new way to connect with the students. Despite the repercussions of the pandemic, it has accelerated an extraordinary time for learning.

Education institutions adapted blended learning as it was the need of the hour. To be digitalized was a dilemma for the teachers as all were at ease with chalkboard, book and classroom teaching. The researchers experienced a challenge in teaching through collaborative engagement amongst learners, rethinking lesson plans to fit a different format by using appropriate teaching-learning resources. The present study has been conducted to find the teachers attitude towards online teaching, the awareness of different skills required for online teaching.

REVIEW OF THE RELATED LITERATURE

Researchers found research like the study.

- A study titled - Teachers’ Attitudes towards Online Teaching (E-learning) during Covid-19 Lockdown was conducted by Dr Sankar Kar (2020). The study aimed at exploring the attitude of secondary school teachers towards online teaching during lockdown period. The analysis revealed that the attitude of the teachers towards online teaching was not satisfactory, and the experienced teachers showed less interest in e-learning.

- A study titled - “Online Teaching during COVID 19: Attitude and Challenges faced by School Teachers.” was conducted by Dr. Seema Sareen 2 Dr. Anita Nangia (2020). The study aimed at studying the challenges faced by teachers during online teaching. The analysis revealed that teachers had a high positive and favorable attitude towards online teaching, but they lacked in online mode training so they felt that they can teach better in traditional teaching.
NEED OF THE STUDY

The severe impact of the COVID-19 has struck the whole world. An unplanned and rapid move towards online learning with no training to the teachers was the biggest challenge faced globally. Lack of ICT competence and socio-economic status of the teachers were not considered, there was no other way but to accept online learning. The questions that arose in the minds of the researchers were-

- Are the teachers ready to accept the new change?
- Do they have the skills which will help them to inculcate new teaching-learning resources for the students?
- Can a workshop or small sessions on teaching-learning resources conducted will help the teachers during this pandemic.

In an attempt to answer all the above questions, the researchers took up the present research. An online survey was conducted by the researcher to find out the teacher’s attitude towards online and the awareness of different skills used in online teaching.

STATEMENT OF THE PROBLEM

To assess the attitude of the teachers towards online teaching and awareness of the different online skills.

OPERATIONAL DEFINITION

- **Skills**: It is a special ability or technique which can be acquired by special training
- **Attitude**: Someone’s opinions or feelings about something{Macmillan Dictionary}
- **Teaching Learning Resources**: It is a collection of teaching material used by the teachers to help them to achieve desired goals.
- **Edu-Tech**: EduTech (a combination of "education" and "technology") refers to hardware and software designed to enhance teacher-led learning in classrooms and improve students' education outcomes. (Investopedia).
OBJECTIVES

1. To check the attitude towards online teaching
2. To access the skills required for Online teaching.
3. To equip the teachers with Online teaching skills.

RESEARCH METHODOLOGY

The researcher chose a survey method to find out the attitude of the teachers towards online teaching, awareness of different skills for online teaching and the readiness to learn the online teaching learning resources.

Population

All the teachers teaching in Secondary schools during the pandemic in Pune City.

Sampling Method

Purposive Sampling
Sample Size

76 teachers teaching in Secondary School in Pune City

Scope

- The researcher is concerned with teachers teaching in secondary schools of Pune City.
- Attitude of the teachers and awareness of the different skills related to ICT tools were the major aspects of the survey.

Delimitations

- The study was delimited to teachers teaching in secondary schools of Pune City.
- The study was delimited to English medium teachers teaching in Pune City.

Limitations

- The fatigue and the mood of the teachers which may affect their responses were beyond the control of the researcher.

Tools for Data Collection

The researcher has prepared a questionnaire for data collection. The questionnaire is with the following main areas.

- Attitude towards Online Teaching
- Skills required for Online Teaching.
- Use of the technology.
- IT infrastructure at home
Details in Table 1 given below:

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<td>Section II</td>
<td>Attitude and Skills of Online teaching during Pandemic Q4-Q8, Q10 (Options-Strongly agree, Agree, disagree, strongly disagree) Q9, Q11 (Options-Yes, No)</td>
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<td>4</td>
<td>Section III</td>
<td>Skills required for Online Teaching. Total 8 questions (Options- Excellent, good, satisfactory and needs improvement)</td>
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</table>

Table 1: Questionnaire details

DATA ANALYSIS

Section II Attitude and Skills of Online teaching during Pandemic
1. 51.3 % feel Teaching remotely is stressful during a pandemic.
2. 47.4 % of teachers find Switching from offline teaching to Online was a great challenge.
3. 48.7 % teachers agree and think Level of interaction in online learning is poor than traditional classroom teaching.
4. 39.5 % Teachers were faced with heavy workload due to this Online mode.
5. 50% require more time to prepare for online classes.
6. 35.5 % realize the lack of a suitable online environment at home.
7. 39.9 % Teachers agree they face problems in creating learning resources due to lack of knowledge of ICT tools.
8. 80 % Teachers want to learn ICT skills which will help me in making my classroom.

Section III: Skills required for Online Teaching.
1. 30 % Teachers having excellent Online Communication Skills as compared to 41% were good at it.
2. 46 % teachers were good at Time Management.
3. 36 % Teachers were having Awareness about basic Computer Knowledge.
4. 44 % Teachers not aware about ICT based Assessment skills.
5. 43 % teachers only have knowledge about Managing Group work in Online Mode.
6. 42% teachers know the new ways to engage with your online students.
7. 36 % teachers only know the G-suite and its use.
8. 33 % teachers only have Knowledge of online ICT Tools.
Graph 1: Attitude and Skills of Online teaching during Pandemic

Teachers find Switching from offline teaching to online was a great challenge. Agree and think Level of interaction in online learning is poor than traditional classroom. Teachers were faced with heavy workload due online to this Online mode. Require time prepare for classes. Realize the lack of a suitable online environment at home. Teachers were Agree they face problems in creating learning resources due to lack of knowledge of ICT tools. Teachers want to learn ICT skills which will help me in making my
Keeping in view the present scenario a online survey was done by the researcher to find out the teachers attitude towards online teaching and the awareness of different skills used in online teaching. To equip the teachers with the online tools the researchers have developed **EDUTECH Module** which will help the teachers to develop their skills for Online Teaching.

**EDUTECH MODULE**

After conducting the survey, the researchers realized that the teachers are facing three challenges in using ICT tools which are access, equity and quality. They require a thorough training of ICT skills which will be easy for them to prepare teaching materials for Online teaching. The researchers created an Edu-Tech module- a ‘bridge’ to break the distance and ‘survive’ the learning.
Image 2: Edutech Module
CONCLUSIONS

The study shows that most of the teachers had a stressful time teaching remotely, especially the senior teachers who lacked basic computer knowledge. Many teachers required more time in preparing teaching learning resources. Many teachers had excellent online communication skills but still 80% Teachers want to learn ICT skills which will help them in making the classroom interactive and make quality learning resources. The EDUTECH Module prepared by the researchers will help the teachers to make their classroom teaching interactive.

RECOMMENDATIONS

1. Schools should plan sessions for teachers to train them in conducting live sessions and not only making videos and uploading them.
2. Online learning should be focused on encouraging teachers to develop e-learning materials.

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ROLE OF EDUCATION IN COVID-19 SAFETY AWARENESS AMONG BUILDING CONSTRUCTION OPERATIVES IN ADAMAWA – NIGERIA

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INTRODUCTION

The emergence of coronavirus (COVID 19) in the city of Wuhan province, China is closely related to the Severe acute respiratory syndrome coronavirus 1 (SARS-CoV-1) which caused thousands of deaths in 2002 (World Health Organization – (WHO), 2020c). COVID-19 was reported in late 2019 and has since spread across the globe (Preskorn, 2020; WHO, 2021). The WHO declared COVID-19 a pandemic in March, 2020. The current COVID-19 pandemic caused so many reported cases around the world with more than 180 million confirmed cases and over 4 million deaths in 215 countries (WHO, 2021). In Africa, there are now more than 5 million confirmed cases of COVID-19 which resulted in over 150,000 deaths across the continent, with a number of African countries experiencing community transmission. According to Nigeria Centre for disease control (NCDC), the first case of coronavirus (COVID-19) disease in Nigeria was recorded in Lagos State, on the 27th of February 2020 since its emergence in China. To date, Nigeria has recorded more than 160,000 confirmed cases of coronavirus and over 2,000 deaths. The WHO (2020b) reported that COVID-19 spreads primarily through respiratory droplets or contact with contaminated surfaces. Exposure can occur at the workplace while traveling to work and during work-related travel to an area with local community transmission. These could lead to the viral transmission of person to person when individuals are near one another. Typically, this implies that the entire human population is potentially susceptible to COVID-19 infection (Preskorn, 2020).

Hyams, Murphy, and Wessely (2002) likened the deadly virus such as COVID-19 to the reaction of biological and other terrorism threats, its effect causes a high level of stress, often with longer-term devastating consequences. The most effective way of handling a pandemic is to contain its spread. This will reduce its impact on the economy and the society, as well as the morbidity and mortality rates (Hyams et al., 2002). Efforts to accommodate the new normal brought by the advent of the COVID-19 pandemic necessitated studies on the adaptability, effects and prospects, consequences, potential risks, control measures and impacts of COVID-19 on the construction sector (Al Amri & Marey-Pérez, 2020; Alara, 2021; Ezeokoli, Okongwu, & Fadumo, 2020; Gbadamosi, Oyedele, Olawale, & Abioye, 2020; Hollingsworth, 2020; Ogunnusi, Hamma-Adama, Salman, & Kouider, 2020; Shibani, Hassan, & Shakir, 2020; Simpeh & Amoah, 2021). To prevent transmission of COVID-19, countries across the globe are imposing a range of prevention and containment measures against the spread of the pandemic and workers are facing ever increasing
regulatory and nonpharmaceutical interventions (FGN, 2021; Brooks & Knights, 2020; Lexisnexis, 2020). The outbreak of COVID-19 disrupted economic activities globally and keep spreading on global scale (McKibbin & Fernando, 2020). COVID-19 has put the world at hold and challenge everything that humans have been known for. Construction is one such industry which has been severely affected (Al Amri & Marey-Pérez, 2020; Ogunnusi et al., 2020). The setting of the construction industry that brings workers together puts them at high risk of exposure to COVID-19 (Hollingsworth, 2020; International Labour Organization, 2020; Ogunnusi et al., 2020).

Building construction operatives are particularly at high risk of exposure to COVID-19 due to the working conditions and the high number of people working together on construction sites (Ezeokoli et al., 2020; Hollingsworth, 2020). Preskorn (2020) argued that instead of “one size fits all” approach to COVID-19, COVID-19 safety awareness should be sociocultural conscious to stem the rise of COVID-19 cases. This shows that Poor COVID-19 safety awareness culture is linked to the rising number of COVID-19 cases (Preskorn, 2020). COVID-19 safety awareness is vital for sustaining the growth of the Nigerian construction industry (Ezeokoli et al., 2020; Federal Republic Of Nigeria, 2021). Zhang and Chan (2013) observed that operatives attributes like age, gender, experience, educational background can significantly influence awareness level. Literature reviewed indicated that little or no studies have been carried out on the role of education in COVID-19 safety awareness among building construction operatives (Al Amri & Marey-Pérez, 2020; Alara, 2021; Ezeokoli et al., 2020; Gbadamosi et al., 2020; Hollingsworth, 2020; Ogunnusi et al., 2020; Shibani et al., 2020; Simpeh & Amoah, 2021). Thus, this study investigates the role of education in COVID-19 safety awareness among building construction operatives in Adamawa – Nigeria with a view to curtailing the spread of COVID-19. To achieve its aim the following objectives are outlined:

I. To assess the level of COVID-19 safety awareness among building construction operatives based on level of education.

II. To determine the relationship between level of education and operatives’ COVID-19 Safety awareness level.

LITERATURE REVIEW

2.1 COVID-19 Knowledge and Awareness

COVID-19 is the new strains of viruses which can infect humans (WHO, 2020b). Bats are considered as natural hosts of these viruses yet several other species of animals are also known to be a source such as camels and civet cats (Yang et al., 2020). According to WHO (2020c), COVID-19 is spread through respiratory droplets. Respiratory droplets may be produced through cough, sneeze, normal breath or conversation. These respiratory droplets may cause viral transmission from person to person when individuals are near one another. Also, it may land on clothing or other objects. Also, it is possible for an individual to contract COVID-19 by first touching a surface or
object that has the virus on it and then touching their own mouth, nose or possibly their eyes (WHO, 2020a, 2020c). There is limited vaccine and no specific treatment for this virus so far and because it is a new virus, nobody has prior immunity which in theory means that the entire human population is potentially susceptible to COVID-19 infection (Yang et al., 2020). There is not enough epidemiological information at this time to determine how easily and sustainably this virus spreads between people, but it is currently estimated that, on average, one infected person will infect between two and three more (Labban, Thallaj, & Labban, 2020; WHO, 2020c).

The incubation period for COVID-19 is estimated at between 2-14 days. At this stage, we know that the virus can be transmitted when people who are infected show flu like symptoms which ranges in clinical presentation from a mild upper respiratory illness to rapidly progressive pneumonia and multi-organ failure (WHO, 2020c; Yang et al., 2020). The symptoms are fever, cough, difficulty breathing, muscle pain and tiredness. More serious cases develop severe pneumonia, acute respiratory distress syndrome, sepsis and septic shock that can lead to death (WHO, 2020b, 2020c; Yang et al., 2020). People who are at greater risk of developing severe symptoms are: elderly people and those with health disorders such as hypertension, diabetes, cardiovascular disease, chronic respiratory disease and cancer (Preskorn, 2020). Disease in children appears to be relatively rare and mild (Preskorn, 2020). There is no published evidence on the severity of illness among pregnant women after COVID-19 infection (Preskorn, 2020). WHO (2020a) reported that precautions for the prevention of COVID-19 include regular hand washing, avoiding individuals who are sick, and self-isolating in case of any symptoms. There is no specific treatment for this disease, so healthcare providers treat the clinical symptoms (e.g. fever, difficulty breathing) of patients. Supportive care (e.g. fluid management, oxygen therapy, etc.) can be highly effective for patients with symptoms (Oyeniran & Chia, 2020; Preskorn, 2020; Zhao et al., 2020). Current advice for testing depends on the stage of the outbreak in the country or area where you live. WHO (2021) acknowledged that different countries are at different stages of the epidemic, and the response should be adapted to suit COVID-19 response strategies at local and national level due to considerable differences in socio-economic, and educational conditions. This necessitates an investigation into the level of COVID-19 safety awareness among building construction operatives based on level of education in Adamawa – Nigeria.

2.2 Factors influencing COVID-19 Knowledge and Awareness

Studies revealed that operative’s awareness level can be influence by training, job experience, work duration and time, type of safety signs, background colour of safety signs and training (Ben-Bassat & Shinar, 2006; Lukianova & Fell, 2015). Zhang and Chan (2013) observed that user characteristics like age, gender, experience, educational background can significantly influence awareness level. They claimed that the effects of cognitive features including familiarity, concreteness, simplicity, meaningfulness and semantic distance play significant role in operatives’ level of awareness. Other studies also reported that the strength of operatives’ awareness can be enhanced by level of education, working experience, working time, background colour of safety signs, and level of H&S training acquirements (Al-Madani & Al-Janahi, 2002; S. Alara, Inuwa, &
Gambo, 2019; Ward, Wogalter, & Mercer, 2004). According to Chan, Han, Ng, and Park (2009), cultural differences can also affect awareness level. Their study in the US shows that the Chinese and Korean resident of US comprehend safety less than the Americans. Besides, comprehension of some safety tips was quite difficult for non-Americans. The fact that awareness level varies among individuals encouraged researchers to explore the relations between understanding and characteristics that are associated with the users themselves of health and safety. Hence, factors like age, gender, experience, culture, and education background have most often been studied, as well as marital status, monthly income, and experience (Al-Madani & Al-Janahi, 2002; Han, Jin, Wood, & Yang, 2019; Rumpagaporn, 1996; Zhang & Chan, 2013). However, results concerning the influence of user characteristics have not been unanimous due to the use of different study sample populations, diverse experimental and analytical methods or other various uncontrolled conditions (Zhang & Chan, 2013). Literature reviewed indicated that little or no studies have been carried out on the factors that influences COVID-19 safety awareness among building construction operatives in Adamawa – Nigeria. Thus, there is a need to evaluate factors influencing building construction operatives’ level of COVID-19 safety awareness among building construction operatives. However, this study is limited to the role of education in COVID-19 safety awareness among building construction operatives in Adamawa – Nigeria.

METHODOLOGY

This study investigates the role of education in COVID-19 safety awareness among building construction operatives in Adamawa – Nigeria. A quantitative research approach was employed through descriptive research design (McNabb, 2020). A valid and reliable questionnaire containing information relating to respondent demographic information and COVID-19 knowledge was adopted to collate data (Labban et al., 2020). The questionnaire was segmented into two sections. Section A contained demographic information while section B contained statements relating to COVID-19 knowledge and awareness. The respondents were requested to express their opinion on the statements. Opinion were based on Yes, No and I don’t know. These questionnaires were randomly administered to 450 building construction operatives from nine selected construction sites across the state, 306 valid responses were used for analysis. This gives a response rate of 68%. For each statement a score point of one was given if the operative response was compatible with answers of COVID-19 knowledge and awareness. The total score of the COVID-19 knowledge and awareness was calculated by summing up these score points, with a minimum of 0 and a maximum of 20 points. A benchmark of 75% was adopted for the study because pathophysiology of COVID-19 is new and there is not enough epidemiological information at this time (Labban et al., 2020; WHO, 2020b; Yang et al., 2020). This implies that score points less than 15 were considered as ‘low’ COVID-19 safety awareness whereas 15 points and above were considered ‘high’ COVID-19 safety awareness. Data obtained were analysed using SPSS to conduct descriptive (percentages, frequencies, median & interquartile range) and inferential (Kruskal-Wallis Test and Chi-Square Test of Independence) statistics respectively. Non-parametric inferential statistics were adopted because preliminary investigation revealed that the data on the study construct is
not normally distributed (Field, 2018; McNabb, 2020). However, preliminary investigation also revealed that all assumptions of Kruskal-Wallis Test and Chi-Square Test of Independence have not been violated. The level of significance of $p < 0.05$ and $p < 0.01$ were adopted (Field, 2018; McNabb, 2020).

The study tested the following hypotheses:

$H_1$: there is no statistically significant difference in the level of COVID-19 safety awareness among building construction workers based on the level of education.

$H_2$: there is no statistically significant relationship between level of education and operatives’ COVID-19 safety level of awareness.

RESULT AND DISCUSSIONS

4.1 Respondents’ demographic profiles

Table 1 shows respondents’ demographic profiles. Eighty-eight percent of the respondents are males while twelve percent are females. This confirms that the construction industry is male dominated. Seventy-nine percent of the respondents are bricklayers, 13% are carpenters, while 8% are foreman. Twenty-nine percent of the respondents have over 10 years’ experience in the construction industry while 58% of the respondents have work experience between 5 to 10 years and 14% of the respondents have less than 5 years’ experience in the construction industry. The respondents have their educational qualification distributed in the order of: no education (17%), primary education (16%), junior high school (17%), senior high school (16%), diploma (18%) and BSc/HND (16%). This shows that the respondents possessed the required diversity and experience in the industry to respond to the study of this nature.

<table>
<thead>
<tr>
<th>Respondents demographics</th>
<th>Frequency</th>
<th>Percentages</th>
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<tbody>
<tr>
<td>Gender</td>
<td></td>
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</tr>
<tr>
<td>Male</td>
<td>268</td>
<td>88</td>
</tr>
<tr>
<td>Female</td>
<td>38</td>
<td>12</td>
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<tr>
<td>Trade</td>
<td></td>
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<tr>
<td>Carpentry</td>
<td>41</td>
<td>13</td>
</tr>
<tr>
<td>Bricklaying</td>
<td>242</td>
<td>79</td>
</tr>
<tr>
<td>Trade supervision (Foremen)</td>
<td>23</td>
<td>8</td>
</tr>
<tr>
<td>Work Experience</td>
<td></td>
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</tr>
<tr>
<td>Less 5 years</td>
<td>42</td>
<td>14</td>
</tr>
<tr>
<td>5 to 10 years</td>
<td>176</td>
<td>58</td>
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<tr>
<td>Over 10 years</td>
<td>88</td>
<td>29</td>
</tr>
</tbody>
</table>
4.2 COVID 19 knowledge and awareness among building construction operatives on construction sites

Table 2 shows COVID 19 knowledge and awareness among building construction operatives on construction sites. Over eighty percent of the respondent agreed that COVID 19 is caused by a virus, Incubation period is between 5–14 days, is either transmitted by infected persons, by droplets in air or on surfaces, while the remaining believed otherwise. Similarly, over 80% of the respondent agreed that COVID 19 is transmitted through exhalation, its mortality rate is higher in elderly, the virus can be prevented by washing hands after every 20 seconds, no drug treatment available for COVID 19, and it has upper respiratory and lower respiratory symptoms while the remaining believed otherwise. Thirty-two percent of the respondents are not aware that COVID 19 is transmitted by cough/sneeze and that COVID 19 can be prevented by having good immune system. Only about 50% of the respondents are aware that COVID 19 can be prevented by wearing mask while over 65% do not know that COVID 19 can be prevented by Vaccine. Above 97% of the respondents agree that COVID 19 has gastrointestinal symptoms including Fever and muscle pain, similarly about 99% of the respondent are aware that COVID 19 patient needs ventilator to survive however they do not know that COVID 19 cannot be prevented by balanced nutrition alone. One hundred percent of the respondents are aware that Vitamin C and Vitamin D are important in COVID 19 treatment.

Table 2: COVID 19 knowledge and awareness among building construction operatives on construction

<table>
<thead>
<tr>
<th>S/N</th>
<th>QUESTIONS</th>
<th>YES</th>
<th>NO</th>
<th>Don’t know</th>
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<tr>
<td></td>
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<td>F</td>
<td>%</td>
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</tr>
<tr>
<td>1</td>
<td>COVID 19 is caused by a virus</td>
<td>249</td>
<td>81.4</td>
<td>57</td>
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<tr>
<td>2</td>
<td>Incubation period of COVID 19 is 5–14 days</td>
<td>245</td>
<td>80.1</td>
<td>61</td>
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<tr>
<td>3</td>
<td>COVID 19 is transmitted by infected persons</td>
<td>249</td>
<td>81.4</td>
<td>57</td>
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<tr>
<td>4</td>
<td>COVID 19 is transmitted by droplets in air</td>
<td>247</td>
<td>80.7</td>
<td>59</td>
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<tr>
<td>5</td>
<td>COVID 19 is transmitted by droplets on surfaces</td>
<td>251</td>
<td>82</td>
<td>55</td>
</tr>
<tr>
<td>6</td>
<td>COVID 19 is transmitted by cough and sneeze</td>
<td>208</td>
<td>68</td>
<td>98</td>
</tr>
<tr>
<td>7</td>
<td>COVID 19 is transmitted by exhalation</td>
<td>256</td>
<td>83.7</td>
<td>50</td>
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COVID-19 has upper respiratory and lower respiratory symptoms

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COVID-19 has gastrointestinal symptoms

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COVID-19 has Fever and muscle pain

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COVID-19 mortality rate is higher in elderly

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COVID-19 can be prevented by wearing mask

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COVID-19 can be prevented by washing hands for 20 seconds

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COVID-19 can be prevented by having good immune system

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COVID-19 can be prevented by balanced nutrition alone

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COVID-19 can be prevented by Vaccine

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No drug treatment available for COVID-19

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COVID-19 patient needs ventilator to survive

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Vitamin C is important in COVID-19 treatment

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Vitamin D is important in COVID-19 treatment

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4.3 COVID-19 safety awareness among construction operatives based on level of education

Table 3 shows construction operatives COVID-19 safety awareness based on their level of education using Kruskal-Wallis Test at 95% confidence level. Results indicated that building construction workers significantly differ on COVID-19 safety awareness based on the level of education at (H (5): 215.864, p = 0.000). Building construction operatives with no education recorded a mean rank of 32.41, while those with formal education recorded a mean rank ranged from 92.04 to 238.24. The mean rank appears to increase across the level of education. In general, construction employees with formal education exhibited higher level of COVID-19 safety awareness compared to their counterpart with no educational qualification. The difference was significant at p = 0.000. Thus, there is significant evidence to conclude that there is statistically significant difference in the level of COVID-19 safety awareness among building construction workers based on the level of education. The findings of this study agree with Labban et al. (2020) study that was conducted among Syrians which concluded that operatives differ in the level of COVID-19 safety awareness based on education level.

Table 3: Comparison of COVID-19 Safety Awareness among construction operatives based on level of education

<table>
<thead>
<tr>
<th>Variables</th>
<th>Median</th>
<th>IQR 25th</th>
<th>IQR 75th</th>
<th>Statistics*</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Education</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>215.864</td>
<td>0.000</td>
</tr>
<tr>
<td>Primary Education</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
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</tbody>
</table>

Table 3: Comparison of COVID-19 Safety Awareness among construction operatives based on level of education

<table>
<thead>
<tr>
<th>Variables</th>
<th>Median</th>
<th>IQR 25th</th>
<th>IQR 75th</th>
<th>Statistics*</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
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<td></td>
</tr>
<tr>
<td>No Education</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>215.864</td>
<td>0.000</td>
</tr>
<tr>
<td>Primary Education</td>
<td>2</td>
<td>2</td>
<td>2</td>
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</tbody>
</table>
4.4 The relationship between level of education and operatives COVID-19 Safety Awareness

The frequencies cross tabulated in Table 4, shows that there is a significant relationship between level of education and operatives COVID-19 Safety Awareness, $X^2 (5, N = 306) = 195.591, p < .001$. About 85% of Building construction operatives with ‘No Education’ are associated with Low COVID-19 Safety Awareness while 15% are associated with High COVID-19 Safety Awareness. Also, the frequencies and percentages cross tabulated in Table 3 appears to increase across the level of education. In general, construction employees with formal education exhibited higher association with High COVID-19 Safety Awareness compared to their counterpart with no educational qualification. The association was significant at $p = 0.000$. Thus, there is significant evidence to conclude that there is statistically significant relationship between level of education and building construction operatives’ COVID-19 Safety level of Awareness. Furthermore, the Cramer’s V Statistics is 0.799, which indicated a very strong association based on Cohen (1988) conventions for interpreting effect size.

Table 4: The relationship between level of education and operatives COVID-19 Safety Awareness

<table>
<thead>
<tr>
<th>Variables</th>
<th>COVID-19 Safety Awareness</th>
<th>Statistics</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>F (%)</td>
<td>F (%)</td>
<td>195.591</td>
</tr>
<tr>
<td>No Education</td>
<td>44(84.6%)</td>
<td>8(15.4%)</td>
<td></td>
</tr>
<tr>
<td>Primary Education</td>
<td>3(6.3%)</td>
<td>45(93.8%)</td>
<td></td>
</tr>
<tr>
<td>Junior Secondary</td>
<td>0(0%)</td>
<td>52(100%)</td>
<td></td>
</tr>
<tr>
<td>Senior Secondary</td>
<td>0(0%)</td>
<td>50(100%)</td>
<td></td>
</tr>
<tr>
<td>Diploma</td>
<td>5(9.1%)</td>
<td>50(90.9%)</td>
<td></td>
</tr>
<tr>
<td>BSc. / HND</td>
<td>2(4.1%)</td>
<td>47(95.9%)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Phi and Cramer’s V Statistics = 0.799, p<0.001

The results in Table 3 and 4 revealed that building construction workers significantly differ on COVID-19 safety awareness based on their level of education. Building construction operatives with formal education exhibited higher level of COVID-19 safety awareness compared to their counterpart with no educational qualification. More so, it was established that there is a significant relationship between level of education and building construction operatives COVID-
safety awareness. In general, construction employees with formal education exhibited higher association with High COVID-19 Safety awareness compared to their counterpart with no educational qualification. The findings of this study agrees with Han et al. (2019) and Labban et al. (2020) that educational background played an important role in the COVID-19 knowledge and awareness. However, these studies were conducted among south-eastern China and Syrians respectively.

**CONCLUSION AND RECOMMENDATION**

The study investigates the role of education in COVID-19 safety awareness among building construction operatives in Adamawa – Nigeria. Findings revealed that building construction operatives differ in the level of COVID-19 safety awareness based on education level. This implies that educational background of building construction operatives can significantly influence awareness level. The study also revealed that educational background of building construction operatives is strongly associated with COVID-19 safety awareness level. In general, construction employees with formal education exhibited higher association with High COVID-19 safety awareness compared to their counterpart with no educational qualification. The study therefore recommended that construction firms should prioritize educational qualification for all level of employees. The construction industry should encourage training of their operatives to enhance level of education. More educated operatives should assist less educated operatives with COVID-19 safety education. Authorities should enforce COVID-19 safety education through massive COVID-19 awareness promotion campaign among construction companies to halt the rising number of COVID-19 cases.
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SUSTAINABLE EDUCATION IN READING: EFFECTIVE LEARNING THROUGH TWO-FOLD TEXT

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INTRODUCTION & BACKGROUND OF ESD

There is a tremendous transformation in learning a language in the current scenario. Education of sustainable development (ESD) is a comprehensive and transformative educational process in which participatory learning and creative, critical, and systemic thinking strengthen by creating links between individuals and the community.

_Education for Sustainable Development provides an exciting vision of an interdisciplinary and learner-centered way to empower students to advance a social and environmental agenda in their organizations, communities, and personal lives._ In the present scenario, educationists, psychologists, researchers, governments & Companies across the world. Adopting innovative sustainable practices has realized the importance of minimizing negative social and environmental impacts that result from their activities and, consequently, achieving superior corporate performance.

Unfortunately, with a few welcome exceptions, the term 'sustainable education' has often been bundled in by writers as synonymous with 'Sustainability education,' 'education for sustainability, and 'ESD.'

William Butler said once, "Education is not the filling of a pail but the lighting of a fire." This paper mainly focuses on the goal of ESD and how reading is magnified through Two-fold text to make students lifelong learners. Hence, the concept of 'sustainable education' suggests a simple 'add-on' of sustainability concepts to some parts of the curriculum but a cultural shift in the way we see education and learning.

The famous quote for "Sustainable Education" is, "A change of educational culture, one which develops and embodies the theory and practice of sustainability in a critically aware way. It is, therefore, a transformative paradigm which values, sustains and realizes the human potential concerning the need to attain and sustain social, economic and ecological well-being, recognizing that they must be part of the same dynamic" (Sterling, 2001:22).
STATEMENT OF THE PROBLEM

• The students have difficulty in differentiating the similarities & differences in the given texts
• To test the students reading ability in similar/different texts.
• The students are unable to analyze & evaluate the given passage

THE OBJECTIVE OF THE STUDY

Based on the research problems stated above, this study aimed at finding out:

• This study looks at high school students' two-fold comprehension.
• For 9th and 10th-grade pupils, to increase their cognitive capacity through Two-fold Text (TFT).
• To assess the students' capacity to comprehend what they are reading.
• TFT is used to help learners enhance their lower and higher-order thinking skills. To assess the psychological components of reading,
• To encourage the use of language in reading skills

PURPOSE OF THE STUDY

• To prove the new reading approach TRT, as an instructional asset to enhance reading comprehension
• To find out whether this novel technique improved students cognitive level
• The purpose of the study is to examine the difficulties of the students to analyze two similar texts in an instructed time
• To find out the reasons and to improve their reading skills

SCOPE OF THE STUDY

• Through TRT, it can be applicable in regular courses
• Through Two-Fold Text, the upcoming researchers can do their research from primary to the tertiary level
• Further research can do in an extensive reading

HYPOTHESES OF THE STUDY

• To allow students to enrich their rigorous reading in a set timeframe; to enable students to think about the given context critically
• To improve students' grammatical skills
• To encourage language aspects to improve kinder garden to tertiary level of learners reading abilities.
• To assess the level of understanding of the learner
• To develop a reading habit and to become lifelong learners and readers
METHODOLOGY

Research Design

- The present study is qualitative and innovative research-based on TFT. The researcher had investigated research with 20 samples with pre & post-test to test psychological & language elements in reading for 9th & 10th-grade learners in Chennai, Tamil Nadu.
- It requires collecting data from the field through classroom observations, student profiles, interviews & classroom activities.

Research Questions

This study aimed to determine how the Two-fold Text technique helped the participants to improve their reading comprehension. In particular, it sought to answer the following questions:

- How is the Two-fold Text technique used in the language classroom?
- How does the Two-fold Text technique improve the reading comprehension of the students?

Universe of the Study

The primary aim of using TFT in this study is to gain a more prosperous, more profound understanding of the impact of SER on sustaining reading skills development for 9th & 10th-grade learners by eliciting the experiences of those directly affected by SE. To research by applying a new reading approach for the learners in the Language classroom environment.

Intervention Period

The intervention period for this research was taken around ten weeks in the state board (Matriculation) school in Chennai, Tamilnadu. The researcher chose the 20 samples out of 60 students from 9th & 10th-grade learners to test their psychological & language elements in reading skills.

The researcher had applied methodology as content-based instructional method (CBIM) for this research. This article gives a brief account of CBIM and its advantages & reading techniques. CBIM brings immersion learning into the language classroom.

Content-Based Instructional Method

It is an effective method that combines both language and content in learning. It has built on the principles of communicative language teaching. Because the language classroom has to emerge with natural and meaningful communication between learners, this article gives a brief account of CBIM and its advantages & reading techniques. CBIM brings immersion learning into the language classroom.
Stroller proposed a few advantages of CBIM (1997)

- It builds strong vocabulary & defines background knowledge
- It helps to synthesize the content and grammar
- It develops Reading skills
- It promotes communicative interaction
- It improves study skills in learners
- It promotes communicative interaction

Figure 1: Advantages of CBIM
Reading Techniques of CBIM

Figure 2: Reading Techniques of CBIM
Interaction with teachers & students about the Reading skills
The researcher interacted with the teachers & students before the preliminary study and observed a few language classes. There was an interactive social session between the students during the observation period and made some activities to motivate the students. The teachers are excited about the TFT for reading. And even the teachers showed their interest in this new technique and improved the confidence level for learners.

Background of the Two-Fold Text
The term Two-Fold Text (Advance) was originated from the Paired Passage (PP) by Jennifer Findley in the United States. She introduced the term PP as a reading activity for struggling readers. The paired passage may consist of two passages connected similarly but with different perspectives. For example, fiction/non-fiction, fiction/fiction, non-fiction/non-fiction, historical events, similar themes, characters, settings, biographies etc.

She has investigated her research on paired passages for the primary level with pictures. She analyzed that through PP, students started to scaffold the paired passage effectively.

About Two-Fold Text- 2020 (Advance)
The study looked at a new reading technique for teaching reading skills in Tamil Nadu, India. As a reading researcher, she aimed to implement a new approach to reading comprehension, called the Two-Fold Reading Technique-2020 (Advance). There hasn't been any research done yet on this instructional method. However, in the United States, it was employed as a reading activity.

For the first time in India, the researcher created and named a new reading approach called "Two-fold Text," allowing students to connect effectively with two related texts. The researcher put this unique technique to the test on high school students. It encourages students to think critically and write from a different point of view. It prepares students to deal with various texts and analyze them in a set amount of time. This method highlights the importance of students studying for their CORE Exams.

Learning a language is defined as assimilating and processing new knowledge and skills, moving them from short-term to long-term memory, and re-using them in another context. It sought to determine the relative importance of skills proposed to be familiar to two-text (word reading fluency, annotating the text, analyzing, evaluating, and comprehension monitoring).

In this research article, assets of two-fold text had discussed briefly. The supremacy of sustainability provides rich and engaging contexts for developing students' abilities in reading comprehension.
Assets of Two-Fold Text- 2020 (Advance):

- It enables learner to identify the main theme in two-fold text
- It helps the learner to list out the similarities & differences in the two-fold text
- It helps the learner to analyze both the text in the defined time
- It enhances lower & higher order thinking skills
- It enhances students to think & write in different perspectives
- It promotes writing prompt
- It increases speed in reading & promotes deeper comprehension

Figure 3 Assets of Two-Fold Text- 2020

**SAMPLING DESIGN**

To implement this new approach for the learners, the researcher planned to take the samples from mid-level learners. And, she had selected one particular school to see the effectiveness of this innovative technique.

The researcher had selected samples for this study in State board (English medium) school in Chennai, Tamil Nadu. The researcher had collected personal information through the students' profiles from 9th & 10th-grade learners.

The below table. One explains the demography of students' personal information
Demography for the 9th & 10th students

<table>
<thead>
<tr>
<th>S. No</th>
<th>Demography</th>
<th>No of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Urban</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Rural</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>1st graduation</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>Educated Family</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>State Board</td>
<td>English medium</td>
</tr>
</tbody>
</table>

Table 1: Demography for the 9th & 10th students

Apart from 60 students, only 20 students had taken from 9th & 10th students. The average age of students was 14 to 15 years old.

Instruction and Activities:

- Students are to read one text and write notes on things they learned that helped them understand that topic on the one side of the Two-fold text chart
- Then students read the second text on a similar topic and write notes on things they learned that helped them understand that topic on the other side of the Two-fold text chart
- Students should use the Venn diagram to list out similarities & differences in understanding on two topics.

RESEARCH EVALUATION

The researcher first introduced the two-fold text for the students. Then the researcher discussed the new technique. And the students were started to think of it for some time. Then the students eagerly began to do the task because it was very new to them. Before giving them a pre-test, the researcher generally explained the technique and how it works on a particular process. The students may experience paired reading or paired activity. But they may not hear about the two-fold test, which consists of two-passage similarly but quite a difference in the story it may be either fiction/fiction, non-fiction to fiction. The researcher gave a pre-test consisting of two passages.

Read out the two passages given below and list out the Similarities & Differences in the table

Passage-1: Mahatma Gandhi (Freedom Fighters)
Passage-2: Sardar Vallabhbhai Patel (Freedom Fighters)
### Criteria for Research Evaluation

<table>
<thead>
<tr>
<th></th>
<th>Number of Student's 9th &amp; 10th Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SIMILARITIES &amp; DIFFERENCES:</strong></td>
<td></td>
</tr>
<tr>
<td>9th Evaluation</td>
<td>10th Evaluation</td>
</tr>
<tr>
<td><strong>Psychological Elements &amp; Evaluation:</strong></td>
<td></td>
</tr>
<tr>
<td>Understanding</td>
<td>10</td>
</tr>
<tr>
<td>Analyzing</td>
<td>8</td>
</tr>
<tr>
<td>rethinking</td>
<td>7</td>
</tr>
<tr>
<td>conceptualizing</td>
<td>8</td>
</tr>
<tr>
<td><strong>Language Elements &amp; Evaluation:</strong></td>
<td></td>
</tr>
<tr>
<td>Spelling</td>
<td>15</td>
</tr>
<tr>
<td>Punctuation</td>
<td>8</td>
</tr>
<tr>
<td>Grammar</td>
<td>8</td>
</tr>
<tr>
<td>Comprehension</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 2: Research Evaluation on Psychological & Language Elements in Reading

The researcher asked the students to read the first passage once and made them think of it. Secondly, the researcher asked the students to read the next passage and think of it. And she discussed both texts in detail to find out the similarities & differences, identify the theme, and point out the main ideas in both texts. Analyze, summarize & evaluate both texts.

