Research Papers Presented at the 2016 LSME International Conference on Responsible Research in Education and Management and its Impact

Held from 13th to 15th of January 2016
at the Grange City Hotel
8-14 Cooper’s Row, London EC3N 2BQ, UK
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Foreword

The London School of Management Education (LSME) has initiated the organisation of a series of International Conferences to foster the sharing of knowledge in Education and other related disciplines