The above table-2 shows that implementing Two-Fold Text to test psychological & language elements in reading skills for 9th & 10th-grade learners. In the research evaluation, students were aware of new techniques, and they were eager to do the task without any hesitation. Half of the students understood the method in the pre-task and comprehended the two-fold passage. The table shows that the learner's perspective is different by seeing the above elements. Only a few students were thinking twice, analyzing & conceptualizing the task. Most of the students were good in their spelling but poor in punctuation and grammar in language elements.
Figure 3: 9th & 10th-Grade's difference in the Psychological Growth Elements

The researcher gave more practice to understanding the new technique for the students. The Student's cognitive ability is improved, allowing him to comprehend the new method. During the intervention period, the researcher assigned simple TFT tasks. According to the above bar chart, half of the students performed poorly in the research evaluation in analyzing, rethinking, and envisioning the two-fold text. Simple tasks with a clear understanding of the given passage can help develop the learner's psychological level.

To be a fluent reader & writer, every learner should be familiar with psychological & language elements in reading comprehension. But the students need more practice and different tasks to improve their reading comprehension.
SIGNIFICANT FINDINGS, RESULTS & DISCUSSION

The Student's competence level was deficient due to their lack of knowledge of the supplied context, as shown in the bar chart above. Only half of the students in the study could comprehend the two-fold text. The students' grammar and punctuation are so bad. Knowing the grammar rules in a language makes a difference in understanding the work. Because there are people who are wrong readers and fluent readers, it depends on the Student's cognitive and reading abilities. Students' comprehension was average before the TFT implementation. If the learner comprehends the content, their language skill level will immediately improve.

Comprehension is the ultimate goal of the reading process. Implementing TFT for students to improve their linguistic aspects in reading resulted in improvement, as shown in the bar chart above. The kids' spelling and comprehension skills were excellent in both the pre-and post-tests. Punctuation and grammar were weak among the students. This issue may occur in learners due to their social context or from their childhood. However, a varied form of learning with different objectives can influence any learner's language competency.
CONCLUSION

Students may interrogate a range of texts in this digital era to shape their decision-making, problem-solving, critical thinking, & social skills with sustainability. Reading always plays a significant role for every individual because it shapes their personality.

Reading comprehension assists students in developing the skills necessary through TFT helped the learners to understand, conceptualize, analyze, evaluate, interact and communicate ideas and information related to actions for sustainable futures. The learners can develop their understanding and skills necessary to act responsibly and create texts that inform and persuade others to take sustainable futures.

TFT technique can enhance students reading accuracy, fluency, text structure, reading speed, and grasping the text in the defined time. The content-based instruction, language, and literacy strands are crucial to improving and sharing social, cultural, economic, and worldviews that promote social justice. Through outcomes of the results investigated by the researcher, Two-fold text has proved a positive outcome for students in their reading.
REFERENCES


IMPACT OF COVID CRISES ON SCHOOL EDUCATION IN INDIA

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INTRODUCTION

Learning is instrumental in shaping one’s personality to handle various situations of life. The today’s growth of children who are gearing up to become adult citizens of tomorrow, reflected through quality of the present education system. Education forms the foundation of any society and in general it is responsible for the economic, social, and political growth and development of the society. School education contributes immensely to the development of the young minds as it is the foremost fountain of knowledge and the first avenue of socializing for them. It plays an important role in moulding a nation’s future by creating all round development of children (Sylva, 1994).

In covid pandemic period school education has changed dramatically— with the distinctive rise of e-learning— as teaching is being shifted from its traditional mode to digital platforms. According to UNESCO, over 1.2 billion children globally and approximately 320 million learners are affected in India alone and out of the classroom as schools got shutdown.

Indian government has announced the closure of educational institutions as a logical solution to enforce social distancing within communities. Such a nationwide lockdown had a tremendous impact on the education system of the country (especially for students from disadvantaged sections of society) thus affected the learning outcome across the country. All educational activities like: examinations, school admissions, entrance tests of various universities and competitive examinations and the structure of the Indian education system i.e. learning methodology, teaching techniques & assessment methodologies, is quite affected during this period (Rawal, 2021).

SIGNIFICANCE OF THE PROBLEM

In times of crisis a holistic approach to education which addresses to students’ learning, social and emotional needs is required significantly. School closures in pandemic period has increased the vulnerability of students from diverse backgrounds who are more at risk as they are less likely to receive the support and extra services they need thus created the digital divide among them. Closure of schools has considerable effects on students’ sense of belonging to schools and their feelings of self-worth. Hence it is worthwhile to conduct the study to see the impact of covid crises on school education in India.
OBJECTIVES

- To see the impact of covid crises on school education in India.
- To highlight the challenges to Indian school education system during covid-19 crises.

METHODOLOGY

In the present study data is collected from various sources such as: reports, newspaper articles, research papers & evidences, journals, websites and documents published by national and international agencies on impact of COVID-19 pandemic. A documentary analysis of these sources is used in the present study. **Impact of Covid Crises on School Education in India**

COVID-19 has had an unprecedented impact on school education and affected a large number of children across states, class, caste, gender and region. The decision of shifting traditional classrooms to digital platforms is not only increasing learning inequality among children but also has long-lasting effect on the health and nutrition of children. Following are the impact of covid crises on school education in India:

- **Increase in out-of-school children during and over the post COVID-19 period:**
  School closures have affected 320 million students across the country and only 37.6 million children across 16 states were able to continue their education through various distance education initiatives such as online classrooms and radio programmes (UNICEF, 2020). During the pandemic child labour among school-going children has increased by 105 per cent that only in one state of the country. Save the Children (2020) reports the discontinuation of children's education in 62 per cent of the surveyed households with 67 percent in rural and 55 per cent in urban areas during pandemic. The major reasons for being out-of-school were engagement in economic activities and participation in domestic chores.

- **Nutrition of children between 6-17 years of age get affected**
  The Mid- Day Meal scheme (MDMs) is one of the most important interventions of the Government of India to avoid classroom hunger, increase school attendance, and addressing malnutrition. The closure of the schools across the country affected 115.9 million children who were enrolled under the scheme. As on May 1, 2020, only 15 out of the 36 states/UTs had taken steps to adapt to the MDM scheme and 39 per cent of households did not receive MDM during lockdown between April and June as reported by Save the Children, 2020 in their survey.

- **Reinforced digital divide and learning inequality**
  The closure of schools has moved the teaching to digital platforms either through online teaching, distance education, government portal like Diksha and e-Pathshala, direct-to-home (DTH) channels, social media tools like WhatsApp, Zoom, Google meet, Telegram, Youtube live, Facebook live and any other electronic devices (like smartphones and computers). Remote learning is a challenge for many students in India due to lack of access to basic digital infrastructure like electricity, devices and internet connection. Less
than 50 percent of rural households receive electricity for more than 12 hours while only 24 percent Indians own a smartphone and have an internet facility (Kundu, 2020).

- **Children lose out on early childhood care and education (ECCE)**
  In India, the early childhood care and education (ECCE) services are largely provided through the Anganwadi Centres (AWCs) under the Integrated Child Development Services (ICDS) scheme. The disruption of ICDS services due to the lockdown during COVID-19 had huge consequences on the health, nutrition and learning of 30 million children (of the age group 3-6 years) who were beneficiaries of this scheme in 1.37 million operational AWCs. The closure of these institutions poses an immense threat to their holistic development potential.

- **Increase in gender disparity in education**
  The COVID-19 pandemic forced around millions of girls and transgender children to drop out before they complete their school education especially for children—living in poverty, disabled or the ones living in rural isolated places. Adolescent girls are more likely to dropout from secondary education (19.8%) than primary education (6.3%) and even higher for government schools (26.8%). Further estimation to be that 10 million more secondary school age girls could be out of school after the COVID-19 crisis. Only 33 percent women had access to internet as compared to 67 per cent for men which increase the gender disparity in access to use digital infrastructure. As per locale the disparity is more prominent in rural India where 72 per cent men and only 28 per cent women had access to internet (Kundu, 2020). Thus, girls are more likely to miss out on online education and this will lead to an increase in learning gaps.

- **Disproportionate impact on marginalized children**
  The dropout rates among children from the Scheduled Castes (SCs), Scheduled Tribes (STs), Other Backward Classes (OBCs), with disabilities, those from ethnic minorities, on the move (migrant, refugee and internally displaced children), and the ones that are in the most rural hard-to-reach and poorest communities is high, especially for secondary education. Swabhiman in 2020 found that about 43 per cent of children with disabilities are planning to drop out of studies due to difficulties faced by them in online education.

### CHALLENGES TO SCHOOL EDUCATION DURING COVID CRISIS

- Both educators and learners face frequent problems while using or referring online educational tools. Some of the challenges identified and highlighted are as follows:
- A substantial issue with a reliable Internet connection and access to digital devices is one of the major challenges faced by teachers and students in India. The economically backward children were unable to afford online learning devices.
- The online education brings health issues among learners due to more exposure to increased screen time. Therefore, it has become essential for students to engage in offline activities and self-exploratory learning.
• Lack of parental guidance is another challenge—especially for the vulnerable group—as both parents are working they face more difficulties.

• The learning outcome of the students drops down for both year-end examination and internal examination due to lack of consultation with teachers when facing difficulties in learning/understanding. Online student assessments based on trial and error brings more uncertainty and confusion among the teachers, students as well as parents.

• Various state-level board exams, recruitment exams, university-level exams and entrance exams have been postponed across India due to the COVID-19 outbreak and national lockdown.

• Some economic, social and psychological repercussions on the life of students were seen due to physical and social distancing among students as they were away from the normal schedule of schools. Increased and unstructured time spent on online learning has exposed children to potentially harmful and violent content brings greater risk of cyber bullying.

• Majority of students do not have access to smartphones, internet and even TV at home. Closure of business and offices during lockdown affected the source of income of huge population. Online face-to-face classes had become a very costly affair for so many students especially for economically disadvantaged as face-to-face online class consumes more internet data packages. It is difficult to design a proper system as per the learning needs and convenience of all students.

CONCLUSION

The study on the impact of the covid crises on school education in India concludes that suitable pedagogy and platform for different class levels of higher secondary, middle and primary education need to be explored further. Policy-level intervention is required to improve this situation. Further exploration on effective pedagogy for online teaching and learning could be an area for action research. Customized educational tools to address the needs of all the learners of varied economic background are another area for further studies. Making online teaching creative, innovative and interactive through user-friendly tools is the other area of research and development. This would assist and prepare the education system for such uncertainties in the future. For this the efforts of government, corporate giants, and other social agencies need to be synergized as it is difficult for one single entity to bring about the change, as the scale is enormous.
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OPEN SCHOOLING WITH COLLABORATIVE SCIENTIFIC ACTION FOR ENVIRONMENTAL PROTECTION OF WILD ANIMALS IN THE SEMI-ARID NORTHEAST

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Universidade do Estado da Bahia, Brazil

PROBLEM

Wildlife trafficking is the third most profitable illegal activity in the world, moving from ten to twenty million dollars and second only to arms and drug trafficking. There are records that thirty-eight million animals are taken from nature each year in Brazil. The country contributes five to fifteen percent of the world's total illegal income from animal trafficking. The removal of animals from their natural habitat has a strong impact on environmental balance by affecting the food chain cycle of various species but beyond that, there are the issues of captivity and illegal transport, the death of species subjected to this illegal trade and the maltreatment to which animals are exposed. Among these animals, birds are the majority, and the fact that many of them are threatened with extinction is aggravating.

INNOVATION

Education supported by open schooling for environmental protection has a key challenge to engage distinctive societal representatives to select real world scenarios to empower the youth to become scientific literates as responsible innovators for the green economy growth and responsible citizenship for a sustainable world (Okada et. al 2020).

This study focuses on procedures for identifying relevant scenarios and collaborative scientific actions which will prepare young people for a better understanding of natural environmental problems caused by humans and the consequences of its damage to the balance of the planet due to the lack of scientific knowledge about the ecosystem and also present alternatives for the local community to review its forms of sustainable economic growth.

The question this research poses is how to co-evaluate collaborative scientific partnerships for open schooling. Can open schooling with collaborative and innovative scientific action, involving young students of basic education, their teachers and civil society, in addition to public authorities, contribute to transform these predatory actions of keeping birds in captivity into acts of identifying, admiring and protecting these animals, developing scientific education, strengthening citizenship and helping to improve the quality of life on the planet?
According to Brennan (2014) Apud Torres et.al. (2016),

At the end of the last century, the European Union created the European Group on Ethics in Sciences and New Technologies—EGE, in order to make recommendations on the need to consider ethical aspects in technology promotion policies. Recently, the European Commission sought to promote a Responsible Research and Innovation policy, which was linked to the Horizon 2020 program, with the intention of promoting the integration of ethical and social impacts of research on their evaluating processes (Brennan, 2014).

This principle of Responsible Research and Innovation (RRI) are included and fully appreciated in the actions of this project. We are improving our scientific procedures by observing all ethical aspects prescribed by the European Commission.

To improve the students’ scientific capital, the project will teach them the main aspects of arguments based on theories and facts. According to Pinto et. Al. (2018), alternative methodologies can help teachers prepare their students to develop scientific arguments together with evidence based opinions by critically thinking about socio-scientific dilemmas and hence, making science available and reachable to these students.

PARTICIPANTS

The Rewilding Birds Brazil project which is linked to CONNECT was elaborated and is in the implementation phase in the Antônio Carlos Magalhães Municipal School, a public elementary school in the city of Irecê located in the State of Bahia, Brazil. The main objective here is to conceive and implement collaborative scientific actions which involve the elementary school students of this school. The implementation steps are:

1) An open invitation to school teachers, the Bahia State University including academic researchers and doctoral students to form an open schooling team in the state of Bahia;
2) weekly meetings by the Bahia team to adapt the Scenario Rewilding Birds Brazil;
3) coaching to support teachers in establishing partnerships and student-led scientific actions;
4) evaluation of the results using the European project instruments adapted for Brazil.

METHODOLOGY

These exploratory studies of the research-action characteristic adopt the principles of responsible research and innovation (RRI). The data refers to synchronous discussions and asynchronous interactions using Microsoft Teams with the support of WhatsApp to interact with community subjects. Based on the action research, data were generated with semi-structured questionnaires and the CONNECT model "Cuidar-Saber-Agir" supported the qualitative analysis software, MaxQda.
PRELIMINARY RESULTS

How can the collaborative scientific partnership be co-evaluated by those involved in open schooling?

Co-evaluation occurred through several factors. The scenario was considered relevant and engaging by all participants, leading them, from the principle of open schooling, to carry out collaborative actions.

The schools involved various social actors, from their families to people in their community, entrepreneurs, local radio, television and social networks, policymakers, scientific bodies, teachers and students.

The interested participants came from the areas of law, biology and education including science teachers. The participants could measure the impact of this culture of bird trapping for the balance of the local fauna, furthering the initial findings of the study in scientific literature which is summarized above, creating awareness campaigns to discourage these practices and stimulating the organization of wildlife observation activities without intervening in it through the organisation of exhibitions, photo contests and the creation of tourist routes that stimulate a sustainable relationship with the environment.

The community foresees the development of the mobile application called ‘bird tracker’ by the students themselves. Its function is to support the collection of data on birds in the region where the research is conducted also serving as a means of collecting more data on animal life, even after the completion of the project. The application can be used by any citizen who wishes to voluntarily contribute to the cause of nature’s preservation.

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TARGETED EDUCATION FOR SUSTAINABLE DEVELOPMENT IN HIGHER SECONDARY STATE SYLLABUS TEXT BOOKS OF KERALA

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INTRODUCTION

The Education is necessary to shape the future of the Learner. Targeted Education is the Goal setting for the Learner. It encourages the students to take the responsibility for their own learning.

The New approach of Education is to promote progressive and the personal development of the students in studying different subjects. The students can understand and face new or different problems include Personal, Educational, Social, Economic and Environmental Problems. Then the students gain in interest in Learning, to transform his or her behaviour and act for a more Sustainable world.

This article Targeted Education for Sustainable development assumes that the curriculum and the text books should be revised to design various activities related to different subjects which can promote the Sustainable Development Goals (SDG) in the Higher secondary school class rooms.

NEED AND SIGNIFICANCE OF THE STUDY

The present system of Education in Kerala state syllabus is Learner centered and activity based curriculum. Curriculum is designed and based on the philosophy of Social Constructivism. It emphasis upon the Learning Outcomes.

Learning outcomes is “the precise and accurate statements based on the knowledge, skills, attitudes, values etc. to be acquired by the learner in a particular subject”.

But the most of the Learning outcome is not achieved by the students in the Higher secondary school class rooms. Also the activities provided in the different subjects is inappropriate and limited.

“As a Knowledge society, it is of paramount importance to basically restructure and reform the curriculum to face the challenges posed by the times”. Dr P.K. Abdul Aziz Committee

Although activity based pedagogy has already been introduced at the Higher secondary level, a comprehensive revision of Curriculum has not been implemented yet.

Higher secondary stage is the most crucial stage of school education. It is essential for the learner in chemistry to gain the knowledge, skills, problem solving abilities and applications of concepts
of chemistry useful in real life situations for making learning of chemistry more relevant, meaningful and interesting.

**OBJECTIVES OF THE STUDY**

To equip Higher Secondary school students to build a more sustainable world in chemistry text books in Kerala state syllabus.

To assess the Higher secondary chemistry text books in Kerala state syllabus about the four different Tasks as specified in the study.

**Targeted Education for Sustainable Development**

It is often referred to as TESD allows every human being to acquire knowledge, skills, attitudes and values necessary to shape a Sustainable Future. TESD Goal4 is about quality education and is among the 17 Sustainable Development Goals established by the United Nations in September 2015.

**Mission (4 Quality Education, Wikipedia)**

is "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all".

**METHODOLOGY OF THE STUDY**

The Methodology used for the study is Qualitative approach. It helps the policy makers and acute researchers to assess multiple development and impact across the environmental, social, economic and educational dimensions. Observation is the tool used for the study.

This study is theoretical and qualitative. It uses the content and chapter wise analysis as a technique, since the purpose is to explore the opportunities offered by the chemistry text books to promote TESD in the higher secondary class room.

The Study enable the Higher secondary school students to promote TSED in the classroom focus upon four tasks in the plus one and plus two (higher secondary) chemistry Kerala state syllabus texts

**Task 1. Investigatory Project based experiments**

This Task involves how much emphasis is given upon the investigatory projects based experiments and activities in the higher secondary chemistry text books. This also involves how much worksheet, activities and experiments is given to the students in every chapters in the higher secondary chemistry text books. It also gives the “Self learning and Learning by doing” by the students in every chapters in the higher secondary chemistry text books.
Task 2. Scope for the Cottage industrial development

This involves how much emphasis is given upon the cottage industrial development by the higher secondary school students in chemistry text books. Whether the text books contain ample scope for preparation of products (Gel, Sol, Shampoo etc), make a laundry product at home related to each chapters in our daily life. It also gives any opportunities to the students to visit the small scale industrial firm or factory which is mentioned in every chapter of higher secondary chemistry text books.

Task 3. Knowledge about the Hazard, Safety and Environmental protection

This Task involves how much emphasis is given upon Knowledge about the Hazard, Safety and Environmental protection activities in the higher secondary chemistry text books. Whether each chapter in the higher secondary chemistry text books specify the safety measures, remedies about the chemicals studied by the students. It also gives any study about the Biological importance of the elements, less hazardous chemical synthesis, designing safer chemicals, safer solvents, zero waste and pollution, reduce derivatives, etc and its environmental protection.

Task 4. Sustainable task for life long Education.

This Task involves how much emphasis is given upon Sustainable task for life long Education in the higher secondary chemistry text books. It includes the knowledge about the concepts in chemistry and apply to the situations in the future which is specified in the higher secondary chemistry text books.

ANALYSIS FOR THE STUDY

The study is conducted to find out the sustainability of chemistry text books to promote Targeted Education for Sustainable Development in the school class room. Simple and categories analysis (content wise, chapter wise, unit wise analysis) of higher secondary chemistry text book in Kerala state syllabus is used for the study. Frequency distribution, Bar graph, Pi diagrams etc. is used as the statistical techniques for the study.

Sample and Chapter Wise Analysis Units

The sample selected for the Analysis is Plus one and Plus two chemistry Kerala state syllabus texts in 2014. In plus one 14 chapters is taken and analyzed for the study. In Plus One, chapter is codes as F1 to F14. In Plus two, 16 chapters is taken and analyzed for the study. In Plus two, chapter is coded as S1 to S16.
RESULT ANALYSIS

Chapter wise Task Analysis

Chapter wise Task Analysis shows that Task1 Project based Experiments and Activities constitutes 40% from the total sample of 30 chapters from 295-chapter wise Concept units (Plus one 164 units + Plus two 131 units) of the higher secondary chemistry text book state syllabus in Kerala.

Figure 1. Bar Graph of 4 Tasks compared with 30 Chapters in Plus one and Plus two Chemistry Kerala State Syllabus Texts.

The Task 2 Scope for the Cottage industrial development constitutes 30% from the total sample of 30 chapters from 295-chapter wise Concept units (Plus one 164 units + Plus two 131 units) of the higher secondary chemistry text book state syllabus in Kerala.

The Task 3 Knowledge about the Hazard, Safety and Environmental protection constitutes 20% from the total sample of 30 chapters from 295-chapter wise Concept units (Plus one 164 units + Plus two 131 units) of the higher secondary chemistry text book state syllabus in Kerala.

The Task 4 Sustainable task for life long Education constitutes 70% from the total sample of 30 chapters from 295-chapter wise Concept units (Plus one 164 units + Plus two 131 units) of the higher secondary chemistry text book state syllabus in Kerala.
COMPARISON OF FOUR DIFFERENT TASKS

Among the four Tasks, Task 4 Sustainable task for life long Education constitutes the major contributions from the higher secondary chemistry text books state syllabus in Kerala. In short, Higher secondary chemistry text book is useful to the students in future life too. Curriculum and the chemistry text book should be revised to add more and more Tasks which can promote the sustainable development goals in the higher secondary class rooms to attain a very efficient life for the students.

RECOMMENDATION AND FUTURE IMPLICATIONS

This article analyses the higher secondary chemistry text book Kerala state syllabus to equip the higher secondary students to develop sustainability in all aspects of his or her future life. The text books and curriculum should be revised for every five years to meet the challenges in the society and enable the students to develop all the potentialities in the entire future life.

The four Tasks is analyzed for the study involves the fact that it incorporates the more activities and investigatory project based experiments in every chapter of higher secondary chemistry texts. Each student can go through these experiments and activities given in the chemistry texts to attain the knowledge about the realistic view of future life.

By ample scope for the chemistry text book contain lab preparation and homely preparation of the various products, its experiments, Hazard, Safety precautions and provision for cottage...
industrial preparations is being conducted in every chapter of higher secondary texts Kerala state syllabus.

This enable the students to develop the various skills by “Learning by doing”. This will provide the students to develop the knowledge about the Hazard, Safety precautions, self or group preparations of some products and attain sustainability for lifelong learning.

This study is also conducted for various subjects in the text books of higher secondary Kerala state syllabus and other boards include CBSE, ISCE etc. enable the students to achieve more sustainable world today.

LIMITATION OF THE STUDY

The study is limited to Higher secondary chemistry text book state syllabus in Kerala. The edition of the text books referred is 2014 only. After the 2014 there is no revision of Higher Secondary Texts and Curriculum Kerala state syllabus by SCERT. The Tasks is analyzed for the study is four only to develop the sustainability in higher secondary students in Kerala.

CHALLENGES OF THE STUDY

Filho, 2020 Impact of COVID-19 pandemic Just as all SDGs, achieving SDG 4 for inclusive and equitable access to education is likely to be missed due to the COVID-19 pandemic, there is a projection that more than 200 million children will still be out of education by 2030.

CONCLUSIONS OR OUTCOME OF THE STUDY

When the students are encouraged to take responsibility for their own learning, Target or Goal setting is a logical step in the Teaching – Learning Process. Target or Goal setting is powerful tool to help bring about change and the improvement of the Learner. To ensure Quality Education and Targeted Education at the Higher secondary school students in Kerala, the Curriculum planners, the Experts Committee’s, the Educational Researchers and Government continues to implements the revisions of texts regularly after the five years. Texts books contain the detailed activities in regular and serial order which is easy to difficult, more experiments, more clues or hints, work sheets, safety sheets and exercises in every chapters enable the students to develop knowledge, skills, attitudes and values towards science learning.

It is very efficient to implement several Comprehensive Teacher Transformation Programs and Authentic, Simple, Activity oriented and comprehensive text books to shape the future of the students. Empower the students to take the responsibility for the present and the future generations and actively contribute to societal, economic, environmental and educational transformations and to build a more Sustainable World. Employ interactive, project based, e learning resources and learner centered pedagogy in higher secondary texts and syllabus in Kerala state. Transform all aspects of learning environment through a whole institution approach to
Education for Sustainable development to enable learners to live what they learn and learn what they live.

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INTRODUCTION

Sustainable development was first officially discussed in the Brundtland Report published by the World Commission on Environment and Development in 1987, and the corresponding rapporteur defined it as "sustainable development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs" (WCED, 1987). The life of human beings depends entirely on the environment and any adverse change in the environment makes the life of the human being difficult on the planet. The desires and expectations of humanity increase exponentially which crosses all limits consumption of environmental resources that are essential for the existence of future generations. The greedy nature of certain people makes this planet not suitable for human life. Development is essential for humanity but the projects for those developments do not affect the existence of human beings. In this context the term sustainable development got important. Sustainable development has three dimensions, namely economy, environment, and society (Olsson, Gericke, & Chang Rundgren, 2016). For sustainable development to take place, the sustainability of these three dimensions must be ensured simultaneously (Sandel, K., Öhman, J., & Östman, L. 2006). On the road to sustainable development, the role of individuals and their awareness is important.

Even though the attainment of sustainable development is a global one but the understanding of individuals especially students, teachers, and teacher educators are important in attaining sustainable development goals. By 2030 United Nations aims to build a more prosperous, more equal, and more secure world. For this 193 Member States at the UN General Assembly Summit in September 2015 formulated seventeen sustainable development goals and 169 targets. Awareness and understanding are important in achieving the goals by 2030 with the motto leaving no one behind.

REVIEW OF RELATED LITERATURE

Marwah Mohsin & et.al (2021) conducted an Analysis of Differences between Public and Experts Views Regarding Sustainable Development of Developing Cities: A Case Study in the Iraqi Capital Baghdad. The study reveals the difference in the views about sustainable development of the public and experts. This study reveals that there exists a wide difference between the public and experts' attitudes due to their knowledge and experience. The areas such as 'Minimise energy consumption, 'Reduce pollution', 'Increase educational activities', 'Promote the use of public...
transport, 'Renewable energy sources', 'Smart energy management, 'Walking and bike as a mean transport', and 'Social awareness programs' where the viewpoint greatly different.

Michele Biasutti and Sara Frate (2016) in the article A validity and reliability study of the Attitudes Toward Sustainable Development scale describes the development and validation of the Attitudes Toward Sustainable Development scale. The scale consists of a quantitative 20-item scale that measures Italian university students' attitudes toward sustainable development. A total of 484 undergraduate students completed the questionnaire. The validity and reliability of the scale were statistically tested by computing the KMO and Bartlett tests and via exploratory factor analysis, descriptive statistics, Cronbach's alpha, confirmatory factor analysis, and multi-group invariance testing. The results of the principal components factor analysis show that the scale consists of the following four dimensions, with five items in each: environment, economy, society, and education. The overall structure and measurement of the scale are confirmed by the confirmatory factor analysis and by the multi-group invariance testing. Internal reliability, which was found using Cronbach’s alpha, varies between .660 and .854. The results show that the instrument meets the validity and reliability criteria. To demonstrate its utility, the scale was applied to detect differences in sustainable development attitudes among students pursuing degrees in psychology and agriculture. Relevant differences were detected for the dimensions of Environment and society. The Attitudes Toward Sustainable Development scale could be useful for understanding how students think about sustainability issues and could be used to investigate the relationship between sustainability attitudes and other variables.

Ozlem Afacan & et.al (2011) in the study of the Development of attitude scale in the context of sustainable environmental education indicate that the data gathered from the scale shows that teacher candidates have negative thoughts about sustainable environmental education. So the necessary environmental education for sustainable development should be accurately needed for future teachers. To convert these negative ideas to positive ones, nature trips and conferences, panels, etc. convened by expert scientists in the context of sustainable environmental education should be organized. They developed the "Sustainable Environmental Education Attitude Scale" and it can be used as a data-gathering means for future researches. For the development of the scale, they conducted a pilot study with 400 teacher candidates who are studying in the programs of Social Sciences Education, Elementary Science Education, and Primary Education in the Department of Elementary Education at the Ahi Evran University. As a result of exploratory factor analysis, it was found that the scale has 6 factors and they are "Environmental policy and environmental awareness in Consumption, Negative thoughts concerning environmental events and activities, Frugal behavior and thoughts for consumption, “Sensitivity and intervention on environmental problems, Using recycled material and volunteering, Sensitivity for negative behavior towards animals and environment. The scale has an internal consistency coefficient of 0.904.

Mehmet Erdogan et.al (2011) in the study for the Development and validation of Children's Responsible Environmental Behavior Scale revealed that very few scales have been developed to
assess children’s ERB. Though environmentally responsible behavior (ERB) has been this article focuses on the development and validation of Children’s Responsible Environmental Behavior Scale (CREBS) and also reports the psychometric properties of this scale. The scale was developed through a five-stage process and they are (1) an extensive review of research on ERB; (2) generation of items pool; (3) a review of panel experts on various fields to provide content and face validity; (4) a pilot study with 673 fourth and fifth graders to reveal initial factor structure; and (5) a validation study with 2412 fifth graders to confirm the four-factor model and to ensure reliability evidence.

NEED AND SIGNIFICANCE OF THE STUDY

Development is essential for progress in every field of human being's life. For development, humans have to depend entirely on nature. Any excessive usage or consumption of resources will lead to harmful effects in nature. In certain cases, the visible change may be very slow but in the future, it may take serious threats to the life of human beings and other species. So human beings need to be responsible in their behavior towards the environment. The present situation demands the measurement of people's sustainable development attitude which is an indicator of the disposition of people towards the protection of the environment not only for ourselves but also for the coming generation also. This makes the requirement of understanding of perspective teachers attitude and their environmentally responsible behavior to be measured possible through the environmentally responsible behavior. Student teachers have a great role in the molding of the future generation of learners. Understanding their attitude towards sustainable development and the environmentally responsible behavior indicates the attainment of sustainable development goals and the study helps us to make the strategies to develop sustainable development attitude among student teachers and thereby in students also.

OBJECTIVES

1. To find out the attitude towards the Sustainable development of student teachers.
2. To find out the Environmental responsible behavior of student teachers.
3. To find out the relationship between attitude towards sustainable development and environmentally responsible behavior of student teachers

HYPOTHESES OF THE STUDY

1. There will be a significant difference in the attitude of student teachers towards sustainable development.
2. There will be a significant difference in the environmentally responsible behavior of student teachers.
3. There will be a significant relationship between the attitude of student teachers towards sustainable development and the environmentally responsible behavior of student teachers.
RESEARCH DESIGN

In this study, a normative survey method was carried to determine the attitude towards sustainable development and environmentally responsible behavior of student teachers of four northern districts of Kerala. The survey method gathers data from a relatively large number of cases at a particular time (Best & Kahn, 2010)

SAMPLE

The sample consists of 53 student teachers from various teacher education colleges of Kozhikode, Malapuram, Kannur, and Kasargod district for attitude towards sustainable development and 44 student teachers from various teacher education colleges of Kozhikode, Malapuram, Kannur, and Kasargod district for environmental responsible behavior. The sampling technique adopted is volunteer sampling. (Best & Kahn, 2010).

TOOLS

The study was conducted using the following tools

1. Sustainable Development Attitude scale developed by Biasutti & Frate (2011).
2. It consists of twenty items following 5-point scale. The scale was standardized with a reliability coefficient which shows high reliability. Reliability is ensured using the test-retest method. Validity is ensured as content validity
3. Environmental responsible behavior inventory developed by Erdogan, Ahmet & Marcinkowski c (2011).

It consists of twenty-three items following 5-point scale. The scale was standardized with a reliability coefficient which shows high reliability. Reliability is ensured using the test-retest method. Validity is ensured as content validity.

STATISTICAL TECHNIQUES

1. Basic statistical techniques such as arithmetic mean, median, mode, and standard deviation.
2. ANOVA
3. Pearson’s product-moment coefficient of correlation
4. Test of significance correlation
METHODOLOGY

The study was conducted to find out the attitude of student’s teachers towards sustainable development and environmentally responsible behavior. For this, the investigator adopted the scale developed by Michele Biasutti & Sara Frate and Mehmet Erdogan, Ahmet Ok & Thomas Joseph Marcinkowski. First of all, the investigator collected the email address of 150 student teachers from Kozhikode, Malappuram, Kannur, and Kasargod district of Kerala state. Then the investigator sent tools to the email id of student teachers with proper instruction and requested them to respond. For the attitude towards sustainable development scale 52 responses were obtained and for environmental responsible behavior, 44 responses have obtained. The investigators valued the response sheets with a five-point scale. The scores obtained by each student in the Metacognitive awareness inventory were encoded and underwent statistical calculations. Mean, standard deviation, ANOVA, and Pearson's product-moment ratio were calculated.

DELIMITATIONS OF THE STUDY

The present study is limited to finding out sustainable development attitude and environmental responsible behavior of student teachers only. Moreover, the study is limited to 4 northern districts of Kerala.

DATA ANALYSIS

As a first step, the scores are assigned to the responses for attitude towards sustainable development and environmentally responsible behavior. Since both the scales are five-point scales, a maximum of five points were given to strongly agree responses for the positive statements. Similarly, the point decreases in a step-wise manner to 1 for the strongly disagreeable response for a positive statement. Then the mean, median, mode, and standard deviation are calculated for the scores of attitude towards sustainable development and environmentally responsible behavior. Then the investigators classified the entire student teachers into three groups as strong attitude group, moderate attitude group, and weak attitude group. As well as the student teachers were classified as excellent behavior, moderate behavior, and low behavior group.

RESULTS

Sustainable development attitude Student teachers

The investigators categorized the whole sample used for the study into Low, Average, and Very High Sustainable development attitude groups based on the scores of the Sustainable development attitude scale. The low attitude group has scores below $\bar{x} - \sigma$, the high attitude group have scores $\bar{x} + \sigma$ and the rest of them belong to the average attitude group. The frequency of student teachers belonging to each group, sum scores, average, and their variance is given in table 1.
Table 1

Frequency of student teachers in different groups with their percentage

<table>
<thead>
<tr>
<th>SI No</th>
<th>Groups of student teachers</th>
<th>No of students</th>
<th>percentage</th>
<th>Sum of scores</th>
<th>Average</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low attitude</td>
<td>5</td>
<td>9.6</td>
<td>361</td>
<td>72.2</td>
<td>29.7</td>
</tr>
<tr>
<td>2</td>
<td>High attitude</td>
<td>7</td>
<td>13.4</td>
<td>671</td>
<td>95.857</td>
<td>6.142857</td>
</tr>
<tr>
<td>3</td>
<td>Moderate attitude</td>
<td>40</td>
<td>76.9</td>
<td>3441</td>
<td>86.025</td>
<td>13.51218</td>
</tr>
</tbody>
</table>

From the table, it is revealed that the high attitude group possesses a high average with little variance.

76.9 % of teachers possess an average attitude towards sustainable development. The distribution of three student groups is shown in Figure 1

Figure 1

Pie diagram showing the distribution of different attitude groups

By using ANOVA, the significant difference between the different groups can be determined. The results of the Analysis of variance are given in Table 2

Table 2

Analysis of variance of different attitude groups
The F value obtained by ANOVA 58.58 shows that it is higher than F Critical Value 3.18 at 0.05 level of significance indicate that the research hypothesis is accepted and which means there exist a significant difference between the high attitude, average attitude, and low attitude group of student teachers.

**Environmental responsible behavior Student teachers**

The investigators categorized the whole sample used for the study into Low, Average, and High Environmental responsible behavior groups based on the scores of Environmental responsible behavior scale. The low behavior group has scores below $\bar{x} - \sigma$, the high behavior group have scores $\bar{x} + \sigma$ and the rest of them belong to average behavior groups. The frequency of student teachers and their percentage is given in Table 3.

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Groups of student teachers</th>
<th>No of students</th>
<th>percentage</th>
<th>Sum of scores</th>
<th>Average</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low behavior</td>
<td>4</td>
<td>9</td>
<td>224</td>
<td>56</td>
<td>159.3333</td>
</tr>
<tr>
<td>2</td>
<td>High behavior</td>
<td>6</td>
<td>13.6</td>
<td>604</td>
<td>100.6667</td>
<td>32.66667</td>
</tr>
<tr>
<td>3</td>
<td>Average behavior</td>
<td>34</td>
<td>77.27</td>
<td>2737</td>
<td>80.5</td>
<td>30.43939</td>
</tr>
</tbody>
</table>

From the table, it is revealed that the high behavior group possesses a high value for average with comparatively low variance. 77.27 % of teachers possess an average attitude towards sustainable development. The distribution of three student groups is shown in Figure 2.

**Figure 2**

Pie diagram showing the distribution of different behavior groups
Analysis of variance is calculated for the sample and the details are given in table 3.

By using ANOVA, the significant difference between the environmentally responsible behavior different groups can be determined. The results of the Analysis of variance are given in Table 3.

**Table 3**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>4829.144</td>
<td>2</td>
<td>2414.572</td>
<td>60.15035</td>
<td>6.39E-13</td>
<td>3.225684</td>
</tr>
<tr>
<td>Within Groups</td>
<td>1645.833</td>
<td>41</td>
<td>40.14228</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6474.977</td>
<td>43</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The F value obtained by ANOVA 60.15 shows that it is higher than F critical Value 3.22 at 0.05 level of significance indicate that the null hypothesis can be rejected and there exists a significant difference between the behavior of these groups.

**Correlation between the attitude towards sustainable development and environmentally responsible behavior**

To find out whether the attitude towards sustainable development of student teachers has a correlation with environmental responsible behavior of student teachers Pearson's product-moment ratio was calculated. The ratio was found to be 0.2944. This shows that there is only a low positive correlation between the variables so the research hypothesis is partially accepted.
The value test of significance of $r$ is 1.9963. Using the two-tailed test at .05 level with 42 degrees of freedom, the research hypothesis is rejected, not exceeding the t critical value of 2.021. The scatter plot of responses for attitude towards sustainable development and environmentally responsible behavior is shown in Figure 3.

Scatter diagram of attitude towards sustainable development and environmentally responsible behavior

<table>
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<tr>
<th>MAJOR FINDINGS</th>
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The major findings of the study are

1) 13.4% of student teachers and 76.9% of student teachers possess a strong attitude and moderate towards sustainable development respectively.
2) 13.6% student teachers and 77.27% student teachers possess strongly desirable and moderately desirable environmentally responsible behavior respectively.
3) There is a significant difference in the attitude of student teachers towards sustainable development among the group’s student teachers formulated.
4) There is a significant difference in the environmentally responsible behavior of student teachers among the group's student teachers formulated.
5) There is no significant relationship between attitude towards sustainable development and environmentally responsible behaviour.
EDUCATIONAL IMPLICATIONS

1. The attitude of student teachers towards sustainable development must be enhanced for the existence of entire humanity and other living organisms. This study reveals that only 13% of student teachers possess a strong attitude towards sustainable development. This reveals the necessity of modifying the curriculum of teacher education programs to get more awareness about sustainable development. The education provided to them is not only to improve their knowledge level but also to develop the affective domain. Then only the attitude can be positively changed.

2. The environmentally responsible behavior of student teachers must be improved because they are acting as role models to students. Thereby students’ environmentally responsible behavior can be improved. This is possible through education. The curriculum should be remolded in such a way that it must generate environmentally responsible behavior.

3. To develop sustainable development, the environmentally responsible behavior must be strengthened. This study reveals that there is only a slight positive relationship between sustainable development attitude and environmentally responsible behavior. These two are closely related. So by providing education for developing environmentally responsible behavior, this will reflect in attitude towards sustainable development.

CONCLUSION

Sustainable development is a need of society that highly depends upon the behavior of individuals towards the environment. For sustainable development, the acclivity of human beings must be reorganized in such a way that it must produce the least harm to the environment. There is the harm in the development process that does not consider the web of life. So by providing education each individual must recognize the relationship with other living and non-living organisms. This is possible by providing an understanding to everyone, especially to students. If the students got such a vision they will try to conserve nature. Education is the tool to bring about such a change. So teachers play a key role in the position of transforming students with a vision of sustainable development. The student teachers with a low attitude towards sustainable development must be enhanced by giving proper training and the environmentally responsible behavior must be strengthened by incorporating suitable programs which will help the students teachers to understand the importance of sustainable development. The thought process of teachers can be tuned within the framework of sustainable development which will have a great impact on the students or coming generation. this will help the students to think globally and to achieve sustainable development goals.
REFERENCE


INTRODUCTION

The outbreak of COVID-19 that emanated from Wuhan, China in November, 2019 swept the entire globe without any alert signs. A reprieve to this invisible viral disease would be staying indoors and following social distancing norms in want for any acknowledged medicine or vaccination during the initial days of its outbreak. The health care sector became a significant source of sustenance to this health crisis, which primarily depends upon the healthcare workers for all the services it provides. A well-motivated healthcare workforce is a key to meeting the continuous and changing demand for healthcare services (Buchan, 2001).

However, in the face of lack of infrastructure, employee shortage, and work overload, healthcare workers have experienced massive transformations in the execution of their services ever since the outbreak of COVID-19. There was no plan or prior intimation, training, or education to deal with this rapidly developing situation. Besides this, lack of the proper awareness among the policy worker and the higher officials, health professionals and public, affected the practices and motivational level of the health professional (Tysiąc-Miśta & Dziedzic, 2020) Yet, they have remained and are still at stick during the current pandemic (AlAbri, 2020).

Notwithstanding their professional commitments, the health care workers are humans, and their intimidations towards COVID-19 cannot be disregarded. Their need to be given importance in the current pandemic by protection and compensation while firming up communications with moral and social support provisions must be emphasized. To have them extra motivated, supported, and protected becomes obligatory to preserve their professional attitudes for the effectiveness of the healthcare sector and get victory over the continuing pandemic of COVID-19 on humankind.

REVIEW OF LITERATURE

Motivated and well-behaved employees give new directions, philosophies, optimism and enthusiasm in the challenging, crises and even abnormal situations like COVID-19. This study advocated the need of training for protection organised according to factors like work experience, education etc. Medical systems should ensure that frontline workers have enough time to rest
between shifts to avoid work overload and conscious errors during pandemic relief efforts (AlAbri, 2020).

The study aimed to evaluate the severity of psychological distress and stigmatization in different categories of HCWs during the COVID-19 pandemic. Physicians experienced more stress compared with nurses and paramedical personnel but were less likely to get stigmatized to SARS-CoV-2-infected individuals. Direct contact with coronavirus infection found to increase stress. The stigmatizing is not directly associated with risks of infection and are most prevalent among nurses and paramedical personnel. (Sorokin, 2020).

The study identifies several risk factors faced by HCWs working during COVID-19. long duty hours in the high-risk department, lack of PPE, diagnosed family member, unqualified hand-washing, and improper infection control. Prolonged PPE usage led to skin damage, with the nasal bridge being the most common site. Adequate provision and training on the use of personal protective equipment, strict infection control practices, shorter shift length, and provision of mental health and support services can reduce the burden. (Shaukat, 2020).

Uncertainty, stigmatisation, and potentially exposing their families to infection were prominent themes for healthcare workers (HCWs). This study examined the effects of stigma, job demands, and self-esteem, and the consequences of working as a “frontline care provider” with patients infected with Corona virus. Findings suggest that stigma has a high impact on workers’ outcomes. Stigma may influence worker compliance and that stigma and fear of infectious diseases hinder HCWs of different roles and responsibilities from responding correctly. This finding also suggests that when a person feels stressed, in a context, of an increase in job demands it exposes to decrease indecision, degradation of performance levels, and reluctance to carry out one’s work (Ramaci, 2020)

HCWs believed that social, moral responsibilities and professional obligation motivated them to continue working long hours. A positive work environment with re-assurance of personal safety were two main factors that might be key to encourage medical staff to continue working. Although they were anxious about their safety and of their families. Training with biosafety measures, a correct application of infection control procedures, as well as having personal protective equipment and recognition of their efforts at institutional and government levels, can generate a feeling of security and motivation to continue working (H.Cai, 2020).

Aimed to access the level of motivation in HCW and identify determinants that lead to dissatisfaction during COVID19 spread. The financial factor represented by salary or bonus had no or little impact on work motivation during the pandemic. more than half stated that motivation was not entirely affected by working conditions in hospital. Harsher working conditions or larger volume of work did not negatively impact motivation but the fear of contamination was considerable. (C.Cobilinschi, 2021).
This study shares the implications and evidence-based experiences of nurses working during COVID-19. Constant fear with uncertainty in the working environment and new disease threat not only on their own personal health, also of family and friends, they self-isolating themselves. Deaths of some colleagues heightened anxiety and stress. But despite getting fearful, they remained in workplace and continued to provide care. Vulnerable and worried about future litigation related to the need to prioritise resources and to ration and deny services to some patients. Need of adequate staffing was found to ensure that they are able to take breaks or take leave when they are ill. (Fernandez, et al., 2020).

Personal health is important for productivity and functioning and acts as motivators for employees, it aids in enhancing the work environment of the workplace. Use of PPE in the COVID-19 environment has become mandatory for the personal health and safety of HCWs in their workplace. But PPEs found to restrict comfort and movement. It can also restrict breathing, vision and communication. It elevates risk of heat stress and dehydration and lead to psychological problems (Chemspace, 2019).

Factors based on the literature review like job security, personal health, training and adequate staffing are analyzed to access the motivation of HCWs. Prevailing work conditions are analyzed using factors workload distribution, discomfort using PPEs, ventilation and workplace safety. **Figure 1: Factors of Motivation and Prevailing Work Conditions.**

This research study is aimed to investigate these factors of motivation and prevailing work conditions of the HCWs during the first wave (March to June 2020) of COVID-19 focusing on the following objectives:

1. To study the prevailing work conditions of health care workers during the initial days (wave 1) of covid-19 outbreak.
2. To study the impact of the prevailing work conditions (during wave 1 of COVID-19) on the motivational level of HCW.
3. To understand the levels of motivation of HCW working in three different locations of India during the wave 1 of COVID-19 outbreak.

SCOPE OF THE STUDY

Since this study is concerning to Wave 1, COVID-19, this can be further taken up to the 2nd wave and to the predicted forthcoming waves. The study can be additionally done based on demography characteristics, lack in infrastructure and manpower shortage. Research on the Black fungus is negligible and can be instigated.

SAMPLE INSTRUMENT AND DATA COLLECTION

The survey was conducted for around a month between end of February to March end 2021 in three different locations of India. A cross-sectional study using snowball sampling technique, with 84 participants was performed using google forms. The 18-item questionnaire was managed virtually, that was distributed through emails and whats app. With questions exploring demographics, accessing the motivational levels and factors relating to the prevailing work conditions of healthcare workers working in Delhi, Mumbai and some cities of state of Jharkhand. Descriptive statistics was used for analysis of demographic characteristics and prevailing work conditions using Microsoft Office Excel 2010. Pearson’s Correlation coefficient was used to find out the relationship between the motivational levels of HCWs based on work conditions and location of work. Factors associated with motivation like job security, work overload, adequate staffing, training and personal health were accessed using five-point Likert scale. Prevailing work conditions factors were accessed with factors like workload distribution, discomfort wearing PPEs, ventilation facilities and workplace safety measures.

RESULTS AND DISCUSSION

The study was conducted while the 2nd wave of COVID-19 had already begun in India. Mumbai had reported COVID-19, 2nd wave positive cases around February 10th 2021, Delhi from March 2021 and Jharkhand had also began to rise in the numbers of positive cases during March 2021. Although the survey was to be conducted for the COVID-19 Wave 1, unavailability of the HCWs to respond to the questionnaire was observed despite reminders and their verbal agreement to participate in the survey. The relatively small sample size of this study can be attributed to that. Out of the of the total respondents (N=84) 26 % were based in Delhi, 14 % in Mumbai and 60 % in the state of Jharkhand. Out of that 61% were male and 39% female. The age distribution was done as age brackets of 10 years, starting from 20 years to ending at more than 60 years. The Representation of the Demographic factors are as below.
Table 1: Distribution of respondents based on demographic characteristics.

### Age
- 4% 20-30 Years
- 16% 31-40 Years
- 38% 41-50 Years
- 38% 51-60 Years
- 4% More than 60 Years

### Gender
- Male 61%
- Female 39%

### Location
- Delhi 60%
- Mumbai 26%
- Jharkhand State 14%
Table 2: Factors of Prevailing Work Conditions by respondents (N=84)

<table>
<thead>
<tr>
<th>Workload Distribution</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regularly</td>
<td>7.40%</td>
</tr>
<tr>
<td>Often</td>
<td>22.20%</td>
</tr>
<tr>
<td>Neutral</td>
<td>34.00%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>35.20%</td>
</tr>
<tr>
<td>Never</td>
<td>1.20%</td>
</tr>
</tbody>
</table>

The workload distribution is calculated in terms flexible work timing. (N=84). 34% HCWs followed adequate workload distribution whereas 22.2% were found overloaded with work.

<table>
<thead>
<tr>
<th>Workplace Safety</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>50%</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>24.10%</td>
</tr>
<tr>
<td>Neutral</td>
<td>20.40%</td>
</tr>
<tr>
<td>Disagree</td>
<td>3.50%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>2%</td>
</tr>
</tbody>
</table>

Workplace Safety is analysed using the safeguard measures provided. 50% of HCWs were found satisfied with it.
48.10% HCWs strongly agreed about adequate ventilation and 53.70% HCWs felt the discomfort in PPEs in the summer months of wave1, COVID-19. The findings suggest that the workplace was safe with proper ventilation facilities.
Table 3: Pearson’s Correlation matrix between prevailing work conditions and motivation of HCW.

<table>
<thead>
<tr>
<th></th>
<th>Motivation</th>
<th>Workload distribution</th>
<th>Discomfort</th>
<th>Ventilation</th>
<th>Workplace safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workload</td>
<td>-0.1590462</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>distribution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discomfort</td>
<td>0.0664128</td>
<td>0.20324186</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ventilation</td>
<td>0.2090291</td>
<td>-0.02332924</td>
<td>0.4610059</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Workplace</td>
<td>0.0507977</td>
<td>0.17956056</td>
<td>-0.1343299</td>
<td>-0.2691009</td>
<td>1</td>
</tr>
<tr>
<td>safety</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Weak Correlation Coefficient. The impact of motivation by the prevailing work conditions of HCWs during wave1, COVID-19 was found to be negligible.

Table 4: Pearson’s Correlation matrix between motivation of HCWs working in Jharkhand, Delhi and Mumbai.

<table>
<thead>
<tr>
<th>City</th>
<th>Motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>City</td>
<td>1</td>
</tr>
<tr>
<td>Motivation</td>
<td>0.156076902</td>
</tr>
</tbody>
</table>

State of Jharkhand(N=50) out of total.

<table>
<thead>
<tr>
<th>City</th>
<th>Motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>City</td>
<td>1</td>
</tr>
<tr>
<td>Motivation</td>
<td>-0.071162202</td>
</tr>
</tbody>
</table>

Delhi(N=22) out of total sample.

<table>
<thead>
<tr>
<th>City</th>
<th>Motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>City</td>
<td>1</td>
</tr>
<tr>
<td>Motivation</td>
<td>-0.065899509</td>
</tr>
</tbody>
</table>
Mumbai (N=12) out of total sample.

To analyse the variables of city and motivation. The mean of all factors of motivation is done. Pearson’s correlation coefficient was used. It was found that both variables were minimally related. There is very slight decrease in motivational level of the HCWs working in Mumbai and Delhi. In Jharkhand the relationship between the city (place of work) and motivation is found to be negligible.

CONCLUSION & LIMITATIONS

Motivation and adequate working conditions are the determining factors for better performance and retention of the healthcare workers. This study identifies the factors of prevailing work conditions and describes the significance of those factors in motivation of the healthcare workers during COVID-19 wave 1. The place of work is found to have negligible impact on motivational levels of HCW. This finding of the study foregrounds the necessity of adequate work conditions and safety for enhancing the motivational levels of the HCWs. That is indispensable for constructing a robust health care sector for the forthcoming times to be equipped for future occurrence of pandemics while remaining sustainable. This study may not represent all healthcare workers due to its small sample size. A larger sample size with use of better sampling methods may produce better outcomes in future.

SIGNIFICANCE

This study will be of relevance to the policymakers, administrators, planners, researchers, and NGO's looking towards better management of work conditions and health care workers' motivation to the continuing pandemic of COVID-19 and to predict and manage the forthcoming future pandemics. Finding is valuable as health sector leaders try to find and evolve to the responses and to realize how to adjust to health systems as the pandemic continues.
REFERENCES

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AB0879-HPR MOTIVATION OF HEALTHCARE PROVIDERS DURING COVID19 PANDEMIC OUTBREAK https://www.researchgate.net/publication/351897416

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ABBREVIATIONS

HCW: Health Care Workers.
THE CONTEXT OF EDUCATION IN BRAZIL IN THE FACE OF THE PANDEMIC

From the suspension of in-class courses (in the first quarter of 2020), due to the pandemic declared by the World Health Organization (WHO) caused by the Sars-Cov-2 virus, which develops Covid-19, it was observed that different paths were taken to maintain the classes. As a measure to deal with this emergency, social distancing practices were established, and in many contexts, remote teaching remained as an alternative.

Various measures and guidelines have been taken by the Ministry of Education (GUY) and the National Council of Education (CNE), making it even more complex to deal with the situation. This heterogeneity in guidelines and regulations made the work done by teachers of basic education, as well as the development of teaching and learning strategies, a challenging process for 48 million students (Yearbook, 2019).

Although some studies (Costin, 2021) have shown that the pandemic situation has resulted in learning impairments, especially for students coming from vulnerable families, further reinforcing educational inequality in Brazil.

Even though in some contexts delivering printed materials by schools to families was a means used in this period, it was found that in many places digital platforms for carrying out and delivering activities were used in conjunction with these strategies, social networks for communication and applications such as educational resources.

9 There were also situations in which educational activities were simply paralyzed by various injunctions (Undime et al., 2020; Villas Bôas, 2020; Unbehaum, 2020 apud Gatti, 2020).
In this context, it was observed that in most Brazilian schools the resources of Digital Information and Communication Technology (DICT) were used, which became a priority condition for the development and maintenance of schooling in the Brazilian context.

Understanding that the digital language, through DICT, is possible to inform, communicate, interact and learn (Kenski, 2007) the presence of DICT before the pandemic situation had already changed the means of access to information and the form of communication in various contexts, among them in the teaching and learning processes. Being highlighted through the National Common Curriculum Base (Brazil, 2017) as important resources for the knowledge construction process. Although research related to teacher training and the use of these resources in the pandemic period is still being developed, it is possible to predict based on previous research that in addition to the various challenges that educators face in maintaining education in times of physical isolation, the use of digital resources in pedagogical mediation has been one of them.

When making a brief resumption in the studies that had as context the use of DICT in basic education, it is evident how these resources were being used in the students' educational processes and the teachers' training processes, revealing challenging results. Both concerning the lack of institutional support and support for the development of educational practices using DICT resources (Batista, 2019; Gomes, 2019; Oliveira, 2019), as well as related to the role of teachers and training needs for the use of these resources in their pedagogical practice (Avelar, 2019; Gomes, 2019; Muller, 2019; Romaniuk, 2019; Zeferino, 2019).

Although the challenges are many, research (Azevedo, 2019; Costa, 2019; Lopes, 2019; Oliveira, 2019) has shown that DICT resources contribute to the development of more meaningful, collaborative, and creative learning, in addition to helping to expand learning opportunities and contribute to the valorization of the creative attitude of students. This requires the need to invest in digital Orienteering educational actions for the digital fluency of those involved.

The potential of DICT is widely recognized in the teaching and learning processes of students with disabilities and students who have autism spectrum disorders (ASD) and are considered promising for the implementation and consolidation of an inclusive educational system, although the use of

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10 Considering the diverse economic-social-cultural situations that are shown in the extent of BRAZIL, and the inequalities that have become even more evident in the context of the pandemic, it is important to point out that these choices although they have become important, did not reach or were accessible to many educational networks due to diverse regionality and the vulnerability conditions that are part of the Brazilian population (Gatti, 2020).
these resources in this context also presents challenges, among them concerning the methodological processes involving the use of these resources (Faria, 2019; Lopes, 2019; Rosa, 2019).

**AUTISM SPECTRUM DISORDERS (ASD) AND PANDEMIC**

ASD is a neurodevelopmental disorder characterized by severe and invasive impairments that have as its characteristics the presence of difficulties in language/communication, social interaction, and behavior (APA, 2013). Therefore, during the schooling period, students who have ASD can experience situations that hinder their access to the curriculum, its interaction with peers and teachers arising from the difficulties experienced in its interaction process and social communication, and by having a restricted and stereotyped repertoire of activities and interests.

The ASD corresponds to a group of disorders in the spectrum of brain development and thus the level of intellectual functioning is extremely variable in this audience (from deep deficiency to superior nonverbal cognitive abilities). Therefore, people who have ASD may present several conditions characterized by some degree of impairment in social behavior, communication and language, and by a narrow range of interests and activities that are unique to the individual and performed repetitively.

According to the World Health Organization (WHO, 2020), it is estimated that there are 70 million people with ASD worldwide, of which 2 million are diagnosed in Brazil alone. The Centers for Disease Control and Prevention of the USA (CDCP, 2020) presents data showing that the prevalence doubled between 2000 and 2014 and the recent data show a new increase.

During the pandemic, studies (Pagaime et al. 2021)\(^\text{11}\) show that the challenges regarding the schooling of the target audience of Special Education in Brazil (including students with ASD) indicate obstacles and difficulties faced by teachers, which may have been aggravated in that period. Given that this is a population that according to Kupper & Heydt (2019 apud Fernandes et

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\(^{11}\) The research "School inclusion in times of pandemic" is developed in this context through a partnership between FCC (Fundação Carlos Chagas), UFABC (Universidade Federal do ABC), UFES (Universidade Federal do Espírito Santo), and USP (Universidade de São Paulo) to identify the challenges faced by teachers and teachers in basic education to ensure access to and participation of such students, as well as the strategies adopted to ensure the right to special education from the perspective of inclusive education, during the suspension of classroom classes (Pagaime et al. 2021).
al 2021) have less access to health services and other social rights and are thus more impacted in crisis scenarios like this.

Studies conducted by Freitas et al (2021) have shown that during this period the development of behavioral problems and increased anxiety and stress in this population has increased. The SBP (2020) explains that the routine changes imposed by quarantine, such as the intimate coexistence of families in the same environment, which is often restricted, can cause additional suffering to children with ASD. In addition to this situation, there is a need to intensify hygiene habits, which may not be understood by these children, as well as the change in the routine of therapies that in many cases have had reduced frequencies may have contributed to the exacerbation of behavioral symptoms.

**STUDY DESIGN AND ANALYZED MOBILE APPS**

Regarding the particularities present in the context of ASD in the pandemic scenario Fernandes et al. (2021) stress that it is of fundamental importance to reflect on the impacts of this global health crisis on the daily life of this population since they naturally already experience quite challenging situations. Thus, given this scenario and emergency demands, the authors emphasize the relevance of studies and practices that may favor the development of strategies to deal with the pandemic concerning the population with ASD.

Thus, taking as reference the use of DICT in the emergency educational context, this study aims to present the mapping and systematization of mobile apps aimed at people with ASD.

The present study has a qualitative-quantitative approach using the descriptive-exploratory method. By grounding on Gil (2008) we sought to provide more purpose with the problem to make it more explicit or to build hypotheses. To systematize the search and selection, the following terms were used: autism, autistic children, Autism apps, Autism games, and autistic space to search the apps on the Apple Store and Google Play platforms.

81 applications were identified, and 53 were selected. The inclusion criteria considered free access and non-paid apps (23) and limited access (30), that is, half free and half paid. Graphics 1 and 2 show respectively the percentage of applications divided by platforms and mobile devices.
It is observed that most of them are developed using the Appstore platform (47%). A lower percentage is found on the Google play platform (19%) and an intermediate percentage considers the two platforms (34%) for the availability of the applications. Being mostly (26%) developed both for tablet interfaces and for smartphones of apple and android systems.

Concerning the target audience, the vast majority of apps are aimed at children. Regarding functionalities, the percentage of distribution of applications is divided into the following categories: Attention (2%), Activities of Daily Living (2%), Behavioral (2%), Communication (72%), Augmentative and Alternative Communication (7%), Communication among family members (2%), Educational (32%), Emotions (4%), Social Skills (15%), Language (21%) and Routine (6%).

**ANALYSIS OF MOBILE APPLICATIONS FOR ASD INTERVENTIONS**

Regarding the use of DICT resources for interventions with people with ASD, studies (Garcia, 2018; Santarosa; Conforto, 2015) have indicated that the use of mobile devices is more adherent for this audience. Garcia (2018) justifies that mobile operating systems are simpler than laptops or desktops platforms. Another factor highlighted by Santarosa and Conforto (2015) is the fact of the most direct physical contact that mobile devices provide. The authors explain that this decreases the need to understand the functionalities of the device, focusing the user's attention on the desired experience.

This study related to the teaching-learning process in times of pandemic will be presented and discussed below some applications that have the format of educational games, aimed at literacy and the development of reading and writing and communication.
Communication is essential for social interaction, it occurs through instruments and signs. Specifically, about communication, only one application is aimed at adolescents, and through it, the user starts a conversation and learns what are the initial lines of the conversations. The other three focus on children as an audience. Through images, texts, and narration, the activities guide the children to prepare to communicate in different contexts, such as school, meetings with friends and family. It also helps in the development of language by pairing questions with real answers.

Given that children with ASD often have communication and language deficits, augmentative and alternative communication (AAC) provides favorable conditions to complement, supplement or assist in the organization of a communication process. In this analysis, we found four applications intended for intuitive AAC that present different options, providing choices for users.

Based on the alternative communication system PECS (Picture Exchange Communication System), the application "Matraquinha", has 13 options of themes, the user chooses one and appears drawings of the selected theme, when touched the name is spoken. Communication through the choice of images has options of different themes that are part of a child's daily routine (PECS-Brazil, 2021). This system aims to develop autonomy and spontaneity and communication properly through simple answers.

The "Tippy Talk", assists in the communication of non-verbal children through images and is divided by category, to help them express in audio what the child wants. The "See Touch and Learn" is based on exercises with flashcards, where visual instructions are presented. The "Commboards Lite - AAC Speech Assistant" allows communication through communication boards. By clicking on the image, it is narrated to express the user's desire.

For the categorization of educational apps, the elements related to the development of the process of literacy and verbal language development, basic math skills, and fine motor coordination were taken into account.

Regarding the literacy process, the following are highlighted: "Draw and learn to write" is divided into sixteen types of textures where the user chooses to draw the letters. When finishing the contour, the sound of the letter appears, and it is demonstrated the contour that the user performed and the real letter for a comparative. "Grapho Games" features sequences of lyrics and sound and 3D images featuring level progression. It creates characters, provides reports of child performance and incentives for learning. The "Letterschool - Learn to write", assists in the literacy processes with the use of images, outline of letters and words. The "A-Z Alphabet" consists of two games with the letters where the user is encouraged to learn the upper and lower case...
letters. The "Brainy Mouse" assists in the process and learning of reading, word formation through the interaction of colors and sounds. The "Biel and his friends" are pairing games with activities for literacy and fine motor coordination skills. "App Tinytap" has several games that help in different skills and can be used for pairings.

As for the development of mathematical concepts, the following have been found: The "Little Genius", has drag mechanics, to sort and sort elements and is divided into thirty-six levels. The "Learning to Count" features fifteen different games with fun characters for children to learn how to count and write numbers from 1 to 10. The "Match it up 1", presents different games of correspondence using strategies of games for children's boards and scenarios. The "Todo Math" develops mathematical skills in early childhood education. The "Matrix Game" has three different versions for ages 4, 5, and 6 years or older, with games of classification and for the development of abilities of visual perception, spatial orientation, classification, attention, concentration, and categorization. The "Edukitchen", has classification games, where users are encouraged to develop skills of fine motor coordination, classification, and categorization. The "Jade" has games of pairings and memory that help in the development of skills such as attention and concentration and fine motor coordination, laterality, and spatial notion.

"Autispark", is an application focused on literacy and the development of mathematical concepts because it has different categories of games with words and spelling, basic math skills, tracing games, memory, classification, correspondence, puzzle, concepts of image association, understanding of emotions, recognition of sounds.

In addition, two applications were detected that can help the teacher’s work: "Bitsboard Flashcards and games" can be used by teachers to create interactive lessons with images and audios and create games with the image cards. The "App Educreations" aims to monitor the classes and the development of students.

Although he also works with speech therapy processes, the following applications also help in the literacy process: "Lele Silabas" develops the recognition of syllables through sounds to combine them and form words. The "Fofuu Fono", has an interface with a carousel of planets with match games that develops phonological awareness of words and verbal language through match games. The "ABA Planet Lite" provides the learning of 350 vocabularies through the practice of receptive language and correspondence exercises. The "Fofuu Edu", has an interface in the form of a train with activities of correspondence related to animals, alphabet, and forms and offers stimuli for the development of fine motor coordination, literacy, and phonological awareness.
The Phonic method consists of activities that aim to teach the correspondence between graphemes and phonemes in the alphabet and is advantageous in the acquisition of reading and writing skills in children with ASD, as well as the development of phonological awareness (Garcia, 2018).

In all applications, positive reinforcements, creative and intuitive design, sounds, and elements that favor user engagement have been noted. As highlighted by Garcia (2018) it is important to observe the principles of accessibility and usability in the development of inclusive practices using digital devices, as well as in decision making regarding the definition of mobile technologies for the educational context together with people with ASD.

As stated by Madureira (2020) the apps for people with ASD must present visual features with little information, to ensure that important information is not confused with other unimportant, as well as should have well-planned narratives and design considering that these users think logically and concretely. In addition, attractive sound and visual stimuli should be included only when the user gets what the app asks for.

It is worth mentioning that within the set of selected applications were evidenced proposals that help in the development of social skills, emotional and routine organization. Applications for routine development have an intuitive interface facilitating user interaction. Its content is gamified to encourage the user to perform the tasks. Applications that have work-related emotions are structured from narratives providing greater contact and communication of the user with the device and content. It was found that the categories with more game developments and applications for children with ASD are aimed at the early stages of education, communication, routines, social skills, and emotions.

When analyzing apps with children with ASD, Megaton; Bim (2017) concluded that both applications developed for people with ASD and those developed for the general public can meet the needs of therapists and educators of children with ASD. The authors emphasize that it is necessary to pay attention to the sounds emitted by the applications, especially at the moment of errors, in order not to be more attractive than the correct ones.

It is important to note that when evaluating or developing an application and/or games for use with children with ASD, these should have a simple design with attractive colors, not have many texts and use images to understand the content. In order not to provoke anxiety in children and leave them with autonomy to make decisions, games cannot stimulate error or success (Hansen et al. 2012).
Evêncio (2020) clarifies that early intervention and adequate follow-up both clinical and educational make possible improvements in the picture presented by ASD. The author states that this change takes place in global development, enabling more autonomy and independence. Consequently, the delay or lack of this intervention may aggravate and compromise the development of the child with ASD. For Evêncio (2019) among the strategies of screening diagnosis of ASD, schooling represents an essential means of intervention and stimulation of the development of socio-cognitive skills.

Among the guidelines presented by Narzisi (2020) to deal with behavioral difficulties in children with ASD in times of pandemic is the use of digital games. The author explains that games can be useful to improve social cognition and recognize facial emotions, emotional gestures, and emotional situations in children with ASD. In their statements, they are considered that these features can be fundamental and it is considered that because many are free and can be downloaded as an application for tablet and/or smartphone can be an educational alternative during this period.

RESULTS

In the analyzed applications, it was not common to find evaluations of the tools that could be considered for the use of children with ASD, such as colors and sounds, for example. Among the 51 Apps that were evaluated, it appears that those developed for children with ASD are more common in daily routines, alternative communication and speech development.

Apps for teenagers or young people with ASD were not found, only for children, mainly in the literacy and speech development phase, in addition to those used for alternative communication. Within this context, we seek to evaluate applications and games that have characteristics that are favorable for the development of children, adolescents and young people with ASD.

Thus, the 51 Apps that were selected and evaluated in this article have mechanics, interface, and usability that favor the development of people with ASD, for example, they do not present sounds when the user makes a mistake and this can generate positive reinforcement, encouraging them to make mistakes to hear the sound. It is important to emphasize the need for these assessments so that they can offer inclusive apps and games for people with ASD, both at this time of remote teaching and in classroom teaching in schools.
FINAL CONSIDERATIONS AND SCENARIOS AFTER THE CORONAVIRUS PANDEMIC

Therefore, it is evident that applications for students with ASD, besides being considered as assistive technology resources, can be used in educational processes, for the development of different skills, as well as contribute to significant stimulation.

The situations experienced in the pandemic contributed to substantive changes in different dimensions, among them, impacting education. Although Covid-19 revealed alerted education problems in different surveys, it may also have contributed to speeding up the use of TDIC resources.

During the period experienced due to the isolation imposed by the emergency, teachers and families had to adapt to new contexts. Thus, the use of DICT was necessary to maintain the students' activities. This condition intensified the challenges experienced in the education of students with Autism Spectrum Disorder (ASD).

Although TDIC resources among them mobile applications are available for access to the population with ASD and can contribute to the teaching and learning process, there are great challenges in teacher training to recognize the potential of using these resources.

In this context, we are led to reflect not only on the emergencies imposed by the situation, but also on what we intend to build for a post-pandemic future and to think about reconfigurations in education after this period. These aspects imply to reflect on the possibilities and limits in the scope of basic education with its institutional and curricular differentials.
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INTRODUCTION

The title of the article points to an issue, part of the most recent challenge in education, curriculum, and school programming. This challenge is of triple nature. On one end, it is up to the school, as an analytic and comprehensive institution of its time, to diagnose false promises, full of sparkle, and distinguish them from those which are essential for fulfilling the goals of education: prepare citizens for conviviality and for life with the quality of being just and free, through knowledge. From another perspective, it is the responsibility of the school, through diagnostic means, to provide new generations with a comprehension of the universal meaning of knowledge and the different ethical, economic, aesthetic, historic, and scientific dimensions of conviviality and participation in the common life. The third aspect includes the role of the school and curriculum in making viable the critical conditions that permit that new generations access such instruments to create a project of a society and life for themselves and others.

Facets of all the values and achievements of humanity have been scrutinized in the frenetic search by technologists for the revelation of secrets and to control its points of entry and exit, adapting them to the dominions and finalities of those operating Big Data. A denunciation of such mechanisms of appropriation of the daily behaviors of humanity grew exponentially in the last six years (2015-2020), revealed in the specific literature by thinkers of the west and orient, and in video documentaries of big impact such as Digital Bias etc. Authors such as O’Neal (2020), Dowbor (2020), Bauman (2013), Morozov (2020), and Zuboff (2020) are in line with the analysis mentioned here.

Online bombardments reach us underhandedly, selling freedom of access and the ease of democratic use and the false happiness of surfing through the waters of the Internet of Things, deep Web, 3D printers, robotics etc. We travel through a continuous and violent web of demands, fears, and needs. The article analyzes part of the ebbs and flows of the digital world and connects them to an educational universe, comprehending its traps, promises, happiness, and hopes. In education, the problem is that they might turn their attention to personalized and adaptive teaching, focusing on individual learning and values, to the detriment of collaborative and humanized education, point at which, according to the view of this article, one might find the terrains for happiness and possibilities for the achievement of the nature of learning.

Brazil, a country with profound socioeconomic differences, in the last six years (2016-2021) has produced and suffered the symbolic violence and the real impact of neoliberal thought, of the negation of science, of facts substituted by the “post-truth”, and the manipulation of data on
social media, which brings consequences that contribute to the erosion of democracy. In this scenario, education takes place, markedly, through online remote activities, and there one can find youth that are fluent in technology and that suffers the risk of the algorithmization of their happiness, measured through *likes* on social media, selfies, stories and tools that, simultaneously. Is the happiness of learning reduced to receiving *likes* on social media? Or can it be understood as a humanizing and transforming education?

It aims to create a dialogue between learning with fun and the humanization of education, from the perspective of undergraduate and graduate students, in the remote education setting that they experienced during the Covid 19 pandemic (2020 and 2021). The findings reported here refer to investigations by the team of researchers from the Pontifical Catholic University of São Paulo (PUC SP) involved in this project.

The research stands out for analyzing a view of students from a humanizing and transformative educational perspective, which provides us with clues to plan curricula, teacher training and educational design of courses.

**LITERATURE**

A brief literature review points to the meager academic publication articulating education and fun (Okada and Sheehy, 2020). Usually, education and fun are not considered compatible, and when they are, publications focus on the use of games, entertainment, and fun to motivate and engage students or to provide a rich learning experience (Neal, Perez and Miller, 2005) or to provide a motivating learning environment (Alfadhl and Alsumait, 2015). Bisson and Luckner (1996) point out that the positive effect of education with fun is related to reducing stress and improving alertness, which improves student performance.

Okada and Sheehy (2020) research “confirmed that fun creates an opportunity and expectation for students to experience positive feelings in learning such as good mood, enthusiasm, interest, satisfaction and enjoyment that are all relevant for “optimal” learning” (p. 3) they also point the importance of investigating students’ epistemic beliefs and its connections with the essence of their views. The study by Okada and Sheehy (2020) confirmed that students must have an enjoyable learning, so that learning involves joy. They point to the concept of “emancipatory fun” (Okada and Sheehy, 2020) supported by Freire’s pedagogy of autonomy, related to the hope and confidence that students can have fun acting, reflecting and learning with pleasure and awareness.

The concepts employed in this study encompass an understanding of online learning and fun (OLAF) in the Brazilian context. Understand that “fun” affects education and ideas of emancipation, freedom, and social transformation through education. It is based on the concepts of transformational education developed by Paulo Freire (1996) and on the concept of technology developed by Vieira Pinto (2005), Zuboff (2020), Morozov (2020), Dowbor (2020) and Bauman (2013).
2.1 Online learning and fun in the Brazilian context

Within the context of cooperation with OLAF Project, which foresees that part of the research takes place in Brazil, the largest challenge during the first conceptual phase is the “tropicalization” of key-concepts in the investigation. In this sense, the Brazilian researcher’s initial task is to clearly distinguish and broaden the concept of fun, teaching, and learning.

The binomial “fun” learning and “boring” learning can be used to analyze reality during research on undergraduate and graduate level courses at PUC-SP, in Brazil. This is because the concept of “fun”, and its opposite, in the English language certainly does not have a direct parallel with the Brazilian concepts of “amusement” (divertimento), which is the first and spontaneous translation to “fun”. The issue is not one of altering the concept of “fun”, which is already made explicit in the research conducted up to this moment, but broaden and improve, for Brazilian cultural and linguistic frameworks, the concept of learning (for this we have the corresponding mirroring concept of teaching) with pleasure, with humor, with happiness, in ways that are ludic, with surprise and irony, with curiosity, with questions, in other words, with meanings that indicate the engagement and desire to learn more – not only about that one given theme but regarding other areas of knowledge. Our question aims to determine how such manifestations of human richness profoundly interact with learning and teaching, mediated or not by technology.

The concept of “boring education” can be compared, in Brazil, to “banking education”, maintaining or broadening the theoretical basis of a concept that is well known and explored by Paulo Freire (1967).

Repressive or unmotivating education, or “banking education”, for the author, is that which is related to the acts of depositing, transferring, and transmitting values and knowledge. According to this perspective, the role of the educator is that of the person who speaks, who disciplines, who selects and administers content, acting as if they are the only subject in the act of education. Students, according to the banking concept, are those who are filled with content, those who listen, who are disciplined, who receive content that is ready, serving as the objects of the act of education. According to this point of view, man is seen as a subject that adapts, who adjusts to a world that is ready, determined, and that does not transform itself. The more humanity adapts to the world the less it creates, the less it acts, and little does it develop a critical consciousness. By inhibiting the creative power of learners, their actions are hindered, and they become frustrated, generating lack of hope and suffering. The opposite of learning and fun.

However, for Freire (1996), man has the ontological vocation to humanize himself, which is not in line with an education that limits humanity to an object and to its adjustment to the world. For the author the world is not, it “is being”, it transforms, much as humanity, understood as unfinished subjects and that are always developing. Freire conceives of a vision of education in which humans are conscious bodies, with the power to create and transform. In education, they are critical investigators, they seek to unveil reality, discover the emergence of conscience and seek critical insertion in reality. Man must, thus, participate and intervene in reality and transform...
the world. The aim here, in this article, is to verify and expose the ontological dimensions of Freirean education (within the context of non-banking education), connecting these to ideas of transforming and participating in the world. These are an essential dimension of fun and of the nature of learning. These are our hypotheses.

What does Paulo Freire say about the concept of happiness, based on the bibliography referenced here? He says that there is no teaching or learning without happiness. And that happiness stems from hope. They work as a dyad. “There is a relationship between the happiness needed for educational activities and hope…” (1996, p. 80, our translation). He continues to speak of heightening curiosity and creativity through a good lesson, which creates “a good environment for curiosity as a form of freedom in the ethical sense" (idem, p. 95, our translation) and evokes “the exercise of curiosity that invites imagination, emotions, and the capacity to conjecture, to compare, in the search for profiling objects or of finding their meaning for being” (1996, p. 98, our translation).

For Freire, happiness is also associated with epistemological curiosity, to methodical searching in line with the development of rigor, happiness does not only take place when one encounters a discovery but is part of the process of searching. And teaching and learning cannot happen outside of seeking, outside of beauty and happiness (p. 142, our highlight and translation).

Therefore, in this article we defend that humanizing and transformative education opens room for the role of a teacher who is attentive to a critical reading of the world, to understanding the contexts of their learners, the knowledge generated from the experiences of learners, linking experience to knowledge, without imposing their own understanding, but rather creating dialogue for overcoming unfavorable realities to justice, for example. The method is focused on socialization and on the exchange of knowledge.

According to the vision of education as a “practice of freedom” (FREIRE, 1967, p.13), the learner has the role of author, which allows for a courageous discussion of their problems that stem from their context, moment in time, and history. Freire, in addition, points to the need for understanding humans as relational beings (and not only one of contacts) and, through such assumption, understands that “man is not only ‘in’ the world, but ‘with’ the world … which results from his openness to reality” (p. 39, our translation), making humans situated and dated, improving through the development of a critical consciousness. The voices of teachers and learners, in this case, their interactions and relationships, contribute to the exchange of knowledge and to the development of autonomy.

Vieira Pinto (2005), a Brazilian philosopher, in his piece the Concept of Technology defends that “The theoretical mastery of technique by man frees him from the practical servitude to a technical one, which has been the current style of life through which man is defined and recognized” (p. 223, our translation). Furthermore, according to the author, technologies stem from a historic process of construction, they are an achievement of humanity, and the citizen needs to be humanized according to the perspective to dialectic and historicity. Therefore, with the
theoretical mastery of technique, the productive praxis can be constituted in epistemological categories, helping men and women in the critical understanding of reality (Vieira Pinto, 2005, p. 224).

Within the logics and concepts of pedagogic practices by Freire and Vieira Pinto, the issue of the feeling of joy, of its meaning, and that of happiness are entrenched in the experience of freedom and in ethical human sociality. This is why we highlight that the criteria for fun and the meaning of learning necessarily seeks a dimension of freedom and happiness for all of society. And, therefore, in a digital society which always adds more to the expansion of control and grasp of freedom, the critical dialogue between these two dimensions is central to our proposal. Part of the construction of meaningful and hopeful learning is the dimension of a critique of the world in which each person lives and in which we all live. Understanding the fun of knowledge supposes a collective development of this knowledge, as well as the use of connectivity for all of society in a network. In order to do so, freedom and the idea of a society that is open to its potential for collaboration is an integral part of fun and the enactment of the act of learning.

An example of this vision of the world can be observed in our research conducted with students in the disciplines of Pedagogy, Medicine, Language and Arts etc.: how to learn to care and understand other people’s wellbeing, citizens serviced by our different professions? The students we interviewed find themselves in a world that not only controls freedom but directs them to endless consumption that goes against learning that is fun and hopeful. This is one of the key issues of the research. Dowbor (2021) denounces such situations as such:

> We are destroying the nature on the planet at an absurd rate, lining up climate change, the destruction of biodiversity, the generation of resistant bacteria through the use of antibiotics in animal farming. And converging with environmental catastrophe we have the drama of inequality. The statistic that 1% of humanity hold the accumulated wealth of the other 99% is quite cold” (p. 15-16, our translation).

The capacity to analyze the world and have a critical view of it is part of the educational task of building a project for a society that favors the climate and proposals for freedom, without which happiness cannot be developed.

The increase in the use of technologies has the common good as a principle, for it promises to alleviate humans from arduous work or to create networks for expanding the democracy of knowledge. However, Morosov (2020) argues, this is not the case, for this world creates the syndrome of ‘predatory emancipation’, making it so that everyone surrenders to it in the med-term:

> Provided that it is conducted according to the terms established in the Silicon Valley, emancipation is an endless task, for every act of liberation creates various new types of dependence. And the reason for why various information services is viewed as a path for one’s own emancipation is related to the reformulation of what it means to be free in the
twenty-first century: in general, it is related to a freedom of choice at the level of the global market and not the freedom to offend and provoke those who are in power” (p. 171, our translation).

When joy is intimately related to the purposes of happiness it reveals itself as a sentiment, but also an ethic. It is related to sharing and to the common good. This is why we call, when citing Paulo Freire, on the idea that the search for happiness is essentially connected to the commitment to the common good, and therefore, to ethics. Happiness searched for in knowledge is that which allows one to get to know the world and analyze it to participate in the world, in the tasks that are part of being a full citizen. According to this perspective, one must bring to learners the dimension of their insertion in a just and equitable world. Learning cannot be reduced to individualistic learning, one of rivalry, and competition within a society of consumption. Part of the dimension of happiness is the social commitment to the results of learning.

However, technologies, particularly ICTs, have dictated norms disguised as so called “free” applications available in virtual spaces, that greatly affect everyone’s life and social practices. Named “surveillance capitalism” or data capitalism, internet users are left at the mercy of large companies of technology, which kidnap their data, naively disclosed to access or use free applications, such as email, social media, online shopping, sites for streaming audio or video, as well as an uncountable number of movements, likes, publications, photos, and opinions posed on the web. The data ends up in data repositories that unite, store, and process all the information on each of the users, making predictions of their future behavior to be commercialized or manipulated. Thus, inexorably, users – people – are tied to digital platforms (an ample phenomena called platformization) in a web of surveillance, with their intimacy violated and the freedom of choice destroyed, “hostage to the logic of datafication (as a modulation of personal life through data) and the opaque and silent acting of algorithms” (LEMOS, 2020). Thus, Man, distant from exercising his free will, his freedom, dehumanizes himself. ICTs should not serve for surveillance, control or domination. Such a background, as it expands, naturalizes uncontrolled consumption and surveillance becomes acceptable as an aspect of happiness, even identified as such. Happiness and joy can become, based on this scenario, consumption and the organization of life with ever increasing demands.

The types of surveillance, control, and manipulation at play by PDAP are not at all in line with education for freedom called for by Freire (1967) or with ICTs as a means for humanization, empowerment, or for freedom, aiming at the quality of education. How to distinguish methods for learning that are fun, happy, and meaningful to escape the demands of the globalized world and overwhelming consumption?

METHODOLOGY

This study analyzes the voices of students regarding their online classes and connects these to Paulo Freire’s theoretical foundations to reflect on the humanizing of education, even though other authors can broaden the understanding of the topic. This is, therefore, a monographic study
on the subject. The methodology involves the qualitative analysis of responses to reflexive instrument, a questionnaire applied to undergraduate and graduate students at PUC SP. The analyses, in the context of the International OLAF Project, seek to identify the “voices” of students from the perspective of critical, humanized and transformative education.

The instrument is constituted by two parts. The first part of the questionnaire was a Likert-scale survey with 25 statements about learning and fun. The second part was six questions. Of the 141 respondents, 69 responses were selected from undergraduate and 16 graduate students, totaling 85 responses. The delimitation for this research, which reduced the number of answers from 141 to 85, took place to consider exclusively answers by students who correctly filled out the questionnaire at PUC SP.

We utilized the software Nvivo 12 to conduct a qualitative analysis of the open questions in the questionnaire, which are the focus of this research.

Participants answered the questionnaire online on the year of 2020, a year in which the activities at this educational institution took place remotely. The courses utilized resources for synchronous classes online (Teams, Zoom) and asynchronous activities through a system for managing learning (Moodle or others).

Of the six open questions that make up the questionnaire, we selected answers to questions 1 and 2 to analyze in this article, which are described as follows:

Question 1 – What is a form of ONLINE LEARNING that pleases (is fun); what would be its characteristics? This question focuses on two aspects of learning: learning that happens online combined with a vision of fun. And another demand of this question is that it seeks to shed light on the students’ perspectives of the characteristics of both dimensions combined – virtual environment and fun that is pleasureful.

The responders seem to reproduce Freire’s words, in which professors and students learn together, in a democratic and effective encounter, in which everyone can express themselves. Freire (1981) highlights that man (student or teacher) must have the right to “say his words”, be it to understand himself and understand others, be it to understand his role in the process of transformation.

4.2 The transformative teacher

Regarding the role of the teacher, the students’ responses claim that the role of the professor, different from the role of the teacher during baking education, is to seek to understand what the students know, based on their realities. One of the responders summarizes the need for the professor to consider the students’ contexts and repertoire, seeking to engage everyone in the process of learning:

Learning centered on the students, that seeks to understand their contexts and the experiences that the students carry regarding a given theme, and, with this, promote the
engagement of everyone involved in the construction of knowledge that is significant and that can be applied in the practical lives of those who learn.

Paulo Freire (1967) understands that man is a historic subject, that constructs his history in participation with others. Freire highlights that it is not possible to “understand teaching without learning, and either without knowledge. During the process of teaching there is another act of knowing, on the part of the teacher. The teacher needs to understand the content being taught. Thus, for him or her to teach, he or she must first know” (p 79, our translation).

One can highlight in the words of the students, the value given to the professor who “likes to teach”, for they believe that “one should feel pleasure in teaching”. Therefore, to like to teach, “know the content very well”, demonstrate patience while teaching, and being someone who “at the same time teaches and inspires, not only as a teacher or professional, but as a person too” are some of the words most identified in the students’ responses in the study. The students’ opinions are in line with Freire, for whom the teacher must have a tireless nature and love knowledge. The students value the pedagogic strategies that involve active participation. This is a factor in learning and satisfaction, such as in the following example by one of the responders: “When courses are developed with a design that promotes active and collaborative learning, with exchanges and more practical activities”. Within the students’ responses a series of suggestions for didactic activities that relate content with practice and reality also appears.

The role of the transformative teacher is not exactly one of being the most fun or one who tells jokes or invests in games, but one who incites and encourages epistemological curiosity, challenges, makes one think and reflect, and creates opportunities for the construction or production of knowledge. Thus, by reflecting on a situation of satisfaction while learning, the students remember experiences of learning that made them reflect, as exemplified in the following: “he [the professor] made us think and reflect critically about the given subject”.

4.3 Participating and intervening in reality and transforming the world

For Freire (2001), education is a political act. Not necessarily partisan, but political because he believes that there is no pedagogic practice independent of values or isolated from society, it is what brings about change. Teaching holds within it a project or a dream of society, which is revealed in pedagogic projects, in the plans, objectives outlined, in the classroom. It is interesting to note that the students who responded to the survey recognize the value of this dream, as illustrated in the following testimony: “She was not that super happy and fun professor, but she always said that to educate was one of the largest political acts that one could do, particularly in her subject area”.

One of the most notable themes in the responses by the 85 students that we analyzed is the relationship between “social reality” and the carrying out of their profession. The backdrop of their answers touches upon the utopia of exercising their profession, as can be seen in the following account:
“The course in the area of humanities led me to work with vulnerable communities, which modified my view of society and of the concept of learning and its ends, taking me beyond an interest in professionalization, but to include citizenship too”.

The desire to intervene in reality and transform the world is also revealed in the testimony by this student studying Medicine:

“I believe that [a satisfaction in learning took place] during classes in which we executed projects that aimed to intervene in communities, and in the classes with outpatients when we cared for patients”.

In addition to the specific activities for a concrete profession, another response emphasized the importance of learning activities that are connected to real problems: “I liked to produce content that gave me satisfaction in learning through real problems”.

The students’ answers translate the values that they attribute to human relationships that take place between professors-students and the content addressed. Here, some of the claims in this regard characterize pleasurable learning. For this responder it is admirable that “Learning the importance of direct contact and its power in treating humans broadened my view of medicine”. Or even: “situations [are happy] when, aided by a tutor with the good will to teach, I could help patients and aid them in solving their issues, for example, in an outpatient service and in a service for public health, these are what most brought me satisfaction”.

The students point to the meaning of education beyond the classroom, the meaning of creating networks of solidarity that are humanizing, or even: “I think of the training activities [beyond the university] in which we work with social service groups surrounding the university”. Therefore, for these students, learning is a professional activity that takes place by including another, identifying their realities, demands, and recognizing and searching for places for intervention.

DISCUSSION

By returning to the starting point with which we began the trajectory of this article, we seek to reflect and highlight a few elements that constitute the process of algorithmization of “fun” and its effects on education in order to capture, through the students’ voices, what we consider paths for reconstructing it humanizing nature.

The data that emerged from the answers to the questionnaire indicate that these students recognize that humans are relational beings when they understand that they do not learn on their own, but rather through respectful dialogue with professors and colleagues, as active and participating subjects. They understand that the classroom is a space for dialogue and critique.

According to the answers, for these students, the professor must enjoy teaching and know their subject area well, must be patient to listen and respect everyone’s time, must be ethical in the classroom and in life, arouse epistemological curiosity and stimulate students to think. It is worth
highlighting that the students do not express that they look for shortcuts or easy routes to obtain a good grade.

Furthermore, the students demonstrate a sensibility towards others. Their answers make clear that the learning of a profession is not separate from reality or society.

We end this article, far from exhausting the subject, claiming that, through the voices of the students researched, university education points to paths for the reconstruction of its humanizing nature. Happiness and the meaning of learning provide, as announced previously, educators and learners with the critical education for sociality and a life with the quality of being just and free, through knowledge.

Transformative education is not at all like an elitist authoritarian professor or to pragmatic training in a given subject. On the contrary, education demands dialogue; critical reflection; rigor; the ability to recognize, coexist, and learn from others; ethical correctness; happiness in teaching how to learn, seeking the students’ autonomy. These are the essential elements of happiness or the meaning of learning! The findings bring elements for the construction of curricula, teacher training and educational design of online and hybrid courses. Students differentiate the “fun” of social media with learning with fun.
REFERENCES


DIFFERENT APPLICATIONS OF TRIGONOMETRIC SPLINE CURVES

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INTRODUCTION

During past decades, spline functions have played an increasingly important role in a variety of areas dealing with computing for industrial applications; these include Computer-Aided Design and Manufacturing, Computer Graphics, Geometric Modeling, Computational Geometry, Robotics, Computer Vision, Computer Animation, Pattern Recognition and Image Processing, Scientific Visualization and many more. B-splines are popularly applied in modeling free form curves and surfaces because of their unified mathematical representation and many desirable properties. Trigonometric splines are an important class of splines, which were studied with various perspectives. In recent years, special attention has been paid to applications of trigonometric splines in geometric modeling for development of certain CAD/CAM software tools. In recent years, several new trigonometric splines with shape parameter have been studied. The shape parameters were applied to generate some curves and surfaces whose shape was adjustable as an extension of the existed method. Each spline has its own merits.

RESEARCH OBJECTIVES

In most of the spline curves, constructed so far, the value of shape parameter lies in the range [-1, 1] or [0, 1]. These ranges of shape parameters are not sufficient for modeling free form curves and surfaces. The provision for large range of shape parameter to control the shape of the curves and surfaces as per requirement is crucial for application. Therefore, it is required to make efforts to find a large range of shape parameter, so that shape of the curves can be adjusted as per the requirement. Since the bases functions contain adjustable shape parameters, the shape of curves and surfaces can be flexibly controlled without changing the control points.

RESEARCH METHODOLOGY

In recent year’s trigonometric splines have found many interesting applications in problems involving geometric modeling and it has been observed that many problems of surface modeling could be better handled by trigonometric splines specially those relating to data fitting on spherical object. All these possible applications have led to introduction of various types of trigonometric splines having different features suitable for CAGD applications. The objective of the study is to find spline function approximation techniques as a powerful tool in the field of Computer Aided Design and Computer Graphics. As a unified mathematic model with many desirable properties, spline functions can be applied very conveniently in modeling free form curves and surfaces. In the present study the main objective is to construct some spline curves and surfaces with a good range of shape parameter that provide local control, sufficient continuity and possess satisfying shape preserving properties. The scheme which be developed in the
chapter should be very easy to implement, convenient and economical and the curves visually pleasant.

**Literature Review**

It is well known that NURBS not only can represent free curves and surfaces in a consistent format, but also can construct some analytic curves and surfaces, such as conic curves and revolution surfaces. So, NURBS has been a standard method in CAD/CAM and been used in Computer Aided Geometric Design (CAGD). However, there are some defects because of the rational style of NURBS, such as large amount of calculation, the weights of selecting not easy to control, and so on. In order to avoid the conveniences, special attentions have been paid to applications of the curves constructed with trigonometric functions (trigonometric curves for short) in recent years. For instance, Zhang [3] constructed C-Ferguson curve, C-B´ezier curve and C-B-spline curve in the space \{1, t, \sin t, \cos t\}. Mainar and Chen [1] defined C-B´ezier curves of higher order in the space \{1, t, \cdots, t^{k-3}, \cos t, \sin t\} respectively. Wang [2] constructed non-uniform algebraic trigonometric B-splines in the space \{1, t, \cdots, t^{k-3}, \cos t, \sin t\}. Zhang [4] presented a cubic trigonometric B´ezier curve with two shape parameters in the space \{1, \sin t, \cos t, \sin 2t\}. Liu [6] has defined a family of quasi-cubic trigonometric curves in the space \{1, \sin t, \cos t, \sin 2t\}. Zhang [10] discussed a class of algebraic-trigonometric blended splines in the space \{1, t, \sin t, \cos t, \sin 2t, \sin 3t, \cos 3 t\}. Lian [5] constructed the biquadratic TC-B´ezier curve in the space \{1, \sin t, \cos t, \sin 2t\}. Xie [9] presented a class of B´ezier-type curves based on the blending of algebraic and trigonometric polynomials. Xie constructed a class of mixed Coons patch with shape parameters in the space \{1, u, u^2, \sin u, \cos u\}. Zhang [4] presented a class of algebraic-trigonometric cubic Hermite interpolating curve with a shape parameter. The curves and surfaces constructed by trigonometric polynomials inherit most properties of the corresponding polynomial curves and surfaces, and some of them have other excellent abilities such as the character of shape adjustment and the exactly representation of some engineering curves and surfaces. B´ezier curve, based on the space \{1, \sin t, \cos t, \sin 2t, \sin 3t, \cos 3 t\}.

**ANALYSIS AND INTERPRETATION**

(5.1) **Shape Control of the Cubic Trigonometric Polynomial B-Spline Curve with A Shape Parameter**

(5.1.1) The Construction and Properties of the Bases Functions: For an arbitrarily selected real values of \(-1 \leq \lambda \leq 1\), \(t \in [0, \pi/2]\), the following four functions are defined as cubic trigonometric B-spline basis functions with a shape parameter.
Research Papers Presented at the 8th LSME International Research Conference on ‘Sustainable Development and Education’

\[
\begin{align*}
B_0(\lambda, t) &= f(\lambda) \ (1 - \lambda \sin t)^2 \ (1 - \sin t) \\
B_1(\lambda, t) &= f(\lambda) \ (1 + \lambda \cos t)^2 \ (1 + \cos t) \\
B_2(\lambda, t) &= f(\lambda) \ (1 + \lambda \sin t)^2 \ (1 + \sin t) \\
B_3(\lambda, t) &= f(\lambda) \ (1 - \lambda \cos t)^2 \ (1 - \cos t)
\end{align*}
\]

Fig.1 shows the curves of the four basis functions

For \( \lambda = 0 \), the basis functions are general trigonometric polynomials. For \( \lambda \neq 0 \), the basis functions are cubic trigonometric polynomials.

These basis functions satisfy the following properties

(i) Non-negativity, (ii) Partition of unity, (iii) Smallest support property, (iv) Monotonicity

(5.1.2) The Construction and properties of the cubic trigonometric Polynomial B-spline curve

Given points \( P_i(k = 0, 1, \ldots, n+1) \) in \( \mathbb{R}^2 \) or \( \mathbb{R}^3 \) and knots vectors \( U = [u_1, u_2, \ldots, u_n] \), for \( i = 1, 2, \ldots, n-1 \), then,

\[ R_i(t) = \sum B_j(\lambda, t) \ P_{i+j-1}, \quad t \in [0, \pi / 2] \quad \text{for} \quad j = 0, 1, 2, 3. \]

is called cubic trigonometric polynomial B-spline curve segment with a shape parameter.

Fig.2 shows the cubic trigonometric B-spline curve with different shape parameter

The properties of cubic trigonometric Polynomial B-spline curves

(i) Terminal Properties, (ii) Symmetry, (iii) Geometric Invariance, (iv) Convex Hull Property

(2.1.3) Applications of cubic trigonometric Polynomial B-spline curves

The construction of open curve and closed curve is the most basis content of curve design. People should know terminal behaviors of the open curve and how to construct a closed curve. Given closed control points \( P_i \) (\( i = 0, 1, \ldots, n \)), where \( P_n = P_0 \), if \( P_{n+1} = P_1 \) and \( P_{n+2} = P_2 \), then we can construct a closed trigonometric polynomial B-spline curve; if there are open control points \( P_i \) (\( i = 0, 1, \ldots, n \)), where \( P_0 = 2P_1 - P_2 \), \( P_{n+1} = 2P_n - P_{n-1} \), we can construct an open trigonometric polynomial B-spline curve, both sides of which are interpolated in \( P_1 \) and \( P_n \), also tangential vectors of knots \( u_1 \) and \( u_n \) are \( P_2 - P_1 \) and \( P_n - P_{n-1} \), respectively. In Fig. 3, the closed curves are generated by altering the value of \( \lambda \) (\( \lambda = 0.5, 0.8, 1 \)), similarly,
Fig 3. The representation of an ellipse and the representation of a circle.

(5.2) A New Class of Quasi-Cubic Trigonometric Bezier Curve and Surfaces

(5.2.1) The Construction and Properties of the WAT-Bézier Bases Functions

For $0 \leq \lambda \leq 1$, the following four functions of $t \in [0, 1]$, are defined as WAT-Bézier basis functions:

$$WAT_0(t, \lambda) = \lambda (1-t)^3 + (1-\lambda) \frac{\pi (1-0 - \sin \pi t)}{\pi},$$
$$WAT_1(t, \lambda) = 3 \lambda (1-t)^2 t + (1-\lambda) \left( \frac{1}{2} t + \frac{1}{2} \cos \frac{\pi t}{\pi} \right),$$
$$WAT_2(t, \lambda) = 3 \lambda (1-t)^2 t + (1-\lambda) \left( \frac{1}{2} t - \frac{1}{2} \cos \frac{\pi t}{\pi} \right),$$
$$WAT_3(t, \lambda) = \lambda t^3 + (1-\lambda) \frac{\pi - \sin \frac{\pi t}{\pi}}{\pi}.$$

Obviously, WAT-Bézier basis functions are cubic Bernstein bases when $\lambda = 1$ and when $\lambda = 0$, WAT-Bézier basis functions are C-Bézier bases associated to $\alpha = \pi$.

The Properties of the Basis Functions

(i) Non-negativity, (ii) Partition of unity, (iii) Smallest support property, (iv) Monotonicity

(5.2.2) The Construction and Properties of the WAT-Bézier Curves

Given points $P_i (i = 0, 1, 2, 3)$ in $R^2$ or $R^3$, then

$$R(t, \lambda) = \sum_{i=0}^{3} P_i WAT_i(t, \lambda), \quad t \in [0, 1] \text{ for } i = 0, 1, 2, 3, \quad \lambda \in [-2, 2.5505],$$

is called a WAT-Bézier Curves with a shape parameter.

Properties of WAT-Bézier Curves

(a) Terminal Properties, (b) Symmetry, (c) Geometric invariance, (d) Convex hull property
(5.2.3) Application
Following figure 4 shows some computed examples with different values of shape parameter.

Fig5: WAT BezierCurves with Different Values of Shape Parameter

These curves are generated by setting $\lambda = -2$ in (a), $\lambda = 0$ in (b), $\lambda = -1$ in (c) and $\lambda = 2.5505$ in (d). These curves are generated by setting $\lambda = 1$ in (a), $\lambda = 0$ in (b), $\lambda = -0.5$ in (c) and $\lambda = -1$ in (d). Also the quartic trigonometric Bézier curve is closer to the control polygon than the cubic Bézier curve for all values of $\lambda \in [-1,1]$.

(5.3) Tension Quasi-quintic Trigonometric B’Ezier Curve With Two Shape Parameters are constructed

(5.3.1) The Construction and Properties of the Tension Quasi-quintic Trigonometric B’ezier Basis Functions
Let $\beta$ be the tension parameter and the generalized trigonometric polynomial blending functions with tension parameter and two shape parameters $m$ and $n$ where $3 \leq m, n \leq 1$.

$$B_{i,\beta}(t) = \beta^i (1 - \sin(\beta t))^3 (1 - m \sin(\beta t));$$

- $B_{0,\beta}(t) = (1 - \sin(\beta t))^3 (1 - m \sin(\beta t));$
- $B_{1,\beta}(t) = \sin(\beta t) (1 - \sin(\beta t))^2 (3 + m (1 - \sin(\beta t)));$
- $B_{2,\beta}(t) = (-1 + \cos(\beta t) + \sin(\beta t))^2 (1 + \sin(\beta t));$
- $B_{3,\beta}(t) = (-1 + \cos(\beta t) + \sin(\beta t))^2 (1 + \cos(\beta t));$
- $B_{4,\beta}(t) = \cos(\beta t) (1 - \cos(\beta t))^2 (3 + n (1 - \cos(\beta t)));$
- $B_{5,\beta}(t) = (-1 - \cos(\beta t))^3 (1 - n \cos(\beta t));$

Fig7. The curves of blending basis functions

Properties of Trigonometric Polynomial Blending Functions
(i) Non-negativity, (ii) Partition of Unity, (iii) Symmetry, (iv) Maximum
(5.3.2) The Construction and Properties of the Trigonometric Bezier Curves with Tension Parameter

Let \( V = (V_0, \ldots, V_5) \) be a set of points \( V_i \in \mathbb{R}^2 \) or \( \mathbb{R}^3 \). The Trigonometric Bezier curves with tension parameter \( \beta > 0 \) associated with the set are defined by

\[
B_\beta(t) = \sum_{i=0}^{5} (B_{i,\beta}(t)) V_i; \quad \text{where } t \in \left[ 0, \frac{\pi}{2\beta} \right]
\]

Let \( V = (V_0, \ldots, V_5) \) be a set of points \( V_i \in \mathbb{R}^2 \) or \( \mathbb{R}^3 \). The Trigonometric Bezier curves with tension parameter \( \beta > 0 \) associated with the set \( V \) are defined by

\[
B_\beta(t) = \sum_{i=0}^{5} (B_{i,\beta}(t)) V_i; \quad \text{where } t \in \left[ 0, \frac{\pi}{2\beta} \right]
\]

The points \( V_i; \ (i = 0, \ldots, 5) \) are called quartic trigonometric Bezier control points. Figure 6. shows the quartic Trigonometric Bezier curves with different tension parameter values. Keeping the same control polygon, as \( \beta \) varies we are not simply changing the domain of a single curve, but defining different curves. The tension like effect of this tension factor \( \beta \) is illustrated in Figures 6 where the interval changes as a function of \( \beta \) keeping all the properties of the blending functions verified. It is an advantage if the curve being modeled tends to preserve the shape of its control polygon.

![Bezier curves of blending basis functions](image)

**Fig.8. Bezier curves of blending basis functions (for \( t \in [0, \pi/2\beta] \))**

The curve has the following properties

(i) End point properties, (ii) Symmetry, (iii) Geometric invariance, (iv) Convex hull

(v) Variation diminishing property, (vi) Convexity-preserving property

(5.3.3) Applications of the Tension Quasi-quintic Trigonometric B´Ezier Curve

The cubic Tension Quasi-quintic Trigonometric B´Ezier basis functions \( b_i(u) \) has \( C^1 \) and \( G^2 \) continuity for non-uniform knots. When choosing shape parameter \( \lambda = \frac{1}{4} \) the basis functions \( b_i(u) \) has \( C^2 \) continuity for non-uniform knots. Since the curve is generated on the interval \([u_2, u_{n+1}]\), the choice of the first and last two knots is free and these knots can be adjusted to give...
the desired boundary behavior of the curve. See the following descriptions. For an open B-Spline curve, we choose the knot vector $U = (u_0 = u_1 = u_2, u_3, \ldots, u_n, u_{n+1} = u_{n+2} = u_{n+3})$. This assures that the points $P_0$ and $P_n$ are points on the curve. Of course, the interior knots can be multiple knots. Figure 7 shows open B-Spline curves for $\lambda = 6$ (solid lines), $\lambda = 2$ (dash-dotted lines) and $\lambda = -2$ (dotted lines) for non-uniform knot vectors.

![Fig.9](image)

![Fig.10](image)

The curve has local control due to small support of $b_i(u)$. Change of one control point will alter at most three segments of the curve. So local adjustment can be made without disturbing the rest of the curve. Figure shows that if we change one control point from $P_4$ to $P_4'$, only three segments of curve are altered.

**5.6 A $\lambda \mu$-B-Spline Curve with Shape Parameters**

**5.6.1 The Construction and Properties of the Extension Basis Function**

Let $\lambda \in [-1, 1]$; for $t \in [0, 1]$, the following polynomial functions

$$b_0^t = \frac{1}{6}(1 - \lambda_i t)(1 - t)^3$$

$$b_1^t = \frac{1}{6}[4 - 6t^2 + (3 + \mu_i) t^3 - \mu_i t^4]$$

$$b_2^t = \frac{1}{6}[1 + (3 + \lambda_i) t + 3(1 - \lambda_i) t^2 - 3(1 - \lambda_i) t^3 - \lambda_i t^4]$$

$$b_3^t = \frac{1}{6}[1 - \mu_i (1 - t)] t^3$$

Where $-2 \leq \lambda_i, \mu_i \leq 1$. 
Properties of $\lambda\mu$-B-spline curves

The $\lambda\mu$-B basis functions have the following properties:

(a) Degeneracy, (b) Nonnegativity, (c) Partition of Unity, (d) Symmetry.

(5.6.2) The Construction and Properties of the $\lambda\mu$ -B-Spline Curves

Given control points $P_i \in \mathbb{R}^n$ ($n = 2, 3; i = 0, 1, \ldots, n$) and knots $u_1 < u_2 < \cdots < u_{n+1}$, the curves $C_i^4(\lambda_i, \mu_i; t) = \sum_{j=0}^{n} P_{i+j-3} b_j^4(t) ; t \in [0,1]; i = 3,4,\ldots, n;$ are called quartic $\lambda\mu$-B-spline curve segments, where $b_j^4(t)$ ($j = 0, 1, 2, 3$) are $\lambda\mu$-B functions. All the curve segments make up the piecewise quartic blending spline curves with parameters $\lambda_i$ and $\mu_i$, defined as $C(\lambda_i, \mu_i; u) = C_i^4(\lambda_i, \mu_i; \frac{u-u_i}{\Delta u_i}) ; u \in [u_i, u_{i+1}] \subseteq [u_3, u_{n+1}]$ where, $\Delta u_i = u_{i+1} - u_i$ $i = 3, 4, \ldots, n$. In particular, when $\lambda_i = \mu_i = 0$, $C_i^4(\lambda_i, \mu_i; u)$ degenerates to the traditional cubic uniform B-spline curve.

Properties of $\lambda\mu$ -B-Spline Curves:

(1) Geometric property at the endpoints, (2) Geometric invariance, (3) Symmetry

(4) Convex hull property, (5) Shape adjustable property
(5.6.3) Applications

The $\lambda\mu$-B-spline curves are an extension to the classical cubic uniform B-spline curves. Besides of inheriting the properties of them, $\lambda\mu$-B-spline curves have a good performance on adjusting their local shapes by changing multiple shape parameters. Since $\lambda\mu$-B-spline rotational surfaces are produced by utilizing a $\lambda\mu$-B-spline curve called generating line, they not only inherit the outstanding properties and advantages of $\lambda\mu$-B-spline curves, but also possess multiple local shape parameters. Moreover, these shape parameters can adjust the shape of the engineering complex rotational surfaces without changing the control points of generating line. By the use of $\lambda\mu$-B-spline curves and $\lambda\mu$-B-spline rotational surfaces, we can expediently construct various kinds of complex curves and rotational surfaces. In order to demonstrate the approaches this can be applied to curve and surface deformation. Fig show that the Coloured drawing surface and Complex curves of apple ($\lambda_i$=-2, $\mu_i$=-2)

CONCLUSION

The construction of open curve and closed curve is the most basic content of curve design. The curve has local control due to small support. Change of one control point will alter at most three segments of the curve. So local adjustment can be made without disturbing the rest of the curve.

(2) Given a control polygon, the shape of the usual cubic B-spline curve is fixed but for a cubic EH B-spline curve, the shape can be changed by altering the values of shape parameters $\lambda$ and $\mu$: Hence the shape parameter $\lambda$, $\mu$ provides an efficient tool for obtaining various smooth shapes in geometric modelling.

(3) An explicit representation of a weighted cubic trigonometric B´ezier curve interpolant with a shape parameter is developed.

(4) This work defines a cubic trigonometric B-spline curve with one parameter, and analysis properties of its basis functions. Each section of the curve only refers to four control points.

(5) We can design different shape curves by changing parameter.
(6) The $\lambda\mu$-B-spline curves are an extension to the classical cubic uniform B-spline curves. Besides of inheriting the properties of them, $\lambda\mu$-B-spline curves have a good performance on adjusting their local shapes by changing multiple shape parameters.

To sum up, the methods described in this paper can provide a new class of mathematical theory for application software development of CAD/CAM, which includes manufacturing industry, computer graphics, computer vision, computer animation, multimedia technology etc.
REFERENCES


INTRODUCTION

As per Johansen (2014) entrepreneurship education can be defined as “the promotion of different entrepreneurial capabilities, students’ personal qualities, their attitude towards different items in the world like ready to take actions, like innovativeness, like creativity, enthusiasm to absorb risk, self-competence and social skills”. An important entrepreneurial competence which should be constantly developed through life-long learning is the digital competence. It is also discussed by Ferk et.al, 2011 that technology allows people to become competent information-seeking users, communicators, problem solvers and decision makers; in a word, well-informed and responsible citizens who contribute to their communities and society as a whole.

1.1 Types of entrepreneurial competences

Taking into account key entrepreneurial attributes and skills, entrepreneurial competence can be defined as a combination of knowledge, skills, attitudes and capabilities to create and discover opportunities in the environment, to introduce changes, and to direct one’s behavior towards successful creation and management of an organization, whose purpose is to take advantage of these opportunities and to deal with a high level of uncertainty and complexity in a challenging environment. (König Sedlan, 2011, p. 4)

1.2 Entrepreneurial competences through life-long learning

Entrepreneurial competence consists of knowledge, skills and attitudes which are appropriate in a particular economic, cultural and social context. Knowledge encompasses insights regarding available possibilities, and ability to recognize those that are adequate for one’s professional or business activities. There is a wide range of skills such as planning, organizing, analysis, communication, performing, reporting, assessment.

STATEMENT OF PROBLEMS AND NEED FOR STUDY

In addition to being a catalyst in creating new businesses, entrepreneurial competence fosters the entrepreneurial way of thinking, as well as more efficient use of creative potential and existing knowledge and skills. There is also growing concern in the education system is not adequately preparing its students for the challenges of the knowledge-based society. At the same time, employers often see the shortage of employees with adequate professional and entrepreneurial knowledge, skills and attitudes as the main problem.
LITERATURE REVIEW

To understand scientifically the entrepreneurial capability of Post graduate students, we should clarify the basic connotation of these students’ entrepreneurial capability at first. Although the academic community has carried out researches on entrepreneurial capability, and many scholars believe that the composition of entrepreneurial capability should include the opportunity, relationship capability, conceptual capability, organizational capability and strategic capability (Man, et al., 2002; Man, et al., 2008). The entrepreneurship education always supports to create certain entrepreneurial abilities like that how to start your own business and the process of innovation in the existing business. From these two business oriented concepts, the educational concept of entrepreneurship is “the introduction of entrepreneurship education is to improve the academic performance, to develop the skills in the students to learn new subject and learn some basic skills like practical market skills. A few creators have contended surely that the monetary and social effect of entrepreneurship is on business foundation level as well as in its development. In this origination, "entrepreneurship" and 'flourish economy' are conjoined (Quoted in Bjerke, 2008).

DEVELOPMENT OF HYPOTHESES

Null Hypothesis $H_{01}$: There is no significant difference in the development of Entrepreneurship skills across the gender of the respondents.

Alternate Hypothesis $H_{01}$: There is a significant difference in the development of Entrepreneurship skills across the gender of the respondents.

Null Hypothesis $H_{02}$: There is no significant difference in the development of Entrepreneurship skills across the stream of graduation of the respondents.

Alternate Hypothesis $H_{02}$
There is a significant difference in the development of Entrepreneurship skills across the stream of graduation of the respondents.

Null Hypothesis $H_{03}$
There is no significant difference in the development of Entrepreneurship skills across the post graduation course pursued by the respondents.

Alternate Hypothesis $H_{03}$
There is a significant difference in the development of Entrepreneurship skills across the post graduation course pursued by the respondents.

Null Hypothesis $H_{04}$
There is no significant difference in the ranking of the Entrepreneurship skills of the respondents.
Alternate Hypothesis $H_{04}$
There is a significant difference in the ranking of the Entrepreneurship skills of the respondents.

RESEARCH METHODOLOGY

Research study was done through two types of data i.e primary data and secondary data. For collection of data students of Management Colleges of Mumbai are considered as a stratum. In this strata simple random sampling method is used. Primary data was collected through structured questionnaire. Students pursuing MBA/MMS/PGDM are considered for the study. Descriptive research method is applied. Total 110 Students who are pursuing currently Master Degree have been selected to participate in the study. Cronbach’s alpha test was conducted to test the reliability of the data. Descriptive, Anova F test, Friedman’s test was conducted to test the Hypotheses, by using SPSS software.

SAMPLE DESIGN

Responses from 110 respondents are collected, Demographics data and responses on various statements from the respondents are classified, rated and presented in the tables as follows:

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>49</td>
<td>44.5</td>
</tr>
<tr>
<td>Female</td>
<td>61</td>
<td>55.5</td>
</tr>
<tr>
<td><strong>Course pursued</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MBA</td>
<td>5</td>
<td>4.5</td>
</tr>
<tr>
<td>MMS</td>
<td>58</td>
<td>52.7</td>
</tr>
<tr>
<td>PGDM</td>
<td>47</td>
<td>42.7</td>
</tr>
<tr>
<td><strong>Graduation Stream</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arts</td>
<td>8</td>
<td>7.3</td>
</tr>
<tr>
<td>Commerce</td>
<td>79</td>
<td>71.8</td>
</tr>
<tr>
<td>Science</td>
<td>16</td>
<td>14.5</td>
</tr>
<tr>
<td>Engineering</td>
<td>7</td>
<td>6.4</td>
</tr>
</tbody>
</table>

The above table indicates that out of total 110 respondents, 49 are male, while 61 are female respondents. There are 5 respondents pursuing MBA, 58 respondents are pursuing MMS and 47 respondents are pursuing PGDM. Of these, 8 respondents have done their graduation from Arts, 79 have done graduation from Commerce, 16 have done their graduation from Science stream and 7 respondents have done their graduation from Engineering.
Entrepreneurship skills

To evaluate the Entrepreneurship skills developed in the higher educational years of the respondents, 11 skills, as described in the Questionnaire are considered. Responses on the same are recorded, classified and presented in the following table:

<table>
<thead>
<tr>
<th>Que. No.</th>
<th>Entrepreneurship skills</th>
<th>No Development</th>
<th>Less Development</th>
<th>Moderate Development</th>
<th>Significant Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ability to Plan</td>
<td>27</td>
<td>35</td>
<td>23</td>
<td>25</td>
</tr>
<tr>
<td>2</td>
<td>Marketing Strategies</td>
<td>2</td>
<td>14</td>
<td>38</td>
<td>56</td>
</tr>
<tr>
<td>3</td>
<td>Interpersonal Skill</td>
<td>6</td>
<td>35</td>
<td>31</td>
<td>38</td>
</tr>
<tr>
<td>4</td>
<td>Personal Effectiveness</td>
<td>7</td>
<td>25</td>
<td>36</td>
<td>42</td>
</tr>
<tr>
<td>5</td>
<td>Team Building Skill</td>
<td>6</td>
<td>20</td>
<td>28</td>
<td>56</td>
</tr>
<tr>
<td>6</td>
<td>Leadership Skill</td>
<td>8</td>
<td>21</td>
<td>34</td>
<td>47</td>
</tr>
<tr>
<td>7</td>
<td>Communication Skill</td>
<td>4</td>
<td>13</td>
<td>38</td>
<td>55</td>
</tr>
<tr>
<td>8</td>
<td>Self Confidence</td>
<td>10</td>
<td>22</td>
<td>29</td>
<td>49</td>
</tr>
<tr>
<td>9</td>
<td>Financial Planning Ability</td>
<td>17</td>
<td>39</td>
<td>31</td>
<td>23</td>
</tr>
<tr>
<td>10</td>
<td>Strategic Developments</td>
<td>17</td>
<td>37</td>
<td>25</td>
<td>31</td>
</tr>
<tr>
<td>11</td>
<td>Risk Taking Ability</td>
<td>6</td>
<td>13</td>
<td>45</td>
<td>46</td>
</tr>
</tbody>
</table>

The above responses are rated as follows: No development = 1, Less development = 2, Moderate development = 3, Significant development = 4

Using these rating, the mean score for Entrepreneurship skills developed in the higher educational years of the respondents is calculated using the formula as follows:

\[
\text{Mean Entrepreneurship skills} = \frac{\text{Total score of rating of respondent (for 11 statements)}}{\text{Maximum rating (44)}} \times 100
\]

The mean Score for Entrepreneurship skills is calculated for each respondent for all 110 respondents and is represented in the table below:
### Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill Development</td>
<td>110</td>
<td>25.45</td>
<td>76.36</td>
<td>59.5702</td>
<td>9.69292</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>110</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above table indicates that the mean score for Entrepreneurship skills is 59.57 percent. Corresponding standard deviation is 9.69, suggesting that there is low variation in the responses.

### Questionnaire Design

Cronbach Alpha test is used for validation of likert scale used in the questionnaire. It was framed to evaluate the Entrepreneurship skills developed in the higher educational years of the respondents and 11 skills were described in that. The ratings are described as: No development = 1, Less development = 2, Moderate development = 3, Significant development = 4.

### Data Design

There are two types of statistics used in data analysis. Descriptive statistics consists of Arithmetic mean and standard deviations are calculated. Inferential statistics is used for testing of hypothesis. Statistical tools such as F-Test, Friedman’s test, Cronbach Alpha test has been conducted.

### Results

#### Cronbach’s Alpha Test

To validate the scale in this study Cronbach Alpha test is applied. Test is applied for all 110 respondents. Following table represents the results of the test:

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>No. of subgroups</th>
<th>Cronbach’s Alpha</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurship skills</td>
<td>11</td>
<td>0.719</td>
<td>Scale is reliable and accepted</td>
</tr>
</tbody>
</table>

Above results indicate that all the Cronbach Alpha values for the variable is more than the required value of 0.700. Hence the test is accepted. Conclusion is **scale is reliable and accepted**.

### HYPOTHESIS TESTING

#### Null Hypothesis $H_{01}$

There is no significant difference in the development of Entrepreneurship skills across the gender of the respondents.
Alternate Hypothesis $H_{01}$

There is a significant difference in the development of Entrepreneurship skills across the gender of the respondents.

To test the above Null Hypothesis ANOVA is obtained and F-test is applied. Results are shown in the table below:

<table>
<thead>
<tr>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill Development</td>
</tr>
<tr>
<td>Sum of Squares</td>
</tr>
<tr>
<td>Between Groups</td>
</tr>
<tr>
<td>Within Groups</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Interpretation

The above results indicate that calculated p-value is 0.126. It is more than 0.05. Therefore, F-test is accepted. Hence Null hypothesis is accepted and Alternate hypothesis is rejected.

Conclusion

There is no significant difference in the development of Entrepreneurship skills across the gender of the respondents. **Finding** is that difference in the Mean Score for development of Entrepreneurship skills of the respondents is highly insignificant across their Gender. It is similar for both, male and female respondents. This can be observed in the following table:

<table>
<thead>
<tr>
<th>Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill Development</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

The above table indicates that the mean score for development of Entrepreneurship skills of the respondents is highest at 61.15 percent for Male respondents, while it is lowest at 58.30 percent for the female respondents. This information can be represented in a Bar chart as follows:
Null Hypothesis $H_0$

There is no significant difference in the development of Entrepreneurship skills across the stream of graduation of the respondents.

Alternate Hypothesis $H_1$

There is a significant difference in the development of Entrepreneurship skills across the stream of graduation of the respondents.

To test the above Null Hypothesis ANOVA is obtained and F-test is applied. Results are shown in the table below:

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1018.756</td>
<td>3</td>
<td>339.585</td>
<td>3.903</td>
<td>.011</td>
</tr>
<tr>
<td>Within Groups</td>
<td>9222.085</td>
<td>106</td>
<td>87.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10240.841</td>
<td>109</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Interpretation

The above results indicate that calculated p-value is 0.011. It is less than 0.05. Therefore, F-test is rejected. Hence Null hypothesis is rejected and Alternate hypothesis is accepted.

Conclusion

There is a significant difference in the development of Entrepreneurship skills across the stream of graduation of the respondents. Finding is that the Mean Score for development of Entrepreneurship skills of the respondents is significantly different across their stream of
graduation. It is higher for the respondents who did their graduation in Engineering stream. This can be observed in the following table:

<table>
<thead>
<tr>
<th>Stream</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts</td>
<td>8</td>
<td>50.0000</td>
<td>12.81970</td>
</tr>
<tr>
<td>Commerce</td>
<td>79</td>
<td>60.0690</td>
<td>8.99456</td>
</tr>
<tr>
<td>Science</td>
<td>16</td>
<td>59.2045</td>
<td>9.98001</td>
</tr>
<tr>
<td>Engineering</td>
<td>7</td>
<td>65.7143</td>
<td>6.67453</td>
</tr>
<tr>
<td>Total</td>
<td>110</td>
<td>59.5702</td>
<td>9.69292</td>
</tr>
</tbody>
</table>

The above table indicates that the mean score for development of Entrepreneurship skills of the respondents is highest at 66.71 percent for respondents who did their graduation from Engineering stream, while it is lowest at 50.00 percent for the respondents who did their graduation from Arts stream. This verifies our findings. This information can be represented in a Bar chart as follows:

**Null Hypothesis H\textsubscript{03}**

There is no significant difference in the development of Entrepreneurship skills across the post graduation course pursued by the respondents.
Alternate Hypothesis $H_{03}$

There is a significant difference in the development of Entrepreneurship skills across the post graduation course pursued by the respondents.

To test the above Null Hypothesis ANOVA is obtained and F-test is applied. Results are shown in the table below:

<table>
<thead>
<tr>
<th>ANOVA</th>
<th>Skill Development</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td></td>
<td>1037.355</td>
<td>2</td>
<td>518.678</td>
<td>6.030</td>
<td>.003</td>
</tr>
<tr>
<td>Within Groups</td>
<td></td>
<td>9203.486</td>
<td>107</td>
<td>86.014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>10240.841</td>
<td>109</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Interpretation**

The above results indicate that calculated $p$-value is 0.003. It is less than 0.05. Therefore, F-test is rejected. Hence Null hypothesis is rejected and Alternate hypothesis is accepted.

**Conclusion**

There is a significant difference in the development of Entrepreneurship skills across the post graduation course pursued by the respondents. **Finding** is that the Mean Score for development of Entrepreneurship skills of the respondents is significantly different across the post graduation course pursued by the respondents. It is higher for the respondents who are pursuing MBA degree. This can be observed in the following table:

<table>
<thead>
<tr>
<th>Report</th>
<th>Skill Development</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
<td>N</td>
<td>Mean</td>
<td>Std. Deviation</td>
<td></td>
</tr>
<tr>
<td>MBA</td>
<td>5</td>
<td>67.6364</td>
<td>2.37062</td>
<td></td>
</tr>
<tr>
<td>MMS</td>
<td>58</td>
<td>61.5047</td>
<td>8.95359</td>
<td></td>
</tr>
<tr>
<td>PGDM</td>
<td>47</td>
<td>56.3250</td>
<td>10.01249</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>110</td>
<td>59.5702</td>
<td>9.69292</td>
<td></td>
</tr>
</tbody>
</table>
The above table indicates that the mean score for development of Entrepreneurship skills of the respondents is highest at 67.63 percent for respondents who are pursuing MBA degree, while it is lowest at 56.32 percent for the respondents who pursuing PGDM.

### Null Hypothesis $H_{04}$

There is no significant difference in the ranking of the Entrepreneurship skills of the respondents.

### Alternate Hypothesis $H_{14}$

There is a significant difference in the ranking of the Entrepreneurship skills of the respondents.

To test the above Null Hypothesis, Friedman’s test is applied and $p$-value is calculated. Results are shown in the table below:

<table>
<thead>
<tr>
<th>Test Statistics$^a$</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>110</td>
</tr>
<tr>
<td>Chi-Square</td>
<td>122.365</td>
</tr>
<tr>
<td>df</td>
<td>10</td>
</tr>
<tr>
<td>p-value</td>
<td>.000</td>
</tr>
</tbody>
</table>

*a. Friedman Test*

### Interpretation

The above results indicate that calculated $p$-value is 0.000. It is less than 0.05. Therefore, Friedman’s test is rejected. Hence Null hypothesis is rejected and Alternate hypothesis is rejected.

### Conclusion

There is a significant difference in the ranking of the Entrepreneurship skills of the respondents.

**Finding** is that there in the ranking in the Entrepreneurship skills of the respondents is significantly different within various skills. It is observed that there is a significant difference in the ranking of
the most important and the least important skill for Entrepreneurship. This can be observed in the following table:

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Entrepreneurship skills</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ability to Plan</td>
<td>4.35</td>
</tr>
<tr>
<td></td>
<td>Marketing Strategies</td>
<td>7.12</td>
</tr>
<tr>
<td></td>
<td>Interpersonal Skill</td>
<td>5.72</td>
</tr>
<tr>
<td></td>
<td>Personal Effectiveness</td>
<td>6.18</td>
</tr>
<tr>
<td></td>
<td>Team Building Skill</td>
<td>6.89</td>
</tr>
<tr>
<td></td>
<td>Leadership Skill</td>
<td>6.33</td>
</tr>
<tr>
<td></td>
<td>Communication Skill</td>
<td>7.01</td>
</tr>
<tr>
<td></td>
<td>Self Confidence</td>
<td>6.26</td>
</tr>
<tr>
<td></td>
<td>Financial Planning Ability</td>
<td>4.62</td>
</tr>
<tr>
<td></td>
<td>Strategic Developments</td>
<td>4.98</td>
</tr>
<tr>
<td></td>
<td>Risk Taking Ability</td>
<td>6.56</td>
</tr>
</tbody>
</table>

The above table indicates that the skill regarding “Marketing Strategies” is the most important skill for Entrepreneurship developed by the respondents as it has the highest rank of 7.12 followed by the skills regarding “Team Building” and “Risk taking Ability” with the mean rank of 6.89 and 6.56 respectively, while the skill regarding “Ability to Plan” is the least important skill for Entrepreneurship developed by the respondents as it has the lowest rank of 4.35.
FINDING AND RECOMMENDATIONS

Marketing strategies is highest among all other skills that means it has become very important for entrepreneurship development followed by team building and risk taking ability. It is also further observed that Respondents feels the ability to plan is less important.

CONCLUSION

Entrepreneurship is a dynamic process of mobilizing resources, spotting profitable opportunity and taking risk to achieve personal satisfaction. Most countries adopt entrepreneurship development programs. These programs are managed by governments, universities, private sectors and incubators. The impact of higher education on entrepreneurial knowledge and skills are moderate.

As per the study there is no significant difference in terms of Entrepreneurship skills across the gender of the students of the management colleges. Further in the development of entrepreneurship skills there is a significance difference across stream of graduation as Engineering students are more skillful compared to arts, science and commerce. Therefore, more skill enhancement is required specifically for arts and commerce students.

There is significance difference across post graduate courses pursued by students. As students of MBA courses have high entrepreneurship skills compare to MMS and PGDM students. However, there is also significance difference in term of ranking in entrepreneurship skills as marketing strategies is highest followed by ‘Team building’ and ‘Risk taking abilities’. To conclude that other remaining skills as per study should also need to be developed among the students of management colleges. Future study can be more focused on enhancement or improvement of others skills which can be developed among College students.

INFERENCE

It has been observed there is no significant difference in development of entrepreneurship skills across gender. However, there is significant difference across graduations stream, pursuing post graduates and ranking of entrepreneurship skills. Further in ranking Marketing strategies skills is at highest rank and ability to plan is at lowest rank as compared to other skills.

LIMITATION

It is exploratory research. It is restricted to certain areas and students of Master level are of different opinion as per their perception and expectations. Results totally depend on opinion of respondents. More data will be required to extend the research.
MANAGERIAL IMPLICATION

Even if there had been several initiatives employing different pedagogical designs for entrepreneurship education, things have started to change quite recently, and few attempts have been undertaken to assess how different teaching methods of entrepreneurship education influence the attitude towards entrepreneurship and the entrepreneurial intentions of students. As the current study is based on entrepreneurship education and academic performance, the study will add good portion of research work in the literature of entrepreneurship education and academic performance. This study will highlight the importance of entrepreneurship education in student’s academic performance.
REFERENCES


THE TEACHING OF MATHEMATICS AS A HUMANIZED AND ENCULTURED PROCESS FOR SUSTAINABLE DEVELOPMENT

Professor Zingiswa M M Jojo, University of South Africa, South Africa

INTRODUCTION

Mathematics is not seen as an absolute corpus of well-founded knowledge anymore, but as a human activity, a social phenomenon, part of human culture, historically evolved and intelligible only in a social context. Freudenthal (1993) asserts that mathematics is a human activity and therefore it must be connected to reality, stay close to children and be relevant to society in order to be of human value. In addition, Sutherland, Butchart, Connor, Culshaw, Dicks, Dinsdale, & Gleave, (2018) claims that mathematics is a human activity that happens as humans mathematize the word, and it leads to the creation of mathematical objects, including concepts, models, tools, strategies, symbols, and algorithms. Those objects created by humans as they engage in joint activity and reified in culture, are likened to exist in the same way that languages exist, or symphonies, or literature (Cole, 2010). This may be manifested in a cultural understanding of a ‘2’ which might mean ‘a couple in marriage. But in other cultures that practice polygamy, the couple in marriage could mean 3. This according to Rotman (2000) may be interpreted as a ‘2’ that is “counted into existence” by humans following an agreed-upon convention. But ‘2’, exists as more than simply an abstract set, or a symbol in an abstract sequence, it is intertwined with the physical world. I contend in this paper that the concept of ‘two’ is constrained by social agreement to conform to certain aspects of the physical and mathematical world. It is important for teachers to explain why a mathematical concept is worth knowing and understanding together with how it relates to other concepts in both theory and practice. The paper reports from a mixed methods approach research project that analysed the teaching and learning environment that promotes mathematics as an encultured process for sustainable development. The main research question was: How can mathematics in the senior phase be taught as a subject that embraces culture for sustainable development?

I will not repeat the considerable evidence pointing to mathematics, culture, and authority, ethnomathematics and the cultural aspects of mathematics together with the challenges experienced in teaching mathematical concepts within South African schools. Such evidence is available in abundance (Rosa & Orey, 2011; Fasheh, 1982 and Tachie, 2020). What is lacking in the available literature are the new explanations of how mathematics in the senior phase can be taught as a subject that embraces culture for sustainable development.

In the first part of this article I provide the evidence for sustainability development in Mathematics Education. Next, I will venture into the bases of sustainable development in Mathematics Education. And finally, I will conclude by evaluating ways of promoting the sustainability of mathematics teachers’ professional developments in the twenty first century.
LITERATURE REVIEW

In essence, Widiati and Juandi (2019) note that mathematical problems should be designed based on sustainable development goals, so that the mathematical material provided can be more useful for learners and more able to develop teachers' skills and creativity in designing problems according to the problems is in the neighborhood. Moreover, Díez-Palomar, de Sanmamed, García-Carrión, & Molina-Roldán, (2018) assert that it is a common fact known that mathematics acts as a gatekeeper in education and that those learners who have a good knowledge of mathematics are more likely to have better scores and end with better educational trajectories than those who underperform in this subject. However, it is worrisome that after several years of democracy in South Africa, a number of schools fall into the category of underperformance in mathematics, needless to mention the integration of Technology in the teaching and learning of the subject. This is clear from a recent South Africa’s shocking report that reveals that the Mathematics pass rate fell by 0.8 percentage points to 53.8%, in 2020, and of those only 8% achieved more than 60% in the subject. This means only 53% of mathematics examination candidates achieved a mark of at least 30%. While mathematics exists as a gatekeeper and instrument for stratification in the current education in South Africa, the question is, how do we provide our learners with the key to that gate? Mathematics as a gatekeeper has its historical background from a dialogue conducted 2300 years ago between Socrates and Glaucón regarding education, where Plato argued that mathematics was “virtually the first thing everyone has to learn...common to all arts, science, and forms of thought” (Plato’s trans, p 216).

Mathematics Education for sustainable development should inculcate the value of character, skills, attitudes, and knowledge through the application of mathematics learning in the field of environment, social, culture, and economics so that learning mathematics becomes more useful in sustaining learners’ lives sustainably and support the achievement of sustainable development goal's in general. Thus, there is a need to make the learning mathematics more meaningful, useful, and support the critical thinking, creative, communicative, and collaborative development required for the 21st century competence.

THE BASES OF SUSTAINABLE DEVELOPMENT

Brundtland (2020) defines sustainability as the ability to meet the needs of the present without compromising the ability of the future generations to meet their own needs. Furthermore, Waitling & Zhou (2020) notes three dimensions of sustainability, the economic, environmental and social. Moreover, those authors assert that development is only sustainable if concepts related to economic viability, social justice and environmental impacts are addressed. Research also points to aspects in education for sustainable development. Those include knowledge based on traditional disciplines like natural sciences, social sciences, and humanities to understand the principles of sustainable development. It is also important that mathematics education empower learners with practical skills that will enable them to continue learning after they leave school, to have a sustainable livelihood, and to live sustainable lives. In addition, the addition of the
understanding of human values is an essential part of understanding the learners’ own-worldview and other people’s viewpoints. Thus, sustainable mathematics education should be about creating a mathematics curriculum that speaks to real contexts, current issues, complexity, value, access to data, human activity, foregrounding context, interdisciplinary, sensitivity to marginalization, opening dialogue, courage, trust, access, and using technology. This implies that a sustainable based mathematics will enable learners to not only could think mathematically but have sensitivity to the problems found in the surrounding environment, especially in the social, economic, and environmental fields.

The importance of stimulating critical thinking and critical pedagogy, is at the centre of addressing the economic and cultural roots of the inequalities in power and wealth/labour distribution in a global complex and uncertain system. The Functional Skills Support Programme, 2007: 21) suggests that modern concepts of mathematics education are focused on moving away from mathematics as an end in itself towards a functional perspective on mathematics where learners are enabled ‘to use and apply the mathematics they know to address problems that arise in their life and work’. Furthermore, Tutak, Bondy & Adams (2011: 66) describe critical pedagogy as the raising of questions about “the way things are” and wondering how they might be done differently are the habits of those who embrace a “critical” approach to education’. Teachers need to recall that the aim of the mathematics education and development education enterprise in formal education could be empowering learners with mathematical and global competencies needed to create democratic communities embracing social justice in the school. Anthony and Walshaw (2009) argue for caring classroom communities that are focused on mathematical goals help develop learners’ mathematical identities and proficiencies. Those authors further note that in such a climate, learners can think, reason, communicate, reflect upon, and critique the mathematics they encounter; their classroom relationships become a resource for developing their mathematical competencies and identities. It then becomes the duty of the mathematics teacher in each level to create such an environment by respecting and valuing the mathematics and the diverse cultures that learners bring to the classroom. Teachers can also develop learners’ positive attitude to mathematics by attending to the differing needs that are derived from home environments, languages, capabilities, and perspectives. In addition, teachers need to ensure that learners engage in whole-class discussion, where they have the opportunity to clarify their understanding and be exposed to broader interpretations of the mathematical ideas that are the present focus. It is also important for mathematics teachers to put learners’ current knowledge and interests at the centre of their instructional decision in planning for learning. This means building on learners’ existing thinking and modifying tasks to provide alternative pathways to understanding mathematical concepts. For low-achieving learners, teachers find ways to reduce the complexity of tasks without falling back on repetition and busywork and without compromising the mathematical integrity of the activity. Anthony and Walshaw (2009) emphasize that the tasks chosen should not have a single-minded focus on right answers; but must provide opportunities for learners to struggle with ideas and to develop and use an increasingly sophisticated range of mathematical processes like justification, abstraction, and generalization.
Mathematics teachers need to support learners in creating connections between different ways of solving problems, between mathematical representations and topics, and between mathematics and everyday experiences.

CONCEPTUAL FRAMEWORK

This study was framed through the teaching for Robust Understanding framework as proposed by Li, Schoenfeld, diSessa, Grasser, Benson, English, & Duschl (2019a). That framework focuses on (i) conceptualizing the mathematics content as something rich and connected that can be experienced and codified in meaningful ways, (ii) Cognitive Demand that examines opportunities learners have to do a kind of sense-making, (iii) equitable access to mathematics content, (iv) Agency, Ownership, and Identity and (v) formative assessment that allows learner thinking to become public so that instruction can be adjusted. The changes in practice including problem solving, reasoning, communicating, and mathematical modelling of how mathematics is viewed, taught, should be taken and accepted as a human activity Dosey (1992). This summarized in Table 1.

![The Five Dimensions of Powerful Mathematics Classrooms](image)

**The five dimensions of the TRU math framework by Alan Schoenfeld**

METHODOLOGY

The study was located within a transformative-emancipation paradigm, which addresses social inequities; useful for enacting positive social and/or individual changes for marginalized groups, and involves community in design and implementation, (Mertens, 2003). The paper reports from a mixed methods approach research project that analysed the teaching and learning environment that promotes mathematics as an encultured process for sustainable development. The main
research question was: How can mathematics in the senior phase be taught as a subject that embraces culture for sustainable development? From a population of 126 senior phase mathematics teachers in the Bizana district, a sample frame of 60 teachers was used for the study, obtaining a stratified random sample of four teachers. Questionnaires were administered to the whole population, after which observations and semi-structured interviews were conducted with four teachers based on their responses in the questionnaires. This paper reports specifically on the data collected during the first year of a three-year longitudinal study aimed at how mathematics could be taught as a humanized encultured process for sustainable development.

Two phases made up this empirical study. The first was a familiarization phase, where the researcher visited the schools to observe how teachers conceptualized their mathematics content in the classroom, opportunities of learners’ sense-making of mathematics content, learners’ conversations and sharing of ideas, classroom activities that elicit learners’ mathematics thinking. Teachers were observed teaching mathematics in their natural setting. A workshop on senior phase mathematics teaching which exposed teachers to creation and use of action mathematics learning environments was conducted in a central venue in the district for two days.

RESULTS AND DISCUSSIONS

The conceptualization of mathematics content was evaluated amongst the four senior phase mathematics teachers visited and observed in their classrooms. This included how the teachers made sense of the value and use of symbolic representations and precise language, use logical arguments and counterexamples as sources of conviction, understand of why relationships make sense, use precise definitions, models for, and examples and non-examples, Classify and characterize objects based on structure, and find and understand patterns. Results are indicated in figure 1.

![Conceptualization of mathematics content chart](image-url)
Figure 1: Conceptualization of mathematics content

It can be noted from figure 1 that all the participants were able to use the language to explain concepts and would sometimes resort to code switching in extreme cases. However, very few teachers were able to guide learners through logical arguments although 75% of them were able to supply precise definitions of concepts. Furthermore, Fitzgerald & Palincsar (2019) note that sensemaking entails being active, self-conscious, motivated, and purposeful in the world. This was used as a measure in this study to highlight how mathematics as a humanized process can be sustained and developed. The activities in which teachers engaged their learners in the classrooms were observed over a period of a week doing mathematics. The results are displayed in figure 2.

The analysis of data brought about a theme that related to the teaching of mathematics as a humanized and encultured process for sustainable development. It was activities that identify with cultural practices, including the execution of Mathematics’ practices, interactions and relations in the classrooms. This theme had categories that indicated how such examples enabled or constrained the knowledge-centered environments for sustainable development.

Activities that identify with cultural practices in mathematics classrooms

The norm with mathematics content delivery is that teachers are guided by the Curriculum Assessment Policy Statement (CAP) document. CAPS prescribes that senior phase mathematics teachers must equip learners, irrespective of their socio-economic background, race, gender, physical ability or intellectual ability, with the knowledge, skills and values necessary for self-fulfillment, and meaningful participation in society as citizens of a free country (DoBE, 2012). In addition, the specific aims of teaching mathematics relate to its nature of being a human activity that involves observing, representing and investigating patterns and quantitative relationships in
physical and social phenomena and between mathematical objects themselves. The subject should be taught such that learners’ mental processes that enhance logical and critical thinking, accuracy and problem-solving that will contribute in decision-making are evoked. When teachers were asked on how they teach mathematics in a humanized way during interviews teachers had this to say:

T1: One thing that I always wish I could do especially when I teach fractions, I wish I could provide each learner with an apple so that they can do the cutting with me. The visual representations would then contribute to their literacy in the section.

On the same note T4 remarked

T4: This goes back to the lack of resources in our schools and the community we serve. Many a times, you wish to relate a mathematics topic to its application in real life, but it is not possible. We also lost a lot of time during the Covid-19 pandemic attack.

T3 had other ideas about the question:

T3: You know what the discussions on the CAPS document are not well served by the examples on our textbooks. So now as a teacher you find that you cannot think of better examples that could extend the learners thinking and connect to other avenues in the community.

It is clear from these discussions that some teachers lacked ideas and techniques of approaching the teaching of mathematics in a meaningful way such that learners develop productive mathematical habits of mind that enable them to connect mathematics skills learnt in the classroom to the outside world. Moreover, it then becomes difficult for the teachers to provide learners with opportunities of being knowledgeable, flexible and resourceful mathematics thinkers. The time also became a constraint that deprived learners of discussions that are focused and coherent around a mathematics topic. Thus, the mathematics itself cannot be linked to existing cultures and as such is not sustainable.

When the teachers were asked on how they initiate cognitively demanding activities in the classroom, and work to maintain appropriate levels of cognitive demand, they said:

T1: I just give my learners different tasks, say about four of them and live them to grapple with it for some time. They then have to come and discuss as groups. But I will be honest with you, although I find this very good for them, I don’t do it much often, I usually do not have time.

This is supported by Schoenfeld (2016) who suggests that teachers can actively support learners in individual work, group work, and whole class discussions by asking clarifying questions and providing scaffolds, instead of moving directly to suggesting overly specific ways to go about assigned tasks.
T3: How I wish I could just give a task to my learners and allow them to do it on their own, I must confess, I don’t usually do that. We teach by examples, you give an example, show them the steps to follow and them give them a similar problem to do on their own.

Indeed, this is the practice that is in contradiction with the development of the critical thinking mathematical skills required for sustainable development. According to researchers Schoenfeld (2016), & Tutak, Bondy & Adams (2011), critical pedagogy should raise questions about “the way things are” and wonder how they might be done differently (p66). Thus, in designing and selecting tasks, teachers should avoid providing detailed step-by-step instructions for solving problems, repetitive exercises, or detailed “recipes” for completing tasks that allow little room for learners to build on their current understandings.

CONCLUSION

In this paper, I have attempted to outline how mathematics in the senior phase can be taught as a subject that embraces culture for sustainable development. This was from the view that mathematics is a human activity and therefore it must be connected to reality, stay close to children and be relevant to society in order to sustain human value. It can be deduced that teachers in this study lacked skills of embracing culture and teaching their learners to connect mathematics content with real world situations. Also, the activities observed in class deprived learners of opportunities for productive struggle that could develop them to higher order levels of thinking. It is recommended that senior phase teachers must expose learners to mathematics activities that can be approached in multiple ways or from multiple perspectives, and in which approaches can be compared. This can provide access to learners’ who choose different pathways into the activity. Teachers can also use tasks with language and contexts that connect to learners’ lived experiences and provide them with windows into unfamiliar experiences, being mindful of power and privilege.

REFERENCES


Department of Basic Education. 2012. Integrated strategic planning framework for teacher education and development in South Africa. Pretoria: Department of Basic Education.


INTRODUCTION

In 2012 Marcy Towns and Adam Kraft (Towns & Kraft, 2012) published an article in which they identified a number of journals focusing on chemistry and science education. They found 7 chemistry education journals (table 2), and 15 science education journals (table 1). All these journals are focused on education research and not on good practices. Two others not mentioned are the ‘Journal of Research in Science Education’ and Chemistry Education, Research and Practice’ both based in the UK.

Table 1. Science Education journals

<table>
<thead>
<tr>
<th>Title</th>
<th>Country of Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eurasia Journal of Mathematics, Science &amp; Technology Education</td>
<td>INT</td>
</tr>
<tr>
<td>Science and Education</td>
<td>Netherlands</td>
</tr>
<tr>
<td>School Science Review</td>
<td>UK</td>
</tr>
<tr>
<td>International Journal of Mathematics and Science</td>
<td>INT</td>
</tr>
<tr>
<td>International Journal of Science and Environmental Education</td>
<td>INT</td>
</tr>
<tr>
<td>Journal of Computers in Mathematics and Science Teaching</td>
<td>USA</td>
</tr>
<tr>
<td>Journal of Science &amp; Technology Education Research</td>
<td>INT</td>
</tr>
<tr>
<td>Revista Ensenanza de las Ciencias</td>
<td>Spain</td>
</tr>
<tr>
<td>Studies in Science Education</td>
<td>INT</td>
</tr>
<tr>
<td>Research in Science and Technological Education</td>
<td>UK</td>
</tr>
<tr>
<td>Acta Didactica Napocensia</td>
<td>Romania</td>
</tr>
<tr>
<td>Primary Science</td>
<td>UK</td>
</tr>
<tr>
<td>International Journal of Science, Mathematics, and Technology Education</td>
<td>INT</td>
</tr>
<tr>
<td>Journal of Research in Science Teaching</td>
<td>USA</td>
</tr>
<tr>
<td>Science Education</td>
<td>USA</td>
</tr>
<tr>
<td>Research in Science Education</td>
<td>AUS</td>
</tr>
<tr>
<td>International Journal of Science Education</td>
<td>UK</td>
</tr>
</tbody>
</table>
Table 2. Chemistry Education journals

<table>
<thead>
<tr>
<th>Title</th>
<th>Country of Origen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry Education Research and Practice</td>
<td>UK</td>
</tr>
<tr>
<td>Journal of Chemical Education</td>
<td>USA</td>
</tr>
<tr>
<td>Biochemistry and Molecular Biology</td>
<td>USA</td>
</tr>
<tr>
<td>The Chemical Educator</td>
<td>USA</td>
</tr>
<tr>
<td>Australian Journal of Education in Chemistry</td>
<td>AUS</td>
</tr>
<tr>
<td>Education in Chemistry</td>
<td>UK</td>
</tr>
<tr>
<td>Educacion Quimica</td>
<td>MEX</td>
</tr>
</tbody>
</table>

In 2016 Keith Taber (Taber, 2016) wrote an editorial in Chemistry Education Research and Practice, titled ‘What is wrong with ‘practice’ papers’. In the article he argues why a number of types of papers are not published in CERP. More specifically he explains and argues what chemistry education research is what it is not. He goes on to explain why good practice papers should not be published in CERP. Basically his idea is that good practices even when evaluated properly do not add to the scientific knowledge and educational knowledge as such.

The Committee on Chemistry Education agreed that good practices are not chemistry education research. In some cases, they might be, but not as a general rule. That does not mean publications on good practices are not important. Reports about good practices can play an important role in improving education. An article about a way in which a flipped classroom was used, that also tries to explain why this worked in that particular situation, may inspire another teacher to try something similar in his or her own situation.

The only two journals in the list given above, that sometimes also publish good practice articles are SSR and JCE. There is one journal that publish good practice articles about chemistry education, the World Journal of Chemical Education (ISSN: 2375-1655&1657). These journals focus mainly on experiments in higher education. There are hardly any publications about good practices in secondary education.


Up to now there was no international journal publishing good practices in chemistry education.

New Journal

The Committee on Chemistry Education in cooperation with the Division on Chemistry Education of EuChemS decided an international journal was needed for articles focusing on

- Good practice in chemistry education at all levels
- Reports about development in chemistry education
• Bridging the gap between research and classroom practice (Herrington & Daubenmire, 2016).
• Papers presented in conferences about Chemistry education such as
  o ICCE
  o ECRICE
  o NICE
  o ACRICE
  o EUROVARIETY
• Reports from educational activities of the divisions and standing committees in IUPAC for publications in the field of education.

The target group for this journal would be chemistry education researchers, that are interested in good practices, but also teachers in secondary education, as well as people involved in the governance of secondary education.

In the EU project Irresistible (J. Apotheker et al., 2017) a study was made of the teachers participating in that particular project. They were characterized according to Rogers (Frank, Zhao, & Borman, 2004) as early adopters. This means they are a group of teachers that is looking for ways to improve their education, looking for information and sharing their experiences. Not all teachers will be interested in articles in ‘CTI’, but groups like early adopters certainly will be.

July 2019 the first issue of Chemistry Teacher International, Best practices in Chemistry Education (ISSN: 2569-3263) (figure 1) was published. In the editorial (Jan Apotheker, 2019) the scope of the journal is explained. Since most teachers do not have access to the journals from table 1 and 2, it was decided to make CTI an open access journal, available to all teachers.

Figure 1. Cover page of issue 3.2.
That means no subscription fees, but instead an Author Processing Charge (APC). For the first two volumes the fee was paid by DeGruyter (publisher) and IUPAC. The APC has been set at € 375, and has been implemented since July 2021. There is a reduction scheme (50% or 100% reduction), based on the economic situation of countries. Members of IUPAC receive a 33% reduction. Apart from that the editorial board can invite authors to publish and waive the APC.

From the start the journal has had no problem attracting articles from an international group of authors. In figure 2 the country of origin of the first 82 articles is given.

*Figure 2. Countries of origin of authors in CTI*

As can be seen CTI has managed to attract authors from all over the world, which is reflected in the editorial board of CTI (Table 3)
Table 3. Board of editors of CTI.

<table>
<thead>
<tr>
<th>Name and email</th>
<th>Institution</th>
<th>Country</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan Apotheker, <a href="mailto:J.H.Apotheker@rug.nl">J.H.Apotheker@rug.nl</a></td>
<td>University of Groningen</td>
<td>The Netherlands</td>
<td>Editor in chief, CCE (Europe)</td>
</tr>
<tr>
<td>Rachel Mamlok, <a href="mailto:rachel.mamlok@weizmann.ac.il">rachel.mamlok@weizmann.ac.il</a></td>
<td>Weizmann Institute</td>
<td>Israël</td>
<td>Vice-editor in chief, Division on Chemistry Education (Middl-East)</td>
</tr>
<tr>
<td>Suzanne Boniface, <a href="mailto:suzanne.boniface@vuw.ac.nz">suzanne.boniface@vuw.ac.nz</a></td>
<td>Victoria University of Wellington</td>
<td>New Zealand</td>
<td>Australia/ New Zealand</td>
</tr>
<tr>
<td>Mei-Hung Chiu, <a href="mailto:mhchiu@gapps.ntnu.edu.tw">mhchiu@gapps.ntnu.edu.tw</a></td>
<td>National Taiwan Normal University</td>
<td>Taiwan</td>
<td>Asia (Network for Inter-Asian Chemistry Educators)</td>
</tr>
<tr>
<td>Marietjie Potgieter, <a href="mailto:marietjie.potgieter@up.ac.za">marietjie.potgieter@up.ac.za</a></td>
<td>University of Pretoria</td>
<td>South Africa</td>
<td>Africa (African Conference on Chemistry Education)</td>
</tr>
<tr>
<td>Ian Butler, <a href="mailto:ian.butler@mcgill.ca">ian.butler@mcgill.ca</a></td>
<td>McGill University</td>
<td>Canada</td>
<td>North America</td>
</tr>
<tr>
<td>Iwona Maciejowska, <a href="mailto:iwona.maciejowska@uj.edu.pl">iwona.maciejowska@uj.edu.pl</a></td>
<td>Jagiellonian University</td>
<td>Poland</td>
<td>Europe (European Conference on Science Education)</td>
</tr>
<tr>
<td>Alejandra G. Suárez, <a href="mailto:asuarez@fbioyf.unr.edu.ar">asuarez@fbioyf.unr.edu.ar</a></td>
<td>Rosario National University</td>
<td>Argentina</td>
<td>Latin America</td>
</tr>
</tbody>
</table>

SPECIAL ISSUES

The editorial board has decided to publish at least one special issue per year. These special issues are connected through a specific theme. In June 2021 a special issue was published with Polymer Science as a central theme. The content of that special issue is given in table 4.
<table>
<thead>
<tr>
<th>Authors</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catherine L. Moad and Graeme Moad (Moad &amp; Moad, 2020)</td>
<td>Fundamentals of reversible addition–fragmentation chain transfer (RAFT)</td>
</tr>
<tr>
<td>Ali Bagheri, Suzanne Boniface, Christopher M. Fellows (Bagheri, Boniface, &amp; Fellows, 2021)</td>
<td>Reversible-Deactivation Radical Polymerisation: chain polymerisation made simple</td>
</tr>
<tr>
<td>Stanislaw Penczek, Julia Pretula and Stanislaw Slomkowski (Penczek, Pretula, &amp; Slomkowski, 2021)</td>
<td>Ring-opening polymerization</td>
</tr>
<tr>
<td>Nurul Fatahah Asyqin Zainal, Jean Marc Saiter, Suhaila Idayu Abdul Halim, Romain Lucas and Chin Han Chan (Zainal, Saiter, Halim, Lucas, &amp; Chan, 2020)</td>
<td>Thermal analysis: basic concept of differential scanning calorimetry and thermogravimetry for beginners</td>
</tr>
<tr>
<td>Daniela Held*, Peter Kilz (Held &amp; Kilz, 2021)</td>
<td>Size-exclusion Chromatography as a Useful Tool for the Assessment of Polymer Quality and Determination of Macromolecular Properties</td>
</tr>
<tr>
<td>Suhaila Idayu Abdul Halim, Chin Han Chan and Jan Apotheker (Abdul Halim, Chan, &amp; Apotheker, 2021a)</td>
<td>Basics of teaching electrochemical impedance spectroscopy of electrolytes for ion-rechargeable batteries – part 1: a good practice on estimation of bulk resistance of solid polymer electrolytes</td>
</tr>
<tr>
<td>Suhaila Idayu Abdul Halim, Chin Han Chan and Jan Apotheker (Abdul Halim, Chan, &amp; Apothecker, 2021b)</td>
<td>Basics of teaching electrochemical impedance spectroscopy of electrolytes for ion-rechargeable batteries – part 2: dielectric response of (non-) polymer electrolytes</td>
</tr>
<tr>
<td>Tamaki Nakano, Adriana Pietropaolo and Masahiro Kamata (Nakano, Pietropaolo, &amp; Kamata, 2021)</td>
<td>Chirality analysis of helical polymers</td>
</tr>
<tr>
<td>Volker Abetz, Torsten Brinkmann and Mustafa Sözbilir (Abetz, Brinkmann, &amp; Sözbilir, 2021)</td>
<td>Fabrication and function of polymer membranes</td>
</tr>
<tr>
<td>Christine K. Luscombe, Uday Maitra, Michael Walter, Susanne K. Wiedmer (Luscombe, Maitra, Walter, &amp; Wiedmer, 2021)</td>
<td>Theoretical background on semiconducting polymers and their applications to OSCs and OLEDs</td>
</tr>
<tr>
<td>Masaru Matsuo, Rong Zhang, Yuezhen Bin (Matsuo, Zhang, &amp; Bin, 2021)</td>
<td>An understandable approach to the temperature dependence of electric properties of polymer-filler composites using elementary quantum mechanics</td>
</tr>
<tr>
<td>Jiří Vohlídal (Vohlídal, 2020)</td>
<td>Polymer degradation: a short review</td>
</tr>
</tbody>
</table>

For the next special issue, a call was sent out, requesting for papers concerning the theme: “Examples of the use of the principles of green chemistry and Sustainable Development in the design of industrial processes for secondary chemistry and for Introductory Chemistry courses”

In many chemistry curricula Green Chemistry has become a feature. The curriculum in the Netherlands is an example (J. H. Apotheker, 2018). In introductory chemistry courses in higher education more and more attention is given to the principles of green chemistry (Hjeresen, Schutt, & Boese, 2000), as well as the ideas of sustainable development (“UN sustainable development goals,” n.d.). This includes design principles like ‘cradle to cradle’, ‘cradle to grave’ as well as life cycle analysis (Braungart & McDonough, 2002).

The number of concrete examples to illustrate these principles, that are used in education at this moment, is limited, even though there are many recent examples.

Within chemistry education it is important for students to understand the role chemistry plays in society. One of these roles is to apply chemical knowledge to design processes that implement the principles of Green Chemistry and help in Sustainable Development.

In order to demonstrate the role of chemistry more information for teachers is needed, so they can use this information and share this with their students.

In table 5 the received abstracts are listed.
Table 5. received abstracts for special issue on green chemistry

<table>
<thead>
<tr>
<th>Authors</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shahrul Nizam Ahmad</td>
<td>Application of Green Chemistry Principles in Chemical Industry</td>
</tr>
<tr>
<td>S. Venkat Reddy,</td>
<td></td>
</tr>
<tr>
<td>Pasha Majidi</td>
<td>The application of xanthan gum instead of sodium salt in liquid soap production”</td>
</tr>
<tr>
<td>Anja Lembens, Heinzle, G.1; Spitzer, P.2; Maulide, N.</td>
<td>Digital learning environments to introduce Green Chemistry</td>
</tr>
<tr>
<td>Jane E. Wissinger,† Emma Corcoran,† Cassandra Knutson,† Mollie Enright,† Kate Anderson</td>
<td>A Thirst For a Solution: Biopolymer Experiments for the Middle and High School Classroom</td>
</tr>
<tr>
<td>Amal S. M. Dissanayake</td>
<td>The use of principles of green chemistry and sustainable development in the design of industrial processes</td>
</tr>
<tr>
<td>Izumi, I. 1†; Ken-ichi, T.2; Keiji, U.3; Hitoshi, T.4; Kentaro, M.5; Narumi, S.6; Takashi, T.7; Tsunemasa, M.7; Toshio, I.7; Kazuko, O</td>
<td>Development of teaching material for green and sustainable chemistry (GSC)</td>
</tr>
</tbody>
</table>

In the single article (Aguilar et al., 2021) received so far, a lab experiment is described, that can even be carried out at home without any (environmental) problems. In another article not published in the special issue Ghose (Ghose, 2021) introduces sustainable experiments in food science. For secondary education these type articles provide a source for teachers to introduce green chemistry in a meaningful way to their students. These experiments will let the students experience the process of green chemistry themselves. Examples like these two will be discussed in the contributions made by professor Wissinger, Izumi.

A more general approach of Green Chemistry will be the topic of professor Dissanayake’s article. In her abstracts she indicates:

“Green chemistry for chemical synthesis addresses our future challenges in working with chemical processes and products by inventing novel reactions that can maximize the desired products, minimize by-products and eliminate the production of harmful substances in designing new synthetic schemes that can simplify the operations in chemical productions. The important
inherent properties of molecules need to be considered from the earliest stage—the design stage—to address whether compounds and processes are depleting versus renewable, toxic versus benign, and persistent versus readily degradable. Sustainable economic growth requires safe, sustainable resources for industrial production”

Other aspects like Life Cycle Analysis, Cradle to Cradle design will be discussed in this article. In professor Ranu’s article Green Chemistry is discussed and compared to photosynthesis, illustrating the 12 principles of green chemistry (Anastas & Eghbali, 2010)

Both professor Lembden and Majidi introduce examples of industrial processes that have become greener (production of soaps and menthol). In the contribution of Dr Reddy a number of examples from the adoption of the principles of Green Chemistry will be discussed.

CONCLUSION

In order to bridge the gap between research and classroom practice the journal Chemistry Teacher International was conceived. In the first two and a half years it has made a flying start, receiving over 80 articles. By now the journal has applied for acceptance in the Social Science Citation Index, as well as in search engines like SCOPUS, and EBSCO.

The special issues of CTI are an opportunity for the introduction of a specific subject to teachers in early chemistry education. So far a special issue on polymer science was published. The second special issue will be published in December 2021, with Green Chemistry and Sustainable Development as a theme. These special issues are a source of background information for teachers. They give both a general presentation of a topic as well as a number of concrete applications that can be used in the classroom.

For 2022 a special issue on Chemistry and Visualization is planned.

REFERENCES


MANAGING FACTORS INFLUENCING THE CONSTRUCTION OF ROAD OVER BRIDGES; A CRITICAL ANALYSIS

Mr Amit Kumar Das¹, Dr Manas Naskar²
¹Research Scholar, Department of Commerce, Raiganj University, India
²Associate Professor and Head, Department of Commerce, Raiganj University, India

INTRODUCTION

Infrastructural development (ID) is an essential component for the overall economic development of a nation particularly for the developing countries. ID contributes not only in the constructional sector, but accost with overall development, including employment generation in all aspects. The construction of over bridges is also part of ID which gives the transport system faster and moving forward for the betterment of the lifestyle of the common people and development in all the regions attached to it. Road over bridge (ROB) are essential for state highways, major district roads, other district roads and the congested area of the cities and town. The road over bridge (ROB) can be defined as a grade separated bridge structure with gradient approaches on both sides. Though substantial budgetary allocations have been made by the central and state govt. towards construction of ROB’s, they are suffering with time delay and cost overrun for various reasons. One reason is associated with others and together all reasons are lead to excess cost engagements. In case of excess of the original cost than budgeted costs due to several reasons, makes it overburden in all aspects. The Industrial sector is the second largest sector of India. And around 16% of the nation’s working population depends on the construction for the livelihood. Near about 30 million people of India depend upon construction industry and creates assets worth over Rs. 200 billion.

Within the dimensions of Kolkata district, West Bengal, so many over bridges were constructed over the road or over some canals. Before independence some bridges were constructed over the circular canal passing through the Baghbazar towards the eastern side of New Cut Canal. From new cut canal towards the southern side of Kolkata via Beleghata canal, new cut canal which is originally called ‘Tully Nullah’ ends on Hastings. This study will work out some selected bridges across the circular canal constructed in the British era.

LITERATURE REVIEW

Some studies have been carried out all over the world on time delay and cost overrun of infrastructural development but a few studies have been conducted on the same phenomenon. The literature so available from various sources has been trying to incorporate here.

Barker, K J and Carder D R (2000) have tried to investigate the Performance of the two integral bridges constructed at A62 Manchester Road over Bridge. The performance of two full height
integral bridges is the basically main portion of the study of about 40m span over the Manchester Outer Ring Road.

Prabhakar G P (2008) conducted research on the topic, namely- What is Project Success: A specification, and achievement of functional objectives and it is an achievement against these criteria that will be mostly subject to variation in perception of multiple project stakeholders.

Agarwal R (2010), on Successful delivery of Public – Private Partnership for Infrastructure Development, critical success factors have been identified by the author for BOT projects to contribute something for the development of some methods and tools that will help the contractor and owner for timely completion of superstructure project.

Gamez, EA & Touran (2010) conducted research on the Performance of Transportation Projects in Developing Countries with the help of quantitative analysis. The study was conducted to develop a better understanding of the performance of these large infrastructure projects in developing countries.

Doloi H, Sawhney A, Iyer, K C, Rentals S (2011) have identified total 45 attribute under six broad categories like project related, site related, process and human related to Indian construction projects. The basic difference between the original cost and budgeted cost are mainly interrelated with some delay factors.

Omran A (2011) had tried to investigate some factors which are basically related with cost performance of Infrastructural development in the state of Kelantan located in the east-coast part of Malaysia. This study was conducted to attempt and investigate all failure and success attributes for the construction project in Malaysia.

Chidambaram R, and Potty N S (2014) investigated various issues related to time delay and cost overrun. He has identified several factors like cost, delay and effectiveness. Under cost factors he has pointed out some issues like price fluctuation of diesel, steel and raw materials. Delay factor like piling works at beam and steel arch and erection are also highlighted by the author.

**OBJECTIVES OF THE STUDY**

The study mainly focuses on the impact of cost overrun due to time delay. However, the objectives of the studies are

1. To give a brief overview of the bridges across the circular canal, Kolkata
2. To identify the factors associated with cost overrun for the construction of Road Over Bridges.
3. To analyse the cost overrun due to delay in completion of work.
4. To contribute some suggestive measure.
METHODOLOGY OF RESEARCH

Study area

The selected road over bridges constructed over the circular canal have been selected for the study. From the extreme north side i.e. Baghbazar, name of the first canal is circular canal. The circular canal proceeds towards the new cut canal and made its junction with the name of Beleghata canal. The bridges pass towards the circular canal - Tolly’s Nullah is another canal which starts from the southern end of the original city.

Sample frame

10 bridges are passing away over the circular canal. All the bridges have been taken into consideration for the study.

Data collection method

Both primary and secondary data have been used as vital inputs for the study. The factors causing time delay have been identified from the authority of KMDA through designing a structured questionnaire. Secondary data have been collected from documents and records of the KMDA. Authority of National library of Kolkata has helped a lot for delivering data and information, particularly the documents related to ROB and their history.

Statistical tools used

Linear regression analysis with one independent variable has been used with SPSS to find the relationship between time delay and cost overrun.

Data analysis and discussion

A brief overview of the over bridges across circular canal.

At Baghbazar, extreme north side of Kolkata with the Hooghly the first canal is circular canal. From Belgachia Bridge at eastern side the circular canal branches off at New Cut Canal. The circular canal made its junction with the new cut canal and moves toward southward and with the name of Beliaghata canal meets the new cut canal. Tolly’s Nullah is another canal which starts from the southern end of the original city, which is just beyond Fort William from river Hooghly, popularly known as Hastings. A summarised form of the selected bridges are discussed below:

Bagmari Bridge in Lansdowne: A foot bridge in Lansdowne area of Kolkata places at a high level for easy movement of pedestrian. It is an N type structure having a bottom boom composed of 1’-3”× 1”, 1’-3”× 7/8”, 1’-3” × 1/2” parallel plates of gradually reducing thickness from the center of the span towards its support. The floor of the bridge has made by steel troughs. Basically the bridge structure is on four steel base plates. The length of the bridge is 113’-6”, width 16’-0”, the depth of the truss is 10’-1”.
Beliaghata Bridge: It is a reinforced concrete arch bridge across the circular canal on the Beliaghata main road. The Construction is made by Messrs Bird & Co. Ltd. This bridge with three hinges and span 128’-0” between centers of end pins, wide footpath of 10’-0” on both sides and vehicular traffic way of 37’-0”.

Railway Bridge near Sealdah station: Basically, there are two adjacent sets of bridges on the main line of Sealdah Eastern railway. One a large three –track Railway Bridge for Eastern Railway and second bridge is with three broad-gauge tracks just adjacent to the three- track composite bridge. The First bridge is like Baltimore Truss type, built in skew of 4’-10.5” in 55’-6”. The span of the main girder is 117’-0” and overall depth of four main girder is 22’-9\frac{3}{4}” , overall length is 120’-0”. Maximum depth of the cross-girders was fixed at 22”. Total weight is 323 tons of the steel work on the bridge. Second one is a half-through type deep plate girder manufactured in 1913 by one local Indian firm.

Narkeldanga Bridge: Near Narkeldanga main road the bridge is situated across the Circular Canal. It is also a reinforced concrete ribbed arch bridge of 128’-0” effective span with provision for 36’-0” wide clear way. Side footpath of 10’-0” on each side.

Manicktala Bridge: Very common and popular bridge situated on the extension of Manicktala Road or Vivekananda Road across the canal to join Manicktala main road. It is R. C arch type bridge with three hinges and exact same span of Narkeldanga bridge, but the clear carriage-way for fast moving traffic is 37’-0” i.e. 1 ft more than previous one. Both side footpath of 10’-0” is also there. Another arrangement of slow moving traffic is there.

Belgachia Bridge: In the Belgachia road across the canal which is very close to R. G. Kar Medical College. It is a reinforced concrete bridge having 128’-0” effective span and 37’-0” wide fast-moving traffic lanes with the facility of slow moving traffic lanes.

Barrackpore Bridge: It was an example of reinforced concrete bowstring girder of 100’-0” span with clear headroom of 21’-9\frac{3}{4}” with fast moving traffic-way of 38’-6” and slow moving traffic way with 9’-3” width. 10 ft wide footpath on both sides, which is famous with the name of Tallah Bridge.

Chitpore Bridge: The Bridge, which connects Cossipore Road to Galiff Street, constructed by the Calcutta Improvement Trust. It is a single span bowstring girder reinforced concrete bridge of 78’-0” central span with two approach span of 49’-4” on either side. For fast moving traffic 40’-0” clear road and for slow moving traffic 10’-0” sidewalk. Footpath on both sides of 10’-0”.

A railway bridge across Beliaghata Canal: A steel framed structure which joins the northern and southern section of Eastern Railway of Sealdah station. In the year of 1908 the N type bridge was constructed by Motherwell Bridge Co. Ltd, which spans the Beliaghata canal.
Main Line Railway Bridge: It is situated near Gurudas Dutta Garden lane in Kolkata. The bridge was manufactured by M/S. Bridge and Roof Co. India in 1940, replacing the old girder bridge. Bridge placed in skew due to the location of the new cut canal. It has clear headway of 16’-4\(\frac{1}{2}\).

**Factors associated with cost overrun for the construction of ROB.**

Different studies identified various factors involve with the construction of ROB. The main factors associated with the delay completion of work identified are – Delay due to land acquisition process, Shortage of material, Bidding procedure, Insufficient technical study, Poor site condition, Equipment breakdown, Weather condition.

Apart from, some other factors for the same reasons involved with the construction of over bridges which are: Lack of project planning, Delay due to land acquisition process, Inadequate project planning, Legal hurdles, Cost of land acquisition, Insufficient technical study, Underestimation of estimate, Poor project implementation strategies, Bidding procedure, Duration of bidding process, Mistakes on various stages, Lowest bid price system, Unreasonable adjustment of price by contractor, Negligence of site visit, Inexperienced supervisor, Many stakeholders, Unethical activities, Unclear terms of contract, Poor site condition, Cost of land acquisition, Methods of payment, Weather condition, Lack of equipment and machineries, Low skill man power, Aggressive competition at tender stage, Contractual failure, Poor site condition, Lack of communication, Environmental issues related with project, Encroachment problem, Lack of high technology mechanical equipment, Slowness of decision making process of client, Shortage of manpower, Accident during construction, Delay due to improper execution, Inadequate experience of consultant, Equipment breakdown, Complexity of project design, Traffic control and restriction on the job site, Insufficient resources, Price fluctuation, Delay in schedule, Lack of managerial and technical knowledge, Source of funding, Availability of funding, Architect’s competency, Cash flow problems, Delay in progress payment, Shortage of labour.

Concentration has been given the time delay of the construction of ROB within this study area. Table -1 shows the time delay of the construction of ROB across the circular canal.

**Causes of time delay**

In this particular study the factors of time delay which causes the cost overrun of the construction are shown in Table -2
<table>
<thead>
<tr>
<th>Name of Bridges</th>
<th>Year of Starting</th>
<th>Year of Completion</th>
<th>Estimated time</th>
<th>% of excess time taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chitpore Bridge</td>
<td>1932</td>
<td>1935</td>
<td>2 years</td>
<td>50</td>
</tr>
<tr>
<td>Barrackpore</td>
<td>1921</td>
<td>1927</td>
<td>3 years</td>
<td>100</td>
</tr>
<tr>
<td>Belgachia</td>
<td>1921</td>
<td>1930</td>
<td>4.5 years</td>
<td>100</td>
</tr>
<tr>
<td>Maniktola</td>
<td>1931</td>
<td>1938</td>
<td>3 years</td>
<td>150</td>
</tr>
<tr>
<td>Narkeldanga</td>
<td>1917</td>
<td>1928</td>
<td>5 years</td>
<td>120</td>
</tr>
<tr>
<td>Main Line Railway Bridge</td>
<td>1933</td>
<td>1940</td>
<td>4 years</td>
<td>30</td>
</tr>
<tr>
<td>A railway bridge across Beliaghata Canal</td>
<td>1901</td>
<td>1908</td>
<td>5 years</td>
<td>30</td>
</tr>
<tr>
<td>Railway Bridge near Sealdah station</td>
<td>1904</td>
<td>1913</td>
<td>5 years</td>
<td>80</td>
</tr>
<tr>
<td>Beliaghata Bridge</td>
<td>1930</td>
<td>1942</td>
<td>6 years</td>
<td>86.6667</td>
</tr>
<tr>
<td>Bagmari Bridge in Lansdownne</td>
<td>1931</td>
<td>1938</td>
<td>4 years</td>
<td>70</td>
</tr>
</tbody>
</table>

Source: Secondary data survey from KMDA

It is observed that Maniktala, Narkeldanga, Barrackpore and Belgachia over bridges had been taken unexpected time to complete the work. The same is somehow considerable in case of the Main line railway bridge and a railway bridge across Beliaghata canal causes of which cost overrun detected from the survey.
Table 2: Delay factors of bridges across circular canal

<table>
<thead>
<tr>
<th>Delay factors</th>
<th>Name of Bridges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal Problem including Land acquisition and others</td>
<td>Beliaghata Bridge, Belgachia Bridge, Maniktola Bridge</td>
</tr>
<tr>
<td>Lack of Planning</td>
<td>Chitpore Bridge, Barrackpore Bridge, Railway Bridge near Sealdah station, Maniktola Bridge, Beliaghata Bridge</td>
</tr>
<tr>
<td>Inadequate Resources</td>
<td>Maniktola Bridge, Narkeldanga Bridge, Main Line Railway Bridge, Bagmari Bridge in Lansdowne, Chitpore Bridge, Belgachia Bridge, A railway bridge across Beliaghata Canal, Beliaghata Bridge</td>
</tr>
<tr>
<td>Site Condition</td>
<td>Maniktola Bridge, Narkeldanga Bridge, A railway bridge across Beliaghata Canal, Railway Bridge near Sealdah station, Bagmari Bridge in Lansdowne</td>
</tr>
<tr>
<td>Lack of Equipment and Machinery</td>
<td>Barrackpore Bridge, Belgachia Bridge, Narkeldanga Bridge, Railway Bridge near Sealdah station, Beliaghata Bridge</td>
</tr>
<tr>
<td>Financing Problem</td>
<td>Barrackpore Bridge, Belgachia Bridge, Narkeldanga Bridge, Beliaghata Bridge</td>
</tr>
</tbody>
</table>

Source: Primary data survey developed by researcher(s)

Analysis of the cost overrun for time delay in completion of work

Data so collected have been tabulated for developing a regression model using SPSS. The difference between actual cost and the estimated cost of bridges is considered as the dependent variable. The difference between estimated time and actual time considered as independent variables to judge the association between two variables i.e. cost overrun and time delay which is shown in Table 3.1.
Table- 3.1: Variables Entered/Removed

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables Entered</th>
<th>Variables Removed</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DIFFERENCE BETWEEN ESTIMATED TIME AND ACTUAL TIME</td>
<td>.</td>
<td>Enter</td>
</tr>
</tbody>
</table>

a. Dependent Variable: DIFFERENCE BETWEEN ESTIMATED COST AND ACTUAL COST

b. All requested variables entered.

Table 3.2 shows the R square value which is .67. R- Square is the proportion of the variance explained by the independent variable. This indicates that there are 67 per cent variation in the difference between actual cost and the estimated cost. It has also been observed that significance level for all the parameters are less than 0.05. That means variables are acceptable and significant for model development.

Table- 3.2: Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>.819a</td>
<td>.671</td>
<td>.629</td>
<td>83954.38</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>132</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.671</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16.28</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.004</td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), DIFFERENCE BETWEEN ESTIMATED TIME AND ACTUAL TIME

In the table 3.3 the regression model explaining the variance, whereas the residual model known as error, does not describe the variable. Degree of freedom linked with the origin of variance, here N= number of project i.e. 10, so DF for total is 9. As the total variance has (N-1) degrees of freedom. The F value is the mean square regression divided by the mean square residual i.e. F=16.282. As the significant value is .004, so the model is significant, that means there is a positive relationship between two variables.
Table- 3.3: ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression</td>
<td>11476289486.2005</td>
<td>1</td>
<td>11476289486.2005</td>
<td>16.282</td>
<td>.004b</td>
</tr>
<tr>
<td>Residual</td>
<td>56386705137.995</td>
<td>8</td>
<td>7048338142.249</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>17114960000.0000</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: DIFFERENCE BETWEEN ESTIMATED COST AND ACTUAL COST
b. Predictors: (Constant), DIFFERENCE BETWEEN ESTIMATED TIME AND ACTUAL TIME

Table- 3.4: Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
<th>95.0% Confidence Interval for B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>16101.015</td>
<td>60129.343</td>
<td>.26</td>
<td>.79</td>
<td>-122557.498</td>
</tr>
<tr>
<td>DIFFERENCE BETWEEN ESTIMATED TIME AND ACTUAL TIME</td>
<td>64599.105</td>
<td>16009.181</td>
<td>.819</td>
<td>.00</td>
<td>27681.867</td>
</tr>
</tbody>
</table>

Table 3.4 shows the relationship between dependent variable and independent variable. As the value of the coefficient is positive, so there is a positive relationship with the dependent variable. The actual cost will be increased with the increase of estimated time. The standard error associates with the coefficient. The model is significant with significant level of below 0.05.
CONCLUSION AND SUGGESTION

This study finds that, since the pre independence period the time delay and cost overrun are a normal phenomenon for infrastructural development. There is a correlation between time delay and cost overrun of the construction of ROB. This study identified some common factors associated with the delay in completion of work which ultimately overrun the cost of the project. It is remarkable that Cost of land acquisition, poor site condition, shortage of material and lack of managerial and technical knowledge are the main factors detected from the study. This is mainly due to the price fluctuation and increasing the market value of the construction material. The positive association between two variables makes it clear that enhancing the estimated time of completion the workforce to increase the actual cost of the project.

It is suggested to prepare the appropriate study regarding the planning before starting a project of constructing ROB. The policy from the government level in coordination with the implementing agencies must be carefully considered. All the external factor is to be sorted out before the execution.
REFERENCES


Construction industry of India.

Statistic times.com
IMPACT OF SOCIAL ISOLATION ON ELDERLY AND SOCIAL INCLUSION OF ELDERLY THROUGH
SOCIAL WORK INTERVENTION WITH SPECIAL REFERENCE TO OMASHRAM OLDAGE HOME AT
BANGALORE

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Faculty, Department of Social Work – MSW, Ramanagara PG Centre,
Bangalore University, India

INTRODUCTION AND BACKGROUND OF THE STUDY

In the present scenario of our nation, elderly will be facing one or the other way of social isolation which will be having great impact on their social and psychological health. As the author is very closely associated with oldage homes in Bangalore metropolitan city, irrespective of economic disparities elderly were neglected by their children, grandchildren and their relatives. Diminution of joint families, respect on family, moral values, mechanical life, and intergenerational gap are the major reasons for social isolation of elderly in India.

The population of census 2011 data tells that the percentage of currently married elderly women was markedly lower than the percentage of currently married elderly men. After the age of 70 years, more than 60% of women become widows.

More than 56% of elderly persons live with their spouse and 32% of aged persons live with their children. About 5% of elderly persons live alone while another 4% live with other relations and non-relations. Source: Population Census 2011

Elderly were more prone to lead their life lonely as their children will be occupied with their job and their grandchildren will be busy with school, later with television, mobile, one or the other way of electronic gadgets. So their children will become emotionless due to work stress and electronic gadgets addiction. At the same time their grand children will be busy with television, videogames or with the online games which leads to get them involved in anti social activities. So there is no emotional bondage, morality and intergenerational bondage.

STATEMENT OF THE PROBLEM

The present research paper assists to find out the major reasons for social isolation of elderly and to incorporate them with the family, relatives and with the community. To find out the intervention strategies and preventive measures for social isolation of elderly to improve their lifestyle, mindfulness and longevity of life.
OBJECTIVES OF THE STUDY

objectives of the present research study have given below.

- To understand about the elderly social isolation and its impact on their life
- To know about the social work intervention for social inclusion of elderly

SCOPE OF THE STUDY

This study was conducted based on the primary data collected through Omashram oldage home at Bangalore metropolitan city. In addition to this, reviewed articles, journals and research studies related to the research article and also interacted with the geriatric social workers.

LIMITATIONS OF THE STUDY

This Study is limited to Omashram of Bangalore city and elderly people who were aged 60 years and above.

REVIEW OF LITERATURE

It includes various opinions of different authors and their research findings.

(Crummett, 2018) The community arts worker emphasized the importance of the participants taking ownership of the activities rather than foisting an agenda on them. The Community arts worker developed new community mapping project for elderly involving neighborhood and then inserting through pictures and other images as per participant’s perceptions during meetings and discussions. As the group grew in confidence they began to explore new activities including trips to seaside and social feast dinner at nearby restaurant. Among all these activities elderly was actively involved themselves to overcome from social isolation.

(Gardiner C, 2016) This document has developed to highlight the essence of professional social workers in the field of elderly wellbeing in the current hospital settings, rehabilitation homes or even with the old age homes.

(ageing, 2011) As the new generation is behind material well being, they were lacking to provide the emotional well being, social inclusion, physical well-being, self determination and interpersonal relationships among the family members.

(G Giridhar UNFPA India consultant, 2017) The life expectancy improvement has been substantial in most states of India. Currently all the states have higher life expectancies at old ages for women than men. While majority of the elderly are still living with their children in India, about one fifth of either live alone or only with the spouse and hence have to manage their physical and material needs on their own. Hospice Care aims at treating elderly with life threatening illnesses during the end of their life. But the sad thing is that, India is lacking professional social workers specialized with palliative care. In other words, palliative care must become physical, psychological and
spiritual support to patients. It leads to affect their daily routine activities and their dependency in old age.

(Gardiner C, Interventions to reduce social isolation and loneliness among older people-an integrative review, 2016) They intervened through multi-strategy program, Friendship clubs, Day care centres, Video Conference program, Internet social networking, shared interest group, Friendship Enrichment Programs, Psychological group rehabilitation, Stress reduction programs, Humor therapy, Cognitive enhancement program and indoor activities program to reduce the elderly social isolation and loneliness.

THEORETICAL FRAMEWORK FOR THE STUDY

Theoretical Framework of the present study primarily constitutes George Herbert Meads theory on Socialization provides a theoretical background for the present study. The socialization theory consists of each individual self develops through socialization means of social experiences since childhood to elderly in one or the other way. It will incept through I and ended with we self awareness. So it leads to self awareness in this materialistic world the social workers will play a vital role to change the mindset of new generation and creating a healthy environment for the elderly to lead a life of mindfulness will be the central intention of this study. At the elderly age, they expect social support from their children, grandchildren or family, friends, caretakers, relatives or any likeminded people to provide psycho-social, emotional and spiritual support.

METHODOLOGY

The present study is based on descriptive research design.

Universe of the Study

Elderly at Omashram Trust-old age Care of Bangalore situated at Hulimavu in Karnataka constitutes the universe of the study. The population of the study includes the all elderly persons aged 60 and above living in this oldage home Unit 1 and Unit 2 of 105 aged populations.

Sampling Design

The study was conducted in Bangalore based on Omashram Oldage Home 2 units at Hulimavu near Bannerghatta Road. In this Old Age Care, there are overall 105 neglected aged were taken care in 2 different units consisting of both male and female aged. Researcher has taken 100 neglected aged consists of both the units on random basis.

Sources of Data

Researcher collected the data through primary and secondary data for the study. Initially, the primary data was collected through structured interview schedule and Observation method. In addition to this, researcher interacted with the gerontologist who uses to visit the old age care
home for treating elderly. Secondary data were collected through research articles published, edited books and through government department books.

**Tools for data Collection**

Researcher used structured interview schedule, Observation method and Focused Group Discussion.

**Procedure of Data Collection**

Researcher visited the Old Age Care Home both the units and interacted with the elderly on individual basis to gather data required for the study and also collected few information through observation. Informed Consent was taken from each respondent to ensure confidentiality.

**Operational Definitions**

Social Exclusion is the process where individuals are not accessible to various rights, opportunities and resources that are normally available for other members of the society and lacking housing, employment, healthcare, civic engagement, democratic participation due to their age factor, thinking that they were incapable.

Social Inclusion is the process of improving the individuals and groups who will be from downtrodden society to take participation and decision making in their beloved family and society. With the perspective of uplifting their life, reassuring them to enjoy their rights and entitlements for the enhancement of their quality of life is much essential.

**Analysis of Data**

Data collected from 100 elderlies was tabulated, presented and analysed as given below.

**Table No.1: Sex Ratio of Elderly**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Sex</th>
<th>Number of Elderly</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Female</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td>2</td>
<td>Male</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
Omashram Oldage Care including both the unit’s female ratio is high compare to male elderly ratio. Most of the oldage homes, consisting more female ratio as their life longevity is more compare to male ratio. Here also same more females, less males in the old age care institution.

Table No.2: Socio-economic Status of the Elderly

Most of the elderly were having assets, house and financial bonds earlier, once they transferred their economic status in the name of their children, they put them in the oldage care and paying some amount on monthly basis. Many of the elderly were holding honorary jobs such as bank manager, income tax officer, commercial tax officer, teacher, lecturer, doctors but now because of their retirement they were in low socio-economic strata as many of them believed their children will take care of them, as they were working they will put them in Elderly care home. So, even today many of the elderly were eagerly waiting for their children to come and have an interaction. But their children were busy with their work and familial life, neglecting their elderly parents.

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Occupation</th>
<th>Income per Month</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Paper Cover Making</td>
<td>2000</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>Garland Making</td>
<td>3500</td>
<td>35</td>
</tr>
<tr>
<td>3</td>
<td>Gardening</td>
<td>2500</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>Carpentry</td>
<td>3000</td>
<td>30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11000</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>
Elderly were leading their life at oldage home through earning their livelihood by doing income generating activities. It gives them more self satisfaction, self confidence as they are self sufficient and potential to handle their life independently without depending on their children. Elderly are eagerly waiting for their children to visit them once and to support their life financially as few of them are suffering from age based illnesses. Elderly will become like children at their elderly age and they were seeking love and affection from their children and grandchildren.

Table – 3: Elderly Health Status

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Agewise Diseases</th>
<th>Number of Elderly</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Whooping Cough</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>Ulcer</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Joint/Bone Problems</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Hypertension</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>5</td>
<td>Chronic Illnesses</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>Multiple Illnesses</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>
Among the elderly 30% of them are suffering from hypertension, stress and other psychological problem due to the rare visits of their children and grandchildren to the oldage home. 20% of them are suffering from Whooping cough and remaining 20% of them are suffering from chronic illnesses such as cancer, chronic kidney disease, liver failure, schizophrenia, Alzheimer disease.

15% of the elderly suffering from multiple illnesses and most of them are bedridden, but still they are active and taking part in one or the other sort of physiological activities pertaining to income generating activities. 10% of the elderly are suffering from bone related joints pain and arthritis health issues and 5% of the elderly are suffering from one or the other sort of ulcer problems.

**Table -4 : Impact of Family type on Elderly**

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Type of Family</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nuclear Family</td>
<td>59</td>
</tr>
<tr>
<td>2</td>
<td>Joint Family</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>Single Parent Family</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Extended Family</td>
<td>13</td>
</tr>
</tbody>
</table>
Bangalore is a hub of job opportunities, many from rural areas will either come for education or for seeking jobs. If the rural migrants are well educated and skilled, then they will equip themselves with the better jobs. Most of the circumstances rural migrants were less educated and unskilled so they will join for lesser salaried jobs. They leave their children with their parents later when their elderly parents are completely deteriorated health to take care of their grandchildren, they abandoned the elderly. If we look into the same issue at semi-urban and slums whether they are from rural or from urban or from slums will leave their parents in oldage homes as they are busy with their work to earn their livelihood. With the multidimensional perspective way one side their grandchildren will join daycare center, grandparents will join oldagehomes and their children will be busy with their bread earning mechanical life. Elderly and grandchildren both will become abandoned without the love and affection of family and lacking social interaction to improve their socialization process. All these issues raised due to deterioration of joint families and there is a big intergenerational gap among elderly and their grandchildren. Now there is a great need of joint families with grandparents to bridge the intergenerational bonding.

**FGD with Elderly**

Before and after Covid19 First and Second wave happened in Bangalore and prior to that also elderly are eagerly waiting for their children and grandchildren visits and for the interaction about their health. Most of the children and grandchildren are either busy with their work or their children online classes, not willing to visit them with the reason of Covid spread. Even though the elderly are eagerly waiting even today for their visits it’s hard to find the genuine emotions from the children towards their parents. Their children will be influenced by the globalization, privatization and liberalistion, they were more intend work to earn their livelihood. Meanwhile they were not concentrating on their parents visits and giving time for their children. It will be negatively impacting on elderly as well as new generation, grandparents and grandchildren are in need of each other to bridge the gap of intergenerational bonding. It will surely reduce the social
isolation of the elderly as well as new generation. As per the opinions of elderly they just need love and affection and lending a hand of care from their children and grandchildren.

ROLE OF GERIATRIC SOCIAL WORKERS WITH REGARD TO SOCIAL INCLUSION OF ELDERLY

Geriatric social workers play a vital role in building the gap of intergenerational bonding through convincing the new generation to give time for their parents and children is much crucial during pandemic. As their parents were busy with their work, grandparents and grandchildren can have social interaction and both will be from social isolation. Due to Pandemic even their savings are drained out, not able to run the family with lesser salary because of lockdown, jobloss and other issues due to pandemic.

Geriatric social workers conduct sensitization and awareness campaigns for Grandparents, parents and grandchildren, so they are targeting schools and college students, anganwadis, ASHA workers and youth groups.

Geriatric Social Workers conduct specific trainings on thematic basis with regard to rights and entitlements of elderly, geriatric counseling, and management of dementia.

Geriatric Social workers will have conversations with the elderly at Oldage Homes, to keep them feel they are socially inclusive irrespective of rare visits of their parents and grandchildren due to pandemic and other workers they held up with.

Geriatric Social Workers will have regular networking with community based organizations to support and assist villagers to have proper care of the elderly by sensitizing through importance of elderly at home to inculcate moral values and morality among new generation.

Geriatric social workers sensitise the new generation about importance of grandparenting in the present scenario, mutual way grandchildren can assist elderly during their ill health to overcome from those illnesses as well as psychological problems.

MAJOR FINDINGS AND CONCLUSIONS

Diversified analysis of primary data collected by the investigator at Omashram clearly point out that, elderly people in Bangalore and even across India are facing the same challenges related to Social exclusion in many ways and putting them apart in Oldage homes, not accepting them to kept at their homes. So they were lacking grandparenting for their children, so grandchildren also suffering from social exclusion.

Due to pandemic upbringing of children by grandparents is much lacking and children are much more addicted to mobile due to online class and online games. Younger generation is giving more prominence for earning and leading their life without difficulties, at the same time they leave their children at day care centers or residential schools and parents at Oldagehomes. So, it will create a big intergenerational gap among parents, grandparents and grandchildren.
Grandparents will play a crucial role while upbringing their grand children irrespective of the physical and psychological disorders because of their age factor. Due to this, parents, children and grandchildren relationship was not amiable; it will be more money-oriented than sensible, lacking goodness among themselves. It will surely create social inclusion and social bonding among intergeneration.

Most of the time grandchildren will become the victims of anti social activities if they were grown up alone at home, daycare centers without their grandparents or parents. In addition to this, due to addiction of online games, they will have self harming and suicidal tendencies behaviours which will harm their mindfulness.

As they were at day care centers and old age homes will automatically lead to internal conflicts among inter generations leads to emotional variations, anxiety, frustrations and finally leads to suicidal attempts. All these themes should be addressed during the Sensitization sessions on building intergenerational Bonding among youths, parents and grandparents.

Grandparent and grandchildren participation and involvement in the above mentioned activities will reduce the Social Inclusion and increase the intergenerational bonding and relationships which will be more fruitful and need of the hour.

Furthermore, elderly was completely depending on their children, especially single/ widow elderly and they were subject to verbal abuse and sometimes they will become the victims of physical abuse too.

Occurrences of Life threatening illnesses, they were undergoing through physical pain, lacking emotional support and the accessibility to healthcare services. At this point youngsters or grandchildren were the best source to provide treatment or palliative care to these grandparents to reinforce positivity in their life.

This paper is an attempt to bridge the intergenerational gap and create social inclusion among the grandparents, parents and children to build cohesive society through building reliable relationships to lead happy and mindfulness of life in the mechanical world.

**SUGGESTIONS**

Social workers will play a crucial role in working with elderly people in various responsibilities as given below.

It is an endeavor to put across diverse problems faced by elderly during their stay at Oldage homes and to bridge the gap of three generations to lead cohesive social inclusive life. Social workers can play a crucial role to bridge the intergenerational bonding and through grand parenting, we can make the younger children to fillup their socialization process in an efficient manner.

Nowadays new generation relying on technology for raising standard of living and more gadget freaks; lacking the importance of family and social life. Social workers can conduct awareness
sessions on importance of family life and emotional bonding among the family and within and outside the society.

Social workers may provide counseling services and psychotherapies to overcome from their chronic illnesses and the psycho-social problems.

Social workers can become bridge between the elderly and the public or private individuals or institutions that can support for elderly people for supporting their health conditions.

A Geriatric Social Worker is mandated by law to advocate elderly people with suspected verbal or physical abuse report to Adult Protective Services.

Social workers will play an essential role in elderly with chronic illnesses from their admissions to discharge from the hospital and their follow up treatment. They will also educate the care givers or the family members of the client who will provide homecare services.

Social workers will lend a hand to the elderly at old age homes through providing occupational training to elderly to improve their socio-economic status and to reduce the dependency on their family members.

**CONCLUSION**

Through comprehensive analysis of the study clearly depicts that, most of the elderly people were not getting adequate support from their family as they were giving more eminence for their materialistic life and they didn’t even bother about their children, they became gadget freaks. Because of Intergenerational gap, younger generations were abandon their parents at their elderly age. So, educating the adults, their children and elderly people and providing healthcare services is very essential for social workers and other Para professionals working with elderly people. The primary rationale behind this paper is to find out the solutions to bridge the gap between different generations and to give more prominence for emotional bondage of family and social life. It will definitely assist to overcome from social exclusion and social mainstreaming of the elderly through social inclusion. It leads to inculcation of moral values in new generation through grandparenting and psychological mindfulness of elderly will be possible. Mutually, Grandparenting leads to create healthy life of grandparents and grand children.
REFERENCES

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INTRODUCTION

For decades’ authors have been defining culture in several ways; here, the author's shorthand definition is: "Culture is the collective programming of the mind that distinguishes the members of one group or category of people from others" (Hofstede, 2011). Culture, being a collective phenomenon, can be associated with diverse factors, taken up as individuals or symbiotic as collaborative. Based on the difference between the individual factors of culture, cultural difference is observed among different groups or societies. The term ‘culture’ is generally applied to tribes and ethnic groups (anthropology), nations (sociology, management, and political science), and an organization (management). The occupation remained a relatively new domain in culture (for instance, engineers vs. doctors, accountants compared with other domains). The term ‘culture’ could also be applied to generations, genders, and to other classes of society. Individuals are under the control of culture since birth. However, societal, gender, and national cultures are acquired early and are deeply rooted in the mind. In contrast, occupational cultures are acquired during the school days or from the workplace. The occupational culture often changes as one switches the job from one to the other. Societal cultures reside in (unconscious) values, in the sense of broad tendencies to prefer certain states of affairs over others (Hofstede, 2001, p. 5). An organization's culture resides in practice or application (visible and conscious): and can be noticed by how individuals perceive things, behaves in a particular situation, and what goes around their organizational environment.

THEORETICAL FRAMEWORK

Anthropologists and behavioral scientists have defined culture as a wide range of learned and acquired human behavior patterns. For the first time, the term ‘Culture’ was used by the pioneer English Anthropologist Edward B. Tylor in his book, Primitive Culture, published in 1871. Culture develops the most significant influence on several dimensions of human behavior. Tylor provides one of the earliest definitions of culture: “the complex whole which includes knowledge, belief, art, morals, custom and any other capabilities and habit acquired by man as a member of society” (1871, in McCort and Malhotra, 1993: 97). The other macro-level influencers complicate defining culture. The culture of a particular region differs inherently from other by several environmental factors. “Culturally patterned behaviors are thus distinct from the economic, political, legal,
religions, linguistic, educational, technological and industrial environment in which people find themselves” (Sekaran, 1983: 68). Entirely differentiating culture from other environmental factors might be impractical as there is no clear line of boundary between these entangled influencers.

One of the best-known approaches of culture has been proposed by Geert Hofstede in the year 1965. The theory was known as Hofstede's Cultural Dimension Theory. The theory is the foundation for cross-cultural communication, developed by Geert Hofstede. It shows the effects of a society's culture on its members' values and how these values relate to behavior, using a structure derived from the factor analysis (Adeoye, 2014). He developed his study model to use factor analysis to inspect the result of the worldwide survey done on the job incumbent values by IBM between 1967- 1973. Since then, the study is being refined as per the requirements. The theory propounded four dimensions and which cultural values could also be analyzed: Power Distance, Individualism - Collectivism, Uncertainty Avoidance, and Masculinity- Femininity. The power distance index is defined as "the extent to which the less powerful individuals of the organizations and institutions accept and expect that power gets distributed unequally." Here, inequality and power get apprehended from the followers and the lower strata individuals. A higher degree indicates that hierarchies are established and executed in society, without doubt and reason. A lower degree signifies that people question authority and attempt to distribute power (Hofstede 2015). Individualism and Collectivism index reveals the "level to which individuals in a society get combined into groups." Individualistic societies have lost ties and they only relate an individual to his/her immediate family. They prioritize "I" over "we". On the other hand, collectivism describes a society in which powerfully combined relationships and values exist among extended families and other groups. Uncertainty Avoidance Index can be defined as "a society's tolerance for ambiguity", in which an individual avoids an event of something unexpected, unknown, unfamiliar, and away from the status quo. Societies that tend to score a high degree, go with rigid codes of behavior, guidelines, laws, and therefore normally rely on absolute truth. A lower degree shows more acceptances of different beliefs and thoughts. Masculinity is defined as "a preference in society for achievement, heroism, confident and materialistic rewards for success". On the other hand, femininity is defined as "a preference for cooperation, modesty, caring for the weaker section and quality of life". Women in their respective societies and environment showcase the different values. In more masculine societies, though women are confident and competitive, but of course, less than men. In other words, a gap between male and female values & beliefs can still be identified.
LITERATURE REVIEW

Stull and Till (1995) propounded a study that presented a theoretical framework by employing Hofstede’s cultural dimensions as an indicator for ethnocentric. The Von Till–Stull Attitude Survey was designed to measure the students’ agreement and disagreement associated with the dimensions of Hofstede and compared the outcomes with numerous cultural characteristics of the respondents. 535 responses gathered using 40 items Likert scale. The outcome of the study reveals that leadership qualities in women are more than in men. The discussion is not to fill all the managerial positions with women or people belonging to a particular culture but to educate and train women and men from U.S. and other countries origins to learn managerial and leadership qualities / attributes that are essential in work.

Wu (2006) re-examined and updated the research done by Hofstede in 1984 & 2001. According to the author, the data employed in Hofstede’s study is now obsolete, and the outcome is not suitable for today’s culture. The data were collected from one eastern and one western cultured country Taiwan and United States respectively. The study further extended to examine the occupational culture in the educational (higher) setting. The outcomes showed that the work-related cultural values vary with different cultures and also change with time. The author also stated that cultural theories should be updated over time. Drogendijk and Slangen (2006) inspect and compare the outcomes of five cultural measures on the alternatives by multi-national enterprises (MNEs) between expanding abroad through acquisition or Greenfield. Two out of five measures were taken based on Hofstede (1980), another two based on Schwartz (1994), and one on managerial perceptions. The result depicts that the Hofstede and Schwartz-based measures of national-cultural distance describe the alternative mode of formation by MNEs. The explanatory power of the managerial perception is lower despite its statistical significance. The reason for the lower perceptual, cultural distance could be a single item in a perceptual measure.

Soares et al. (2007) investigated various approaches for framing concepts and applying cultures in marketing studies. The study proposed the pros of employing dimensions of culture in a particular Hofstede Value. The study further propounded three steps to apply culture comprising Hofstede’s dimensions of culture, nationality, and estimation of culture at the individual level. The study reveals that assessing the dimensions at an individual level is an essential contribution to a cross-cultural study. Whereas applying culture in practice remains a challenge.

Hofstede G. (2011) discussed the Hofstede Model briefly with six dimensions of national cultures (Power Distance, Uncertainty Avoidance, Individualism/ Collectivism, Masculinity/ Femininity, Long/Short term Orientation and Indulgence/ Restraint). The study emphasizes that dimensions of culture is dependent on the degree of agglomeration. The author explained the six completely different dimensions found in the Hofstede et al. (2010) research into organizational cultures. The author also warns about different kinds of value differentiation at the individual level. Whereas Roozmand et al. (2011) propounded a study on an agent-based computational and conceptual representation of consumers' decision-making process that focuses on personality, culture, and
needs of human beings which behaves as a model for the behavior of an individual in representation that explores a system-level resulting behavior. The theoretical concepts applied in the model are the Power Distance dimension of Hofstede's national culture, Agreeableness, Extroversion, and Openness of Costa and McCrae’s model of personality and social status and social responsibility needs. These elements were employed to establish the utility function, process, and streamline the need recognition, agent state, and action evaluation modules of consumer decision-making. The study was carried out in eleven European states. The results showed that (1) the conceptual model employed in the study nicely displays the actuality into agent-based representation by considering the mind, culture, body and space, and healthy relationships among them. (2) Elements and modules are taken into account for the mind adequately represents the flow of data, and these processes deal with consumer decision-making. (3) Examining culture and personality and its function on need recognition and various phases of consumer decision-making is an indispensable innovation of this study. Further, Mazanec et al. (2015) studied the speed to which nationalization takes place within the population of migrant and the level to which one impersonate the regional geographic differences. The study was threefold. Firstly, they verified the validity and the degree of reliability of the scale (CVSCALE) designed to measure Hofstede's dimensions of culture at both level i.e., individual and psychological across the population of the United States. Further, the scale was employed to check the homogeneity of all the measures. The result depicts that the distance of culture of a guest individual and a native individual could greatly intensify the psychological measures against sociological measures of the cultural values. It appears that cultural values obtained from individual measures could give an enhanced understanding of tourist motivation which is necessary for market separation and tourism marketing strategy for such a diverse country like the U.S.

OBJECTIVES OF THE STUDY

After going through the above pieces of literature, the following objectives have been formulated for the study:

1. To know which dimension of Hofstede's cultural theory is more dominant in today’s scenario of India.
2. To study the variation in organization culture based on the demography of India.
3. To understand the variation in organizational culture based on gender.
SIGNIFICANCE OF THE STUDY

After going through several works of literature, we came to know that most of the study has been done on the nation’s culture (broader concept). India is a vast country with different religions, caste, creeds, color, races, ethnicities, etc.

The perception of an individual varies with the tradition (root) they belong to. So, it becomes essential to study these variations very minutely. We felt the need to study it very precisely. For the study, we considered various geographical regions of India to capture the variation in the population's perception. We divided India into Eastern Region, Western Region, Northern Region, Southern Region, and North Eastern Region. This study will also get the difference among the perception of an individual based on different regions. Further, in the study, we also tried to capture the difference in the population's perception based on gender.

RESEARCH METHODOLOGY

The questionnaire method (Google Form) has been adopted to collect demographic information and data of Indian respondents. The Random Sampling method has been adopted for capturing the responses from all over India. A close-ended questionnaire was adopted for the study. The questionnaire scale was Likert 5-point scale with Strongly Agree being the lowest, Agree, Neutral, Disagree, and Strongly Disagree being the highest. The questionnaire adopted was based on the four dimensions of Hofstede's Cultural Theory: Individualism- Collectivism, Uncertainty Avoidance, Power Distance, and Masculinity- Femininity. The questionnaire consists of 32 questions. Out of these 32 questions, 4 are measuring Individualism, 4 for Collectivism, 4 for Lower risk-takers, 4 for High-risk takers, 4 for individuals maintaining power distance, 4 for individuals minimizing power distance, 4 for measuring Masculinity, and 4 for Femininity. The questionnaires were provided with a proper request to the respondents to complete the same for research. Responses of 208 individuals with the complete details in the questionnaire were taken for the study and further analysis. The other methodologies include research publication, interviews, and other research techniques, including present and historical information.

RESULT & DISCUSSION

The collected survey results were analyzed to test the formulated Hypothesis and conclude the Organizational Culture based on Hofstede’s Theory. We conducted several tests such as Reliability Analysis, ANOVA and item mean to analyze the collected data.
7.1. Reliability Analysis

The first step in the process of analysis was to check the reliability of the dimensions of Organizational Culture. Cronbach’s Alpha reliability analysis measure was adopted to test the reliability of the scale.

Table 1: Reliability Test

<table>
<thead>
<tr>
<th>Cronbach's Alpha</th>
<th>Cronbach's Alpha Based on Standardized Items</th>
<th>No. of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.876</td>
<td>0.876</td>
<td>32</td>
</tr>
</tbody>
</table>

It was reported that the instrument measuring the organizational culture was reliable as Alpha reported was 0.87, as can be seen in Table 1 above. The scale was found to be internally consistent and reliable.

7.2. Item Mean

From below Table 2, we can say that the most dominant item among the respondents is “Maintain Power Distance” within the dimension “Power Distance,” with a mean of 2.11 (among male respondents). Moreover, the least dominant is “Masculinity” within the “Masculinity VS Femininity” dimension, with a mean of 1.63 (among female respondents).

Table 2: Item – Wise Mean

<table>
<thead>
<tr>
<th>Hofstede Dimensions</th>
<th>Items</th>
<th>MEAN</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MALE</td>
<td>FEMALE</td>
<td></td>
</tr>
<tr>
<td>INDIVIDUALISM VS.</td>
<td>INDIVIDUALISM</td>
<td>1.819</td>
<td>1.853</td>
<td></td>
</tr>
<tr>
<td>COLLECTIVISM</td>
<td>COLLECTIVISM</td>
<td>1.817</td>
<td>1.87</td>
<td></td>
</tr>
<tr>
<td>AVOIDANCE</td>
<td>LOW RISK TAKERS</td>
<td>1.975</td>
<td>1.985</td>
<td></td>
</tr>
<tr>
<td>UNCERTAINTY OF</td>
<td>HIGH RISK TAKERS</td>
<td>1.802</td>
<td>1.867</td>
<td></td>
</tr>
<tr>
<td>POWER DISTANCE</td>
<td>MAINTAIN DISTANCE</td>
<td>2.11</td>
<td>2.08</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MINIMIZE DISTANCE</td>
<td>1.862</td>
<td>1.927</td>
<td></td>
</tr>
<tr>
<td>MASCULINITY VS.</td>
<td>MASCULINITY</td>
<td>1.735</td>
<td><strong>1.635</strong></td>
<td></td>
</tr>
<tr>
<td>FEMININITY</td>
<td>FEMININITY</td>
<td>1.822</td>
<td>1.899</td>
<td></td>
</tr>
</tbody>
</table>

7.3. Region wise perception of respondents in percentage
The table below represents the perception of local people region-wise based on Hofstede's dimensions. The data shows that the Northern region has a higher value for Individualism, i.e., 36.84, than Collectivism, i.e., 35.4. The Low-risk takers with a value of 39.1 are insignificantly higher than High risk-takers at 37.66. Though there was a very insignificant difference observed between the perception of Low risk takers and high Risk takers but it was slight inclined towards Low risk taker. They also showed a preference for Power Distance, though it was marginally high. The Femininity dimension was also preferred over the Masculinity dimension. The respondent of the Western region showed a similar trend in the Risk-Taking dimensions and Masculinity Femininity dimension but showed a reverse perception for dimensions of Individualism VS Collectivism and preferred Masculinity over Femininity. The respondents of the Northern region showed the same preferential trend as the respondents of the Eastern region, with nearly the same degree of difference. Southern respondents showed a strong preference for Collectivism over Individualism, along with a preference for power distance. They also preferred Femininity over Masculinity and low risks.

### Table 3: Region – Wise Mean

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Region</th>
<th>Individualism</th>
<th>Collectivism</th>
<th>Low Risk Takers</th>
<th>High Risk Takers</th>
<th>Maintain Power Distance</th>
<th>Minimize Power Distance</th>
<th>Masculinity</th>
<th>Femininity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Eastern</td>
<td>36.84</td>
<td>35.4</td>
<td>39.1</td>
<td>37.67</td>
<td>41.08</td>
<td>36.69</td>
<td>33.64</td>
<td>36.08</td>
</tr>
<tr>
<td>2</td>
<td>Western</td>
<td>36.36</td>
<td>37.54</td>
<td>40.62</td>
<td>38.12</td>
<td>35.24</td>
<td>38.08</td>
<td>36.08</td>
<td>34.96</td>
</tr>
<tr>
<td>3</td>
<td>Northern</td>
<td>37.86</td>
<td>36.9</td>
<td>40.2</td>
<td>36.26</td>
<td>45</td>
<td>38.72</td>
<td>32.02</td>
<td>38.28</td>
</tr>
<tr>
<td>4</td>
<td>Southern</td>
<td>35.2</td>
<td>38.82</td>
<td>38.72</td>
<td>33.82</td>
<td>45.94</td>
<td>38.08</td>
<td>33.4</td>
<td>38.5</td>
</tr>
</tbody>
</table>

### 7.4. Two-Way ANOVA

We further performed a Two-way ANOVA on the independent variable: Gender and the dependent variable: Hofstede Dimensions, which is shown in Table 4 below.
Table 4: ANOVA for Gender Differences on Individualism vs. collectivism, Uncertainty Avoidance, Power Distance and Masculinity vs. Femininity

<table>
<thead>
<tr>
<th>Hofstede Dimensions</th>
<th>F – Value</th>
<th>F – Critical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individualism</td>
<td>0.32</td>
<td>3.85</td>
</tr>
<tr>
<td>Collectivism</td>
<td>0.86</td>
<td>3.85</td>
</tr>
<tr>
<td>Low Risk Takers</td>
<td>0.01</td>
<td>3.85</td>
</tr>
<tr>
<td>High Risk Takers</td>
<td>1.47</td>
<td>3.85</td>
</tr>
<tr>
<td>Maintain Power Distance</td>
<td>0.69</td>
<td>3.85</td>
</tr>
<tr>
<td>Minimize Power Distance</td>
<td>1.19</td>
<td>3.85</td>
</tr>
<tr>
<td>Masculinity</td>
<td>3.93</td>
<td>3.85</td>
</tr>
<tr>
<td>Femininity</td>
<td>1.93</td>
<td>3.85</td>
</tr>
</tbody>
</table>

It is seen from the above table that no significant differences were observed between the Male and the Female respondents in terms of Individualism vs. Collectivism items and the rest of the Hofstede Dimensions except the Masculinity vs. Femininity items. Male and Female respondents differ significantly for Masculinity items, with the female respondents show a slightly lower mean of 1.635 than their male counterparts with an item mean of 1.735. However, when we performed an overall test on the independent variable: Gender and the dependent variable: Hofstede Dimensions, we observed an F – value of 1.02 against the F – critical value of 3.84, which suggest that there is no variation in the organizational culture based on gender. When we performed the same test on the independent variable: Geographic Location and the dependent variable: Hofstede Dimensions, an F – value of 6.88 against the F – critical value of 2.42 suggests that organizations' culture differs significantly based on Geographic Location.

EDUCATIONAL IMPLICATIONS OF THE STUDY AND SUGGESTIONS FOR FUTURE WORK

Based on the results of this study, the below discussion presents the conclusion and implications for research in identifying the cultural dimensions of the Indians belonging to different geographical locations. It helps the organization build a strong and diverse work force with individuals from different locations and different cultural preferences. Based on the result, we can say that the organizational culture does not vary significantly based on gender. However, a significant difference in the organizational culture based on the geographic location shows that people may show a change in their operational perspective when the work location switched, which may lead to inefficient growth of the individual and the organization as a whole. Male and female respondents differed significantly on the masculinity item, with the female respondents showing a less item mean value. This suggests that there is still some gap as far as the core values of males and females are concerned, and women are confident and competitive, but of course, less than men. The most dominant item among the respondents is “Maintain Power Distance”
within the dimension “Power Distance,” with a mean of 2.11 (among male respondents). Furthermore, the least dominant is “Masculinity” within the “Masculinity vs Femininity” dimension, with a mean of 1.63 (among female respondents). The 25% of responses that we have received belong to the age group above 51 years. The reason behind the insignificant difference in perception of the respondents belonging from different geographical locations may be due to migration from one region to another for better employment opportunities and influence of western countries through internet exposure. This research also suggests that cultural preferences change with the change in age, qualification, gender and organizations can be greatly benefited by such information of the employees in planning or revising any such policies and programme for them. Students and researchers can further take up the research on the Hofstede Model to determine the individual preferences based on different dimensions.

In the future, the work can be progressed by analyzing the Hofstede Dimensions variations based on many other factors such as birthplace, years lived at a specific location, where an individual has been raised and lived, and identity with other cultures. A study can be undertaken on comparing the responses of urban and rural areas. Further, a comparison can be made on private sector and government sector of the country.

LIMITATIONS OF THE STUDY

- Due to covid-19 pandemic, we were unable to collect more data to strongly validate our study.
- The result of the study based on demographic regions may be inappropriate as today residents of the country are constantly moving from one to another for their career growth, better pay packages and so on.
- In our study we were unable to capture the responses and opinion of rural areas of the country and also North Eastern region of the country has been left out.
- In today’s scenario, there is not much difference in the perception based on gender.
- Respondents above the age of 50 years were unwilling to fill their responses.
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PARADIGM SHIFT TO EMBRACE JUSTICE FOR WOMEN: A NEED

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INTRODUCTION

In today’s world everybody is speaking about empowering women and gender equality. A paradigm shift is a mental movement away from a previously held concept or way of life. The first thing that springs to mind when considering dramatic paradigm shifts throughout history is gender stereotypes, notably female's gender roles. But the data and figure shown an entirely different state. Gender gaps will become more difficult to close unless India experiences a social revolution that prioritises equity. Families today look, feel, and live in different ways. Whenever it relates to achieving women's and girls' rights, families can be "make or break." There are areas in which women's and girls' legal rights are breached, their voices are silenced, and gender inequality reigns. In today's changing world, laws and policies must be based on the realities of how women live.

India ranks 112th out of 153 countries in a chart derived from World Economic Forum’s Global Gender Gap Index in 2020. For years, the country has been slipping in this area. When the World Economic Forum’s first gender gap report was published in 2006, India was ranked 98th, and several other nations have executed better in the years since. The index measures gender disparities in economic, political, educational, and health indicators. While India ranks 18th in terms of political representation and performs dismally in the other three dimensions. There is a drop in economic opportunity and participation, where it ranks 149th. However, the arc of progress is not straight, and even though, equal representation is missing, the results remain extremely poor in comparison to other countries. The country requires a paradigm shift.

The flagship report of UN Women, “Progress of the World's Women 2019–2020: Families in a Changing World,” assesses the reality of families in today’s broad context of economic, demographic, political, and social transformation. The report includes global, regional, and national data. It also examines key issues such as family law, employment, unpaid care work, violence against women, and family life. Instead of achieving equality, women constitute the majority of those living in poverty. Individual governments and multilateral institutions claiming to advance and protect human rights must make this change if females are to achieve peace, justice, and equality.

This International Women's Day, the Women's International League for Peace and Freedom (WILPF) calls on governments to take immediate action on two of the most pressing threats to women and girls in 2021: the deeply intemperate climate change and the escalating violence against females, the inextricably linked issues of economic injustice and environmental devastation.
For females all around, specifically those which are from minority and those living in conflict zones, the interconnected forces of economic injustice and environmental destruction mean high unemployment, an increase in unpaid care work, economic instability, deteriorating health, an inaccessibility to livelihoods and education, and an elevated risk of gender-based violent acts. The destructive financial and social practices and policies have disproportionately affected women. Yet government responses to socio-economic crises do not take sex into consideration — leaving females without adequate resources.

India has fallen four places to 112th in the world in regards to inequality gap, despite increasing disparities in women's health and survival and economic engagement — the two categories where the nation is currently rated in the bottom five. Although Iceland is the world's current foremost gender-neutral nation, India has dropped from 108th place last year to rank behind China (106th), Sri Lanka (102nd), Nepal (101st), Brazil (92nd), Indonesia (85th), and Bangladesh on the World Economic Forum's Gender Gap Report (50th). According to the WEF, economic prospects for women are very limited in India (35.4%) and Pakistan (32.7%).

LITERATURE REVIEW
At now the political environment of a political counter-movement to decrime the identification and structure of women abuse is marked by innumerable vitriolic attacks, with the feminist investigation, if not all, having insufficient comprehension of radical feminism. (Bumiller, 2008; Johnson & Dawson, 2011) Some major religions, scholars (e.g., Dutton, 2006), parents' rights organizations, and right voters, for example, associate feminism with disliking men or see it as a movement focused at empowering women over men in governmental, financial, & social realms (DeKeseredy & Schwartz, 1996). Some feminists may fall into one category or both; but many are women, and are unified in a strong commitment to generate research which fulfills the greatest disciplinary requirements and the elimination of gender inequity, homosexuality, racism and other forms of repression. As Renzetti (1993) points out, the objective for feminist researchers is "not to drive men out to get women, but rather to investigate gender issues. It is a challenging challenge to define gender equality.

A Marxist perspective of the sexes is the foundation of the gender paradigm. The book Toward a Feminist State Theory was started by MacKinnon (1989) who said that "sexuality is the task for marxism" (MacKinnon, 1989). All the interactions between the sexes are reduced to power and control and are seen as equivalent to the bourgeoisie's capacity to repress the proletariat. Rity Dhanoa (2008) reported in her essay "Violation of the Human Rights of Women in India" that despite the Indian Constitution provides equal rights, there are huge gaps in laws. Ritu Dhanoa (2008) In India, women have traditionally been seen as less than males. At various phases of life, she experiences various types of prejudice. As soon as the mother's womb becomes sexual, the discrimination begins - feticism and female infanticide determination testing. The discrimination occurs. In other cases, she is slain by her own people, with whom if she enters into the world, she must feel protected and safe. This shows the rejection of women's rights to life. More about the violence she has suffered throughout her life is child marriage, harassment of the child and the bride burning, rape, domestic abuse, etc.

Even in the 21st century free-market economy, gender wage gaps are one of the major concerns. The gender pay gap is regarded as a measure of the disparity in gains between men and ladies (Debra Leaker, 2008). According to the United Kingdom Off Ice Research Report, the gender pays gaps for full-time staff have been reduced since the Equal Pay Act was introduced in 1975. Gender pays gaps, however, continue to persist and vary according to conditions, such as firm size, kind of work and the number of dependent children.

These variables play a major role in the gender wage gap in the UK (Debra Leaker, 2008).

The legislation on Gender pays gaps came into force in the United Kingdom on 6 April 2017, according to a study published on BrightHR in 2019. Every year, any organization with more than 250 workers should disclose data on gender pay gaps. Young women's managers surpass their husbands in their careers, according to the data, showing a relationship between age and seniority. Consequently, the glass ceiling might be seen as "time bound" in the organizational hierarchy rather than "gender bound." It shows that young girls and women and elderly women's
careers are fundamental and that the glass ceiling impacts mainly senior positions (Simpson, Altman, 2000). Women's career studies in the first 20 years of the year have discovered that their families, society and workplaces impact women's careers.

Gender inequality is an obstacle to women's development in an organization's management hierarchy. There are just seven women CEOs on the 2018 FTSE 100 list, which indicates that only seven per cent of CEOs are women (Statista, 2019).

Another investigation by Piccinelli and Wilkinson on depression and gender differences sought to comprehend the link between concerns of mental wellbeing focusing on despair or gender. Critical examination of prior literature was the method used for the research. Research has shown that the risk of depressive illness in women is greater than in males with just a few exceptions. It starts in the middle of adolescence and remains in adulthood. Results showed that depressive illness differs from gender and has a true gender connection.

Mental health has an influence on psychological characteristics, early events, and the unpleasant experiences of social and cultural roles. Genetic and biochemical variables, on the other hand, have little or almost any influence on gender issues. Research showed that factors of different sexes in problems of mental health have yet to be adequately identified (Piccinelli, Wilkinson, 2018).

**NEED FOR THE STUDY**

Gender equality and empower women, as well as putting resources into the disposal of women and broadening their perspectives and possibilities in different sections of life. A greater financial activity, appreciation, acknowledging can lead to a higher status in gender roles, as well as a superior place throughout the home and society.

**METHODOLOGY**

The paper deals with the secondary data to enlighten the atrocities faced by the women in the normal routine of the lives. There are surveys already done and analysed through which the results are pretty evident that as a society there is dire need to empower women.
GENDER DISCRIMINATION

Discrimination is a societal and cultural occurrence in which someone is treated differently because of their social class, ethnicity, nationality, faith, or gender identity. Gender segregation in the workplace is caused by a variety of factors, including a gender disparity, a lack of career advancement for women, multiple roles with lower pay, gender stereotyping for higher management jobs in business organizations, sexual misconduct, and rising unemployment. More than half the population of women in the globe are frequently subjected to discrimination as a consequence of the phenomenon of gender, which is formed socially rather than biologically. Gender discrimination can result in a variety of psychological problems in women. Gender discrimination creates inequity in household socioeconomic conditions, affecting women's physical and mental health. Women's anxiety and depression can be exacerbated by socioeconomic inequalities, affecting both their personal and professional lives (Moss, 2002).

VIOLENCE AGAINST WOMEN

- Domestic violence and sexual assault is a serious public health concern as well as violation of gender equality.
- Based on WHO figures, approximately one-third (30%) of women worldwide have suffered either physical and/or sexual intimate partner violence or non-partner sexual violence in their lifetime. Almost one-third (27%) of women aged 15-49 years who were in a relationship report that their intimate partner has subjected them to some form of physical and/or sexual violence.

Figure 2
GBV is a sort of abuse in which a person is targeted because of their gender. It is a complicated phenomenon that combines sexual, physical, and mental abuse, as well as neglect or hardship. Gender-based violence is described by the CEDAW (Committee on the Elimination of Discrimination Against Women) as a type of violence that adversely impact women. Sexual violence, domestic violence, acid attacks, child marriages, women trafficking are all examples of gender-based violence. Domestic violence is exacerbated by economic reliance. During quarantine, when more women worked in informal occupations and were laid off, they were hit harder since they were financially male dominant counterparts. Fewer women than males work from home, finding it challenging for them to adjust to changing circumstances. This enhanced economic reliance not only increases their vulnerability to female violence, but it also tends to make it extremely difficult for them to just evade their attackers.

GBV also known as assault against girls and women, is a national crisis that impacts one out of every three women throughout her lifetime.

- Globally, 35% of women have suffered physical and/or sexual intimate relationship violence or semi sexual abuse.

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**PANDEMIC AND GENDER BASED VIOLENCE**

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**Figure 3**

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• Around the world, 7% of women have been sexually attacked by someone other than a boyfriend.
• An intimate partner is responsible for up to 38% of all female homicides worldwide.

Gender-based violence is characterized as it recognizes no social or economic borders and affects females from all socioeconomic classes: this problem must be tackled both for developed and emerging nations. Reduced gender-based violence necessitates a multi-pronged community-based strategy as well as ongoing involvement with different stakeholders. One of most successful effort addresses underlying violence risk factors, including social norms on gender roles and the admissibility of violence.

Figure 4

Figure 5


**ACID ATTACKS, SEXUAL ABUSE, WOMEN TRAFFICKING, DOMESTIC VIOLENCE**

Women are regarded as less compatible for higher managing roles in businesses with their male colleagues. It undermines women's motivation at lower levels and makes it twice more difficult for women to acquire the same job as males. Workplace sexual harassment—the main problem encountered by women at work is sexual harassment. It results in significant emotional anguish and either most sexual assaults go unreported, or they force women to resign from their jobs. Almost 23 percent of women aged 16 to 30 were sexually harassed at work, however, according to the Young Women's Trust, just 8 percent reported it. Reasons for not reporting include dread of sacrificing jobs, less time on the job and the lack of the right procedures to submit and resolve complaints about sexual harassment (Youngwomenstrust.org, 2018). 52 percent of young women reported being confronted, according to another poll. Problems of gender and sexual harassment in employment in terms of mental health. The same poll showed that 42% of young male’s
experience sexual bias according to their job mental illnesses. Women suffer discrimination against women in the workplace more than males with more significant implications.

This kind of brutality happens because of job insecurity, poverty, family problems, conflicts of ties, inadmissible offers, disagreements over money or land, rivalry between businesses, gender crime, rape etc. Ways of fighting: school-based programs, strong legal measures, anti-trafficking volunteers/supporters, appealing to the local police to report such events, dialling women's helpline numbers, employing women, giving equal pay to relieve poverty, and other ways of helping a person.

Figure 6

https://www.weforum.org/agenda/2020/11/violence-against-women-femicide-census/

**STRATEGY**

The World Bank is dedicated to combating female violence via funding, study and education, and engagement with stakeholders worldwide. Since after 2003, the World Bank work jointly with governments and partners to fund projects and educational tools targeted at mitigating and combating GBV. Over $300 million in development projects addressing GBV in World Bank Group (WBG)-financed operations are supported by the Bank, both as standalone ventures and as GBV constituents integrated into sector-specific ventures in sectors such as transportation education, social protection, and obligated displacement. Given the importance of the issue, tackling GBV in operational activities has indeed been recognized as a World Bank commitment, with important obligations defined under both IDA 17 and 18, as well as the “World Bank Group Gender Strategy”.

“WILPF (Women’s International League for Peace and Freedom)” asks that authorities take prompt measures to alleviate the far-reaching effects of economic inequality degradation on women, society, and the globe:
• Implement female gender redistributive social and economic restoration strategies in response to the outbreak.
• Regulate businesses urgently to minimize and guarantee responsibility for environmental harm and other human rights abuses.
• Ensure that ladies are adequately represented in decision-making settings, and aid in the expansion and stability of local females 's right organisations to also ensure that women's views and concerns are acknowledged and addressed.
• Listen, acknowledge and try to believe the survivors who were attacked and are victims of acid attacks, child marriage, women trafficking etc.
• Teach the future generation and be more vocal about any kind of violence. Don’t supress pain and be outspoken.
• Learn and teach the signs of abuse and make them learn self-defence. Take a stand.
• Awareness about women empowerment programmes and campaigns.
• Factors of empowering women include: (i) financial security (ii) making choices in the household and earning income (iii) public mobility (iv) asset ownership (vi) liberty from dominance and the ability to make independent decisions (vii) political consciousness and take part in different types of political action

CONCLUSION

Gender roles and any kind of violence are vital for both gender to address. Although these talks may still be unsettling, they play a vital role in shaping norms and customs of society. Women have been in a perilous situation in contemporary or historical periods. The cultural norm is that women are supposed to “do it all,” which includes maintaining a good “work-life” balance and being able to multitask on several activities. Gender assumptions in society are unreasonable. “Success” is defined by almost everything males do and offer. Women ought to know that they too are honoured and valued, leads to contented marriages and a contented workforce. Females should be granted the same rights as males in order to truly empower them (women). They must be strong, attentive, and awake at all times in order to grow and develop. Support women, stop violence against them and make strategies to combat this problem and be more vocal about the humiliation.
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THE UPSHOTS OF COVID-19 IN STUDENTS’ HEALTH,
EDUCATION AND SOCIAL LIFE: AN EMPIRICAL STUDY

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INTRODUCTION

The ‘Covid-19’ pandemic is a serious communal health disaster that caused an unprecedented economic emergency along with massive job losses in a meager span of several months. Government, business and education, contributed to the differential spread of the corona virus and its impacts by geography, ethnicity, race, gender, and social class. On 08 March 2020, the first three cases of ‘Covid-19’ were detected in Dhaka, Bangladesh (Islam et al., 2020). The rapid expansion of this pandemic made the people of Bangladesh mentally traumatized as it happened with the people of all other countries of the world. Psychologists opine that coronavirus infection has led to an increase in 'psychological disorientation' in humans. The world health organization (WHO) acknowledged ‘Covid-19’ as a pandemic, which is an epidemic of global scale, on 11 March 2020, several months after it had begun spreading in November 2019, in Wuhan, China. Bangladesh shut down the educational institutions on 18 March 2020 to save valuable lives. To continue the educational programs, concerned authorities initiated alternative methods for education ranging from physical learning to the online platform (Kapasia et al. 2020). According to UNESCO, 68.0% (1.2 billion) of the total enrolled learners in the world have been suffering due to the closure of education institutions for indefinite times in 144 countries including Bangladesh as of June 01, 2020. Since all the educational institutions in this country remain closed, a total of 36.0 million students including 17.0 million primary level students are now out of school (Uddin, 2020). Most countries in the world are using online education platforms to continue the education during this pandemic situation, but this platform is not adequately sufficient to meet up the needs of different education levels, because the socio-economic position, economic access to this technology and parental abilities and awareness of all people are not equal (Hasan and Bao, 2020). Odriozola-gonzalez et al. (2020), argued that travel constraints and the closure of educational institutions impact on education, mental health, and social life of students. The study explores and analyzes the impacts of ‘Covid-19’ on the students’. It ventures to underline how Covid-19 has been adversely affecting the education sector, students’ health, education and social life in Bangladesh. The research shows that there exists a gulf of discordance between the conditions of students' health, education and social life before and during the ‘Covid-19’ pandemic time. This research work attempts to assess the health, education and social life of students using different parameters.
LITERATURE REVIEW

In Germany, 2005 the Smart PLS was designed by the development team of Wende, Ring and Will of the Hamburg University. This PLS structural equation model measures the quality and evaluates the mutual relationship among the variables. Almusaddar et al. (2018) comprised of 252 retorts from Palestinian municipalities (middle management staff) collected through a designed questionnaire and used Partial Least Square (PLS) analysis method using the Smart-PLS 3.2.7 software. The study found that capability, knowledge, motivation, and satisfaction were the key paradigms for encouraging performance among municipalities’ employees in Palestine. Espinosa & Rakowska (2018) explored a multi-group analysis with using the Smart PLS3 software among public universities non-teaching employees in Spain and Poland. Silaparasetti et al. (2017) Smart PLS - Structural Equation Modeling (SEM) technique was used for 250 samples and found that commitment of management, communication, training and education plays a crucial role for stimulating the building workers for improving their awareness towards health and safety behavior. Islam et al. (2020) in their study used Smart PLS 3 path modeling for data analysis and find out a good relationship in financial and non-financial motivational factors with teachers’ job satisfaction. Gu, et al. (2019) used Smart PLS in their study and found that official advertising and promotion hospitals can develop patients ‘positive mentality and effectively enhance doctors' sustainable health engagement.

Covid-19 pandemic has created such an unmatched communal health crisis that the governments around the world have been compelled to apply emergency procedures for controlling the spread of the virus in the world (Saha et al. 2020). For this reason, education institutes are shutting down and countless institutions are temporarily pushing the maximum students out of school because of the Covid-19 pandemic (Emon et al. 2020). The subsequent lockdown has had a tremendous social and psychological effect on people exposed through phenomena like stress, acute panic attacks, anxiety and fear during physical separation seen in adults and children, fanatical behaviors, paranoia, depression and post-traumatic stress disorder (PTSD) in the long run (Ahmad and Murad, 2020). The long-hovering pandemic and the pungent positions of safety measures such as stay at home orders and lockdown of institutions have impacted negatively on higher education. Son et al. (2020) finds that it has bad impact on overall education, health and everyday routine also. The pandemic creates worry and fear for oneself and ordains restrictions on social activities and physical movement due to isolation and radical lifestyle changes. The recognized stress-beckoning factors are such as contamination worries, frustration, insufficient information, boredom, scarce supplies, financial and nonfinancial losses, and dishonor (Brooks et al. 2020). Uddin & Uddin (2021) initiate that social elements, educational elements and economic elements have an important effect on students’ mental health during the pandemic situation. People who have to undergo quarantine or isolation fall victim to mental stress, depression, anxiety, and adverse health outcomes that direct them to learn more about the disease (Satt N., 2020). Covid-19 pandemic situation generated questions about students’ tutorial things to do alongside monetary and social affairs concerning contamination (Al-Tammemi et al., 2020), Aqeel et al.
(2020) holds, closure of educational institutes has hindered the regular class activities and students have suffered from depression and anxiety. Khan and Swaminathan (2020) have found that Covid-19 adversely affected people’s lives, creating a void in face-to-face communication and interaction, inflicting changes in people’s social welfare and lifestyle, imposing a halt in education and academic activities, restricting movement and transportation and enhancing household welfare challenges (Mirian et al. 2021). Imai et al. (2020) observes that the consequent psychological effect of the implications of Covid-19 in the socio-political, economic, and cultural domains is not yet clear, although its effects have got to be widespread. The students acknowledged that they had injury of eyesight due to looking at phone and computer screens for a long time and developed fitness problems like headache, fatigue or fever. (Simamora, 2020). It is important to consider and make initiatives to develop a basic medical education module for all our students so that they understand themselves how to boost up their immune system (Daroedono et al. 2020). The Covid-19 pandemic has left a considerable amount of influence on the internet use and psycho-social well-being of the adolescent people (Fernandes et al. 2020). Contact restriction and isolation enforce a major change to the day-to-day routine along with mental and physical well-being of the adolescents and the children (Fegert et al., 2020). Xanidis & Brignell, (2016) concluded that ease of access to the internet and its excessive use contribute directly to the numerous fitness problems, the quality of sleep, sleep deprivation. In Bangladesh, increased domestic violence cases related to physical, verbal, financial, psychological, and sexual abuse have their root in the abusive internet culture. (Ali, 2020). Baloch (2021) suggests, this pathological problematic may lead to another pandemic of behavioral and mental illness.

The review of current literature initially makes a case for the applicability of the PLS model as a proper tool of statistical analysis in the present study and then explores the findings of the recent studies related to the impact of Covid-19 on people’s life, society, health and education. The review encapsulates the gloomy picture of a disastrous debacle of the habitual regularity of everyday life giving way to a more specifically educational institution-oriented study of the bite of the pandemic on students’ personal, social, educational and health lives in the context of Bangladesh with a view to developing viable suggestions to make way for the post-covid new normalcy. The review of literature done above leads to the formation of the following conceptual model for conducting the present study.

Figure 1: Conceptual Model of the Study
OBJECTIVES OF THE STUDY

From the assessment of current literature, the researchers have formulated the following focal objectives of the present study:

- To explore the consequences of the Covid-19 pandemic in students’ regular education.
- To identify the influences of the Covid-19 pandemic on students’ physical and mental health.
- To assess the impacts of the Covid-19 pandemic on students’ social life.

HYPOTHESES OF THE STUDY

H1: There is a noticeable impact of changed lifestyle during Covid-19 pandemic on students’ health, educational, and social life.

H2: There is a mention-worthy impact of physical and mental pressure in the Covid-19 pandemic on students’ health, educational, and social life.

H3: There is a significant impact of school closure in the Covid-19 pandemic period on students’ health, educational, and social life.

METHODOLOGY OF THE STUDY

A quantitative method was used to attain the objectives of this study. Primary data used in the study have been collected through a structured questionnaire. For collecting primary data a suitable questionnaire, keeping in mind the objectives of the study was designed. A Survey technique has been applied to obtain data from the respondents and a five-point Likert scale was
used. A simple random sampling method has been used to pull out the sample unit. The study has satisfied the Fishers’ (1998) guidelines in determining the minimum sample size. Researchers approached a total of 600 people across Bangladesh to have their valuable feedback and received 508 filled-in questionnaires from them. The overall response rate was 84.67 per cent. The Smart PLS 3.2.8 and Statistical Package for Social Science technique have been used for interpreting and analyzing the data. Some important statistical tools e.g., descriptive analysis, reliability and validity analysis, collinearity statistical analysis and hypothesis testing have been used to attain the objectives and draw the findings of this study.

Data Analysis and Interpretation
Table 1: Demographic Profile of the Respondents.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Subgroup</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>18-24 years</td>
<td>438</td>
<td>86.2</td>
</tr>
<tr>
<td></td>
<td>25-34 years</td>
<td>54</td>
<td>10.6</td>
</tr>
<tr>
<td></td>
<td>35-44 years</td>
<td>11</td>
<td>2.2</td>
</tr>
<tr>
<td></td>
<td>45 and older</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Sex</td>
<td>Male</td>
<td>304</td>
<td>59.8</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>204</td>
<td>40.2</td>
</tr>
<tr>
<td>Category of Respondents</td>
<td>Guardian</td>
<td>15</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>Teacher</td>
<td>18</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>Student</td>
<td>475</td>
<td>93.5</td>
</tr>
<tr>
<td>Education</td>
<td>Post Graduate</td>
<td>28</td>
<td>5.5</td>
</tr>
<tr>
<td></td>
<td>Graduate</td>
<td>74</td>
<td>14.6</td>
</tr>
<tr>
<td></td>
<td>Under Graduate</td>
<td>406</td>
<td>79.9</td>
</tr>
</tbody>
</table>

Source: Study Survey

The inputs of Table 1 reflect that most of the respondents were university and college students. Out of the total 406 respondents, 93.5% were students, 3.5% were teachers and only 3% were guardians. A majority of the respondents 86.2% belonged to the age group of 18 - 24 years, 10.6% respondents’ ages were between 25 - 34 years, 2.2% respondents were aged between 35 - 44 years and only 1% respondents fitted to the age group of 45 years and older. Most 59.8% of the total respondents were male and 40.2% were female. Most of the respondents 79.9% were undergraduate, while 14.6% were graduates and only 5.5% were postgraduate and PhD degree holders.
Table 2: $R^2$ value of smart PLS (partial least square) structural equation modelling

<table>
<thead>
<tr>
<th>Statement</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covid-19 impacts on students’ health, educational and social life</td>
<td>0.424</td>
<td>0.420</td>
</tr>
</tbody>
</table>

Source: Calculated by PLS

$R^2$ is a significant statistical tool for computing a model’s analytical ability (Shmueli & Koppius, 2011; Rigdon, 2012). The significant value of $R^2$ generally remains within 0 and 1, and if the $R^2$ value is higher, it indicates a better explanatory ability. The smart PLS technique has been used for calculating $R^2$ in this study. Table 2 displays the results of the $R^2$ value. Here, the $R^2$ value is 0.424 which indicates to the moderate explanatory power of the model.

Table 3: $F^2$ value of smart PLS (partial least square) structural equation modelling

<table>
<thead>
<tr>
<th>Construct</th>
<th>Students’ health, educational, and social life ($f^2$ square value)</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>School closure</td>
<td>0.0229</td>
<td>Small effect</td>
</tr>
<tr>
<td>Pressure in physical and mental health</td>
<td>0.2191</td>
<td>Medium effect</td>
</tr>
<tr>
<td>Changing lifestyle</td>
<td>0.0733</td>
<td>Small effect</td>
</tr>
</tbody>
</table>

Source: Calculated by PLS

The metric given above is the $f^2$ effect size which is a bit superfluous compared to the size of the path coefficients. When a dependent construct is explained in the structural model, if the rank order pertaining the constructs’ relevance differs during the comparison between the size of the path coefficients and the $f^2$ effect sizes, the researcher may report the $f^2$ effect size to explain the presence of, for instance, partial or full mediation (Nitzl et al., 2016). Customarily, values higher than 0.02, 0.15 and 0.35 respectively denote small, medium and large $f^2$ effect sizes (Cohen, 1988).

Table 4: The composite reliability (CR) and average variance extracted (AVE) construct

<table>
<thead>
<tr>
<th>Construct</th>
<th>Item</th>
<th>Loading</th>
<th>Composite Reliability</th>
<th>Average Variance Extracted (AVE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>School closure</td>
<td>EDU1</td>
<td>0.8565</td>
<td>0.8632</td>
<td>0.7594</td>
</tr>
<tr>
<td></td>
<td>EDU2</td>
<td>0.8861</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure in physical and mental health</td>
<td>HEL1</td>
<td>0.7207</td>
<td>0.7763</td>
<td>0.6364</td>
</tr>
<tr>
<td></td>
<td>HEL2</td>
<td>0.868</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students’ health, educational, and social life</td>
<td>SHESL1</td>
<td>0.8594</td>
<td>0.8259</td>
<td>0.7036</td>
</tr>
<tr>
<td></td>
<td>SHESL2</td>
<td>0.8259</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4 shows the result of the measurement model. Generally, factor loading on a construct was used to measure the indicator reliability of the study. High loadings indicate the associated indicators, which is captured by the construct (Hair et al., 2017). Factor loadings values more than 0.50 were considered to be very significant (Hair et al., 2010). In this study the factor loadings for all items exceeded the recommended value of 0.50 and it’s indicated suitable for analysis. Convergent validity measures the extent to which the items of a scale that are theoretically related and correlated. The composite reliability (CR) values of each construct are 0.70 or above and an average variance extracted (AVE) value of each construct is more than 0.50 are deemed to be acceptable. The table showed that all the composite reliability values are above 0.70 and it ranged 0.776 to 0.878. The average variance extracted values are above 0.50 and it ranges from 0.636 to 0.782. So, it’s concluded that the convergent validity has been established.

Table 5: The discriminant validity (Fornell-Larcker Criterion)

<table>
<thead>
<tr>
<th>Construct</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Changing lifestyle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Pressure in physical and mental health</td>
<td>0.885</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. School closure</td>
<td>0.524</td>
<td>0.798</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Students’ health, educational, and social life</td>
<td>0.300</td>
<td>0.347</td>
<td>0.871</td>
<td></td>
</tr>
</tbody>
</table>

Hair, et al., (2017) suggested that discriminant validity sets to confirm a reflective concept which has the most solid associations through its own indicators in PLS path modelling. Henseler, et al., (2015) recommend the HTMT principle to judge discriminant validity. In the present case, the HTMT calculation value is inferior to 0.90, which indicates that the discriminant validity has confirmed between two thoughtful constructs. The results obviously indicate that the discriminant validity is well established.
Table 6: The Collinearity Statistics (VIF)

<table>
<thead>
<tr>
<th>Statement</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOCL2</td>
<td>1.47</td>
</tr>
<tr>
<td>SOCL1</td>
<td>1.47</td>
</tr>
<tr>
<td>SHESL2</td>
<td>1.20</td>
</tr>
<tr>
<td>SHESL1</td>
<td>1.20</td>
</tr>
<tr>
<td>HEL2</td>
<td>1.099</td>
</tr>
<tr>
<td>HEL1</td>
<td>1.099</td>
</tr>
<tr>
<td>EDU2</td>
<td>1.379</td>
</tr>
<tr>
<td>EDU1</td>
<td>1.379</td>
</tr>
</tbody>
</table>

Source: Calculated by PLS

Lateral collinearity has been measured through collinearity statistics. VIF is in the structural equation model first phase. The VIF values measure the collinearity of variables. If the values are 3.3 or higher it specifies possible collinearity (Diamantopoulos & Siguaw, 2006). The VIF values of this type of collinearity are assessed and represented in the Table 5, all values indicate a lack of collinearity because each of the value are less than 3.3.

Figure 2: The Study Model with Smart PLS (partial least square) Structural Equation Modeling.

From figure 2 it is seen that all variables loading values are more than 0.70. It indicates that all variables are suitable for analysis.
Table 7: The Path Coefficients and T Statistics

<table>
<thead>
<tr>
<th>Hypothesized path</th>
<th>Standardized Beta</th>
<th>T Statistics</th>
<th>P Values</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Changing lifestyle → Covid-19 impacts on students’ health, educational and social life</td>
<td>0.244</td>
<td>4.174</td>
<td>0.000</td>
<td>Supported</td>
</tr>
<tr>
<td>H2: Pressure in physical and mental health → Covid-19 impacts on students’ health, educational and social life</td>
<td>0.429</td>
<td>7.215</td>
<td>0.000</td>
<td>Supported</td>
</tr>
<tr>
<td>H3: School closure → Covid-19 impacts on students’ health, educational and social life</td>
<td>0.124</td>
<td>2.71</td>
<td>0.003</td>
<td>Supported</td>
</tr>
</tbody>
</table>

Source: Calculated by PLS

As predicted, the findings in Table 7 and Figure 1 and 2 confirmed that in the Covid-19 pandemic situation, students ‘changing lifestyle’ impacts students’ health, educational and social life ($\beta = 0.244$, $T = 4.174$, $p < 0.000$). Hence, H1 is strongly supported. Again, the Covid-19 pandemic situation ‘physical and mental pressure’ impacts students’ health, educational and social life ($\beta = 0.429$, $T = 7.215$, $p < 0.000$). Hence, H2 is strongly supported. Finally, Covid-19 pandemic situation
‘school closure’ impacts students’ health, educational and social life (β= 0.124, T = 2.71, p< 0.003). Hence, H3 is strongly supported.

DISCUSSION

The present study aims at examining the effects of Covid-19 on students’ health, educational and social life. Basically, the objective was to explore the changes in students’ habits, behavior, and social activities during the government imposed lockdown to control spread of coronavirus. The forced shutdown of the regular patterns of social communication disrupted economic and social activities. People encountered disruptions in the normal rhythms of daily life due to inflicted social distancing, continued disturbances in work, social life, school and family relationships. Students encounter loss in schooling hours as well as social and psychological interactions since schools are designated as vital sources of health, social protection, nutrition and psychosocial support to the children and young adults (Uddin, 2020). Covid-19 pandemic creates harmful threats to economic security, physical safety and trust in educational institutes. These threats influence the affective and cognitive behavior of the students and eventually, students take resort to increased use of social media like Facebook, Messenger, WhatsApp, TikTok and many more to stay in touch with their peers’ contacts across different parts of the world. (Ellis, Dumas, & Forbes, 2020). Mamun et al. (2020); Błachnio and colleagues (2019) emphasis that addiction to social media is associated with unhappiness and worse mental satisfaction regardless of country of residence. Duan et al., 2020); Wong et al. (2020) suggest that increased gaming over the internet is one of the most important reasons for low mental and physical adjustment along with absence of sound sleep. Europe and the western countries’ adolescents are very much addicted to this to cope the pandemic incurred lockdown and their mental and physical distress of the pandemic is very high (Ko & Yen, 2020). Day by day, the unemployment rate is increasing because of the Covid-19 pandemic situation. Students are frustrated about their future jobs. Most of the organizations/enterprises are not performing their regular activities properly in a pandemic situation. For this reason, they are not being able to create job opportunities for the fresher.

CONCLUSION AND RECOMMENDATIONS

From the results of the hypotheses test, it is evident that there are significant impacts of the Covid-19 pandemic period on students’ health, education and social life. School closure has brought disruptions to education and impediments to the regular learning routine. Online educational services help continue the education but it is not as effective as school education imparted offline. Students are very much addicted to social media. Excessive addiction to social media and internet gaming is very harmful for students’ education and learning. It causes poor psychological conditioning and hinders quality sleep. From the researchers’ observations it is clearly visible that in the Covid-19 pandemic situation, students are living with their families and are being influenced by the poor mindsets of their society. They are being involved in social violence and social crime. Students feel frustrated about jobs and their future life. It is high time for the government to take fruitful initiatives to mitigate students’ educational lapses. The government needs to create
employment opportunities, provide incentives for students to recede undesirable impacts of covid-19 as well as to arrange counselling programs illuminating the merits and demerits of social media usage, internet obsession, and passion for gaming etc.

The conceivable limitation of this study is that the number of variables was inadequate for comprehensive research; it should have been larger. The constraints of limited time and meagre budget led to the delimitation of variable numbers. Yet the study has opened a new window of introspection for the longer term researchers to conduct more interesting and far more effective studies in the present context, with extended surveys based on larger number of variables and supported by ample time and adequate budget.
REFERENCES


The questionnaire for the present study was developed on the basis of the following variables:

<table>
<thead>
<tr>
<th>Category</th>
<th>Variable</th>
<th>Description</th>
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<tr>
<td>School closure disruptions education and learning</td>
<td>EDU1</td>
<td>School closure has brought disruptions to education</td>
</tr>
<tr>
<td></td>
<td>EDU2</td>
<td>School closure has hampered regular routine learning</td>
</tr>
<tr>
<td>Pressure in physical and mental health</td>
<td>HEL1</td>
<td>Covid-19 pandemic has invigorated social media addiction and create mental pressure</td>
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<tr>
<td></td>
<td>HEL2</td>
<td>Covid-19 pandemic has affected students’ physical and mental health</td>
</tr>
<tr>
<td>Changing lifestyle</td>
<td>SOCL1</td>
<td>Covid-19 pandemic has aggravated unemployment problem</td>
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<tr>
<td></td>
<td>SOCL2</td>
<td>Covid-19 pandemic has increased poverty levels decrease the living standard</td>
</tr>
<tr>
<td>Covid-19 impacts on students’ health, educational and social life</td>
<td>SHEL1</td>
<td>Covid-19 upshots on students’ health and educational life</td>
</tr>
<tr>
<td></td>
<td>SHESL2</td>
<td>Covid-19 upshots on students’ education and social life</td>
</tr>
</tbody>
</table>
REFLECTIONS OF YOUTH ON USAGE OF SOCIAL MEDIA

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INTRODUCTION

The world is changing at a speed no one imagined. Social media and mobile technologies have come along way in transforming the manner in which individuals interact and how information is shared.

Social media is a networking platform that provides a medium for people to connect and communicate with each other and for youth to explore the world. Prior to the emergence of social media, individuals communicated either by mail, telephone or by personal visits. Information travelled at a slower pace. While seeking information people would be required to make a trip to libraries.

Internet access and technology allow individuals to download information conveniently. Social media has become a crucial part of the modern society. It has made it feasible for individuals to choose what they read, and also to contribute to content. It has enormous benefits in professional and personal lives - the very fact that one can be empowered with so much knowledge by simply browsing the internet or be connected with so many avenues truly reflects its power. In fact, the adage, ‘it's a small world’ has become true. This revolution in the sphere of social media has resulted in a democratic movement that emphasizes journalism’s key factors such as: transparency, honesty, and also in giving a voice to the person who doesn’t have one. It has influenced our economy too. One important way is how social media has changed the way journalist source for news. It has helped them to gather more material on news stories.

Social media offers opportunities for learning and interacting. Students are exploring and experiencing the world not only by books and assignments; but also through social media. In present-day world; contacts, networks and communication are very important. Students who are accessing Facebook, Twitter and other such social networking sites to connect and share information have good contacts.

After ‘tech savvy’, ‘social media savvy’ has become parallel to today’s generation. About 2/3rd of Indian population online spends time on various social networking sites. Teens who are differently abled can communicate with others with similar problems. Social media also has adverse effects as it can be highly time consuming, distracting and could keep people glued to their phones or computers. Bullying or harassment which takes place on social media platforms could be a threat faced by the youth. The bottom line is that social media is a substantial part of our lives and there’s no way that we can keep it away from the youth.
NEED AND RATIONALE OF THE STUDY

A few of the major aspects that play a role in the admiration of social media are interaction, live chats, status updates, image- as well as video-sharing etc. On the other hand, customer’s responses, interaction and brand awareness is the reason because of which companies are using social media in India and across the globe. Therefore, multiple roles played by social media far off its core role of mere communicating information are leading to its popularity.

A sudden availability of smart phones and mobile internet has led to a spurt in the use of social media. All the business moves in India depend on social media to understand their consumer base, for brand recognition and interaction. Indians use social media to build virtual communities, groups and to interact. So, there is no doubt that Information and Technology, in particular rapidly increasing social media plays an important role in shaping the minds of customers towards products and brands. It is also used for connecting, entertainment and leisure by most Indians online. Every day, about 100 million Indians are occupied in social media, more than the population of Germany.

The usage of information technology in social media expands its popularity among the youth especially in students of universities.

Two things stand out from this definition:

1. Social media should integrate online communication, meaning the history of social media cannot begin before the invention and worldwide adoption of the internet; and

2. Social media is based on user-generated content. This is the reason why typical websites and blogs do not get included in the world of social media. Only specific people can post to these sites, and there are significant restrictions or limitations on the types of content that get uploaded.

Social media allows connecting with experts on different topics. It provides great assistance in research processes. It allows learners build social credibility. It offers enhanced learning management systems.

REFLECTION

Reflection is a way of seeing things in a new way; constructively examining and evaluating one’s own feelings, thoughts and actions. It brings about a change in behaviour, perception and attitude leading one to the path of progress. It is essentially a self-directed, self-motivated process guiding the individual to become aware of his/her capacities and qualities; in brief a more conscious living being. Reflection helps the learner realize their goals and mission in life and construct knowledge, making meaning out of the world. Reflection is about learning from experience, and developing your own thoughts from the experiences.
Reflection leads to understanding, which leads to informed decision-making and actions. Effectual reflection leads to a healthier understanding of societal problems and to the pursuit of better solutions.

Social media offers diverse benefits and opportunities, including access to information, widened social networks, social skills practice, identity expression, informal learning probabilities, interest-based groups, development and maintenance of friendships, and fun. Social media has been defined as an important part of a youngster’s life and a platform for examination, creative self-expression and identity generation.

The expanded use of social media by young people across the world has multiple dangers and consequences. They include privacy concerns such as sharing too much information, posting of untrue information about themselves or others, subjection to fraudsters and marketers, and addictions to internet or social media use that might adversely impact their social, emotional, and psychological well-being. Vulnerability to cyberbullying; giving others access to personal information; exposure to inappropriate content, sexting, influences of third-party advertising; sleep disturbance, resulting in low academic achievement are some other unfavourable outcomes of social media. It is clearly understood that social media could be a boon, a bane or both. Hence, there is an utmost need to study the reflections of youth on social media usage.

The importance of youth’s reflection can be seen as a way to improve society. Youth is the future citizen of the nation. Youth’s reflections can lead towards a building up of nation. Reflection is an important component in ones’ life. Through reflection, we can continue to learn from experience and grow as an individual and contribute to a peaceful society.

LITERATURE REVIEW

The literature review is cardinal in helping the researcher to conceptualize a research problem and prevent duplication of a study.


Through an extensive review of literature of studies conducted in India and abroad, it was observed that majority of the studies related to the impact of social media on the students and young people, were conducted in developed societies i.e., in western countries. There is easy accessibility of social networking sites and the services provided by social media are wide-reaching in these countries. On the contrary, there were very few studies that were conducted in the Indian context.

The segment of youth in the society is comparatively neglected in the studies. Hence, it is significant to understand the reflections of youth on usage of social media and it is also crucial to identify the age group of youth who are engaged in the utilization of social media for an extended period of time; due to which there are alterations in their mental and physical health.

Therefore, the researcher decided to do a study on reflections of youth on usage of social media.

STATEMENT OF THE PROBLEM

Reflections of Youth on Usage of Social Media

AIM OF STUDY

To study the reflections of youth on usage of social media: A Pilot Study.

OPERATIONAL DEFINITIONS

Some of the terms used in the study have been operationally defined to prevent the misinterpretation, as definition of terms establishes the frame of reference with which the present problem is approached.

Reflection

Reflection refers to the view points and beliefs of youth that are based on their own experiences.

Youth

It includes the undergraduates and postgraduates from various streams of science and technology, commerce and management, humanities and interdisciplinary studies in the age group of eighteen to twenty-five years.
Social Media

In the present study, the researcher dealt mainly with few well known applications of social media namely, Facebook, WhatsApp, YouTube, Instagram, Twitter etc.

RESEARCH QUESTION

What are the reflections of youth on usage of social media as revealed to the researcher in the pilot study?

- What is the extent of social media use by the youth of India?
- What are the various purposes for which they use social media?
- How do they access social media?
- What problems do they encounter while making use of social media?

The methodology and research design is needed as it facilitates the smooth sailing of the various research operations, thereby making the research as efficient as possible. The study was aimed at understanding the reflections of youth on usage of social media. Qualitative Method was employed as it develops concepts, insights and understandings from patterns in the data.

The researcher adopted Phenomenological Method in this study as the aim was to conduct an in-depth analysis of the experiences and perceptions and describe the structures of experiences. The researcher intended to examine the particular experiences of youth and explore not “what is” (reality) but what it is “perceived to be”. The objective was to conduct direct investigation and describe phenomena in natural settings. The researcher explored the essence of experiences of individuals with firsthand accounts and generated a theoretical account that allowed to observe the effect and significance of experiences that an individual may have undergone.

For the purpose of this study, the researcher conducted in-depth interviews. These allowed the researcher to get an in-depth understanding of how the youth view, interpret and perceive the usage of social media in the present day context. The researcher intended to use words as the basis for analyzing rather than numerical data. The objective of the researcher was to probe into the unexplored dimensions of the phenomenon. The researcher attempts to capture and discover meanings by immersing in the data and seeks to understand the reflections of youth on usage of social media.

The strategies used by the researcher in the present study include intuiting, bracketing, analyzing and describing. The researcher first acquired an understanding of reflections on usage of social media as described by the youth. Broad conclusions based on common understandings were drawn from the data on the views of the youth. Researcher’s own assumptions and preconceptions were explored and set aside so that they do not interfere with the information given by the participants. Hence, identification of recurring themes and interrelationships was carried out. Common themes were drawn. Description of the final themes was carried out. Critical elements of the phenomenon were revealed.
SAMPLE OF THE STUDY

In the present study, for conducting the in-depth interviews, the researcher included eight undergraduates and postgraduates from the various streams of science and technology, commerce and management, humanities and interdisciplinary studies in the age group of 18 to 25 years, from South Mumbai. Snowball or chain-referral sampling technique was used for selecting the sample for the study. It is a non-probability sampling technique. In this sampling technique, the existing subjects provide referrals to recruit samples for the research study.

TOOLS OF RESEARCH

For the purpose of this study, interview protocol was used to collect the data from the respondents. In addition, the researcher also prepared a personal data sheet for the purpose of data collection.

A brief description is as follows:

a) **Personal Data Sheet**: The students were required to give personal information such as their name, gender, age, stream, college name, address, contact number and e-mail id.

b) **Interview Protocol**: It contained open-ended questions. These questions were used to allow the respondents to express themselves without any given limit. The questions were based on the time spent on social media, the purposes, the benefits and drawbacks of usage of social media, strategies to combat the ill-effects, views of their friends, parents etc.

TECHNIQUES OF DATA ANALYSIS

Open-ended interview protocol was used to collect data which enabled the researcher to access the world of youth and to understand their world from the standpoint of a theory that is grounded in languages, behaviours, definitions, feelings and attitudes.

In the present study, the researcher first made a soft copy of all collected interviews in handwritten format. Transcripts of verbatim data in plain text were prepared with no indents. This means that the transcribed interviews were presented as it is. The main questions posed to all the informants appeared in all the transcripts. During analysis, the data were read in detail and codes were prepared on individual documents. The analysis of the codes was deeply done for the formation of categories. MS Word was used for storing and analyzing the data. Options like highlighting and tabulation arrangement of codes made the task possible. Finally, the themes were developed through categories.

Data analysis technique is represented in the diagram:

Data ———> Codes ———> Categories ———> Themes
SCOPE AND LIMITATIONS OF THE STUDY

This study dealt with undergraduates and postgraduates from the various streams of science and technology, commerce and management, humanities and interdisciplinary studies from South Mumbai only. The study was limited to the youth in the age group of 18 to 25 years; does not include any other colleges from other cities; was qualitative in nature and was conducted only through interviews.

SIGNIFICANCE OF THE RESEARCH

This study will be beneficial to allow the usage of social media constructively and create awareness among the youth so that the proper use of social media becomes a tool to educate, enlighten and coach their mindset level. This study will further complement the existing knowledge about usage of social media by the Indian youth. The findings of this paper will notify government and other stakeholders about trends in young people’s social media use and problems related with its use and suggest measures to facilitate its responsible and effective use.

This study may provide knowledge for the upcoming scholars, will be important with a view to get information pertaining to the young social media users and will provide information to them about positive outcomes of using social media and the negative effects of its excessive use on their physical as well as mental health. The study will also make them mindful about the extent of their social media usage.

- From the analysis of data, the following themes emerged:

THEME I. Social Media: A multidimensional digital ecosystem

1. Learning
2. Sharing
3. Interacting
4. Entertainment
5. Awareness and Activism
6. Marketing

THEME II. Repercussions of excessive social media usage

1. Time consumption
2. Impact on physical health: Affects posture, eyesight and may cause obesity
3. Impact on emotional and mental health: Causes anxiety, depression and may lead to addiction

THEME III. Threats of social media usage

1. Phishing
2. Identity theft
3. Cyberbullying
THEME IV. Remedial measures for building up a social media friendly society

1. Being mindful of one’s social media usage
2. Socializing
3. Consulting a counsellor
4. Taking a social media detox

DISCUSSION

Almost all the participants use WhatsApp, Facebook, YouTube, Instagram and Twitter. Other applications used were Spotify Netflix, Chrome, Snapchat, LinkedIn, GPay, Phonepe, Quora, Gmail, News applications, Games and Prime Video. Most participants used mobile phones to access social media and other devices used included were laptops, tablets, and computers. Most participants responded that they checked their devices to access social media very frequently, i.e. every 15 minutes on an average.

It was revealed that the respondents use social media for various purposes. Youth use social media to communicate, interact, stay in touch with friends and family, to stay aware of the happenings or latest trends around them, to learn about experiences of others, to post motivational or interesting stories, to promote businesses, acquire new skills and to find employment or a secondary sources of income for themselves or others, for entertainment, educational purposes, gathering information, sharing news and their own thoughts, development of their interests and finding people with common interests, gaining and sharing of knowledge, to explore and learn new things, meet new people, and use it as a place to voice their opinions, The youth view social media platforms as an equalizer and get a sense of belongingness. They portray themselves as positive, optimistic and vigilant citizens on social media.

The participants acknowledged threats related to social media such as phishing, identity theft, cyber bullying. They even associated social media usage with emotional and mental health issues like anxiety, depression, stress, loneliness, poor self-esteem and sleep quality, misinformation, twisting of facts for personal benefits addiction, distraction from daily tasks and even online bullying and harassment that causes trauma and stress. Technical threats of social media, as expressed by the participants include data security and privacy issues. It was revealed that long hours of social media usage can result in poor physical health. Some participants also noted that many a time other individuals may provide a unidimensional narrative on social media.

Regarding ways to tackle threats related to usage of social media, participants suggested being mindful of social media habits and setting time limits, switching off devices and taking time off from social media, monitoring time spent on social media, deletion of social media, sticking to verified sources, encryption of personal data, avoiding unnecessary sites and pages, keeping a close circle of online friends/acquaintances, being aware of the threats, spreading awareness and reaching out to a professional in extreme case of addiction.

The analysis revealed that the significance of social media grew manifolds during the pandemic and that social media is not only used to consume content but also to generate content. Overall, the youth consider social media to be an effective and powerful tool. It was revealed that the
respondents’ friends view social media as useful and in a positive light. All the respondents agreed that their friends and family use social media platforms for connecting to each other predominantly via Facebook, WhatsApp and Instagram.

Some the participants revealed that their parents understand the importance of social media. They understand the necessity to stay in touch with people during the pandemic. On the contrary, some respondents opined that their parents are of the view that usage of these platforms affects normal socialization and that social media is a waste of time. Concerns regarding social media addiction was also expressed. The participants also stated that everyone’s views are based on their experiences and may hold right or wrong for others.

CONCLUSION

The fundamental motive of conducting this research was to understand the reflections of youth on usage of social media. This study gives insightful information that social media or the social networking websites are imperative part of the existing times and also proclaims their hike among the youth. It is revealed that maximum number of youth today access social media. The youth uses this tool genuinely towards learning, sharing, interacting and building relationships, and also for awareness, activism and marketing. The youngsters perceive the social media platforms benefitting them academically and user friendly. For some the social media serves as a channel to express their honest opinions. For some social media is a great place to find employment and showcase their talents. The youngsters identify social media to be a powerful tool in marketing and advertising because of its global e-word of mouth or online word of mouth. The youth perceives social media as an integral part of their lives and has a great understanding of pros and cons of the social media usage reflecting that if used in a right proportion, it is a blessing to the mankind. The youth should take maximum care to establish a balance while making use of these platforms. The youth must concentrate on the dynamic use of social media for boosting their knowledge and schedule the time spent to keep them safe and healthy. The threats of excessive social media usage cannot be neglected and an effort can be made to minimize them. Hence, social media is akin to a double-edged sword.
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FRIENDZONE: A REMEDIAL SOCIAL MEDIA PLATFORM FOR SOCIAL ANXIETY DISORDER

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OBJECTIVE OF THE STUDY

The paper contributes a long term objective on reducing the Social Anxiety Disorder among people who uses social media platforms.

It focuses on introducing a secured (data as well as money transaction) application which helps for content creation, sharing/activities, rewarding and use of rewards and also the basic features such as photo and video sharing, followers, followings and messaging.

Identify business and normal profile using this application makes the user to improve their businesses world wide and networking faster.

RESEARCH METHODOLOGY

Researcher have been selected analytical research methodology for this study. To satisfy the objectives of the research, researcher needs to use secondary data from various publications by financial websites, government of India, journals, news papers, books and magazines etc.

I. INTRODUCTION: BLOCKCHAIN SOCIAL MEDIA

Social media use is becoming more commonplace. We love to view other’s pictures, entertainment activities, etc as well as we also love to share our feelings and fun with others.

I.A) SOCIAL MEDIA BENEFITS

Social networking sites may help those with social anxiety to more easily initiate and establish social connections. These sites may make it easier for some people with a social anxiety disorder to become involved in connecting with others, when transportation, isolation, or fear of leaving the house is an issue. Individuals may experience less anxiety when interacting online versus offline.

Social networking sites may provide an outlet for those with a social anxiety disorder to share how they are feeling. Platforms that allow for anonymous "blogging" may allow those with social anxiety to feel less alone and look at their situation in a more light-hearted way.
I.B) SOCIAL MEDIA FEARS AND ISSUES

Social media platforms have always been an entry point for establishing social communications for billions of people. They share their feelings through status posting, their traveling details along with pictures and videos, family data like relationships, their taste of interest in all things like foods, dresses, etc even though we are clear about the social media platforms have always been under the limelight due to its privacy and security concerns. Undoubtedly social media have changed the entire way of communication, but they have complete control over users’ data, and thus, they can control the mind, behavior, and other aspects of the data produced. Every social media platform tracks their user data, sharing their data by integrating with other social media platforms and e-commerce websites to gain profits through uploading their ads on user’s home pages. User privacy on social media platforms like Twitter, Whatsapp, Facebook, and others is a growing concern. This is because they are governed and monitored by centralized corporations. Having an account on these platforms means you are giving away your privacy rights in their hands. Moreover, content posted on such media platforms is also used frequently for business sales come profits, and others as well. Recent study shares that 50% of the accounts were hacked to a crypto-related scam. Many of the prominent and high-profile accounts were targeted on social media platforms. Apart from security and privacy, content producers on social media platforms are losing a significant amount of money due to the involvement of third-party intermediaries. All the issues can be rectified to a greater percentage by using blockchain social media.

II SOCIAL MEDIA USERS DISORDERS

Online social networking has caused profound changes in the way people communicate and interact. It is unclear, however, whether some of these changes may affect certain normal aspects of human behavior and cause psychiatric disorders. Several studies have indicated that the prolonged use of social networking sites (SNS) leads to different kinds of mental issues.

a) Depression

b) Several studies have made the connection between computer-mediated communication and signs and symptoms of depression, this issue remains controversial in current psychiatry research. There are many potential reasons why a social media user may tend to become depressed, as there are numerous factors that may lead an already depressed individual to start to use or increase their use of social networking sites. Increased time spent online is related to a decline in communication with family members, as well as the reduction of the Internet user’s social circle, which may further lead to increased feelings of depression and loneliness.
c) **Social Networking and self-Esteem**

All social networking platforms where self-presentation is the principal user activity cause or at least promote narcissistic behavior.

d) **Addiction**

Without any age discrimination, children, teenagers, adults have been using social networking sites and their prolonged usage leads to the addiction to these sites apart from them forget to do their daily routine. Everyone is beginning and ending their day with the first and last sight on their phone. Even there is a tendency to wake up in the middle of the night to see whether there are any messages from someone special. Finally, they are getting disturbed sleep overnight.

### III LITERATURE REVIEW

#### III.A FEARLESS USERS

Innovative people, sometimes hipster, and definitely set trends. With the internet as their blank canvas, People feel inspired to share their pioneering ideas with the world. They enjoy taking pictures, writing blogs, and utilizing any platform that allows them to express their thoughts. Ultimately, these people’s followers look to them for the latest trends. Marketers should recognize those people rising in fame, as they have the potential to become useful influencers.

People are known to be thoughtful individuals who enjoy helping others through social media. You can see them sharing YouTube tutorials, informative articles, and product reviews. Heck, sometimes they’re sharing articles to raise awareness and money. Although they may or may not have substantial influence, they are certainly capable of spreading the word. For your company that could be good or bad. Make sure to pay close attention to their concerns and respond to negative reviews.

People who are highly active on social media and check their feed several times a day. They put a great deal of importance on building and cultivating relationships. They tend to have a decent number of followers and engage with their followers by constantly liking and commenting on posts. They make up a large portion of social media users and a company must capture the attention of these users by intriguing photos and stories.

#### III.B USERS HAVING SOCIAL ANXIETY DISORDER

People with social anxiety disorder were more likely to engage in passive use of Facebook (looking at other people's profiles) and less likely to engage in content production (posting, commenting, etc.).

People who brood or engage in anxious rumination may be more at risk for their social anxiety becoming worse when they use Facebook passively. For example, if you sit at home all day reading
other people's Facebook posts, not posting anything of your own, not commenting on anyone else's status, your social anxiety may worsen.

People may be able to tell on social networking sites that you have social anxiety because of how you interact. Examples include being relatively inactive or withdrawn in your interactions.

In general, people with social anxiety are less likely to be users of Facebook but more likely to be users of "micro-blogging" sites such as Tumblr or Myspace. (This may be because it provides an outlet to share feelings in a non-threatening atmosphere.)

People with social anxiety do not appear to be more likely to post negative content on social networking sites. However, whether you post positive or negative materials relates to how others respond to you. Positive updates are related to increased "likes" while negative material results in lower positive feedback.

People with social anxiety may receive more positive supportive comments from social networking friends and fewer negative interactions. This social support may play a protective role if you have high levels of social anxiety, leading to greater feelings of well-being.

IV. BLOCKCHAIN AND BLOCKCHAIN SOCIAL MEDIA BENEFITS

Blockchain is a system of recording information in a way that makes it difficult or impossible to change, hack, or cheat the system. Blockchain-based social media platforms, ensure greater privacy and allow users’ right to express themselves freely. Distributed ledger technology enables users to make transactions privately as only the sender and recipient know about the transaction’s contents. Blockchain enables people to express their opinion without the risk of punishment.

We have seen that some of our pieces of information that we shared on our page were deleted permanently without the user’s consent. It is all because of centralized data storage on social media platforms. Whereas Blockchain uses decentralized social media platforms which allow users to save their content permanently, ensure that nobody would ever delete other’s content once they uploaded it to their page.

Blockchain-based social media platforms allow users to have complete control over where and how their content can be distributed. The distribution capability gives them the improved capacity to profit from the production of passive income.
V. METHODS AND FINDINGS

A blockchain refers to a distributed peer-to-peer or sender and recipient ledger that is secured by state-of-the-art cryptography. The reason why the blockchain technology is blowing up with regard to social media is the increased levels of personal data security and reduced invasive advertising. It enables users to make transactions privately as only the sender and recipient know about the transaction's contents. As a result, users have more privacy when using these networks and a data-breach becomes virtually impossible. The cherry on top is the fact that users actually get paid to share viral-worthy content as well!

Introducing a new social media application like a popular Social networking site says Facebook that supports blockchain technology.

FRIENDZONE

A community-driven social media platform. It allows its users to post photos and videos. Even though it works similarly to traditional social media platforms like Facebook, it is decentralized. It functions on a decentralized blockchain platform, and its users can earn rewards in exchange for their content in the form of its cryptocurrency.

a) Stories
- Find people with mutual interests.
- Share catching content and bright moments.
- Engage your audience, get subscribers and likes.
- Activate your Business profile to promote your posts.

Everyone is starting their small businesses through these kinds of social networking sites.

b) Business Accounts
- Account can be activated as a promo account.
- Earn online. They can monetize their account.
- Sell goods on your profile without switching to another platform.
- Buy products directly from your newsfeed.
- Rate the sellers you bought from and help others to shop smartly.

SETTINGS AND PRIVACY

1. Data Collection through creating an account: Specifically asking for Business or casual account
3. Settings: Payments and Rewards, Account privacy, Ad blocking, history clearance, Managing apps and website history.
VI. CONCLUSION

The fundamental problems we have been facing on traditional social media platforms are fake news, excessive trolling, censorship, and demonetization, respectively. No matter which way we look, the decentralized nature of Blockchain technology is the future of several fields, especially in social media, because of the fact there is no central organization or supervisor controlling value. The idea of monetizing your social identity and your content through block chain network won’t bombard you with targeted ads or mine your personal data for their own profit. Moreover “enjoy your privacy: not only offers greater privacy, but it also gives you the right to express yourself freely. You can make the transactions in a private way as only the recipient and sender are aware of the transaction and its contents.

To end up, we can say that these Blockchain-based social media platforms may transform the way we interact on the internet and automatically reduces the Social Anxiety Disorder. And for that Hyperledger fabric would be the blockchain platform that uses for the development of this application with Python as programming language.
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ASER – Annual Status of Education Report 2020
This publication contains a compendium of papers and other resources shared at the 8th Annual LSME International RRI Conference on 'Sustainable Development and Education', held online between 26th and 27th August 2021.

As a group, our research community recognises and values the importance of sharing our ideas for the benefit of our stakeholders, from early career researchers to seasoned professionals, as well as a wide and varied range of participants active in the network. In common with all of our earlier conferences, this event was intended to provide an open and inclusive platform for the dissemination of practical responses to challenges keenly felt in many contexts. The papers presented in this compendium represent a broad sample of the research projects and applied concepts shared and enjoyed during the conference.

We continue to pride ourselves in the quality and consistency of our editorial process, which involves close scrutiny of scholarly and theoretical contributions by a highly qualified and experienced panel of reviewers. Authors are given full credit for their work, regardless of their status or visibility as new or fully established researchers – a continuing and established principle of RRI which we seek to uphold.

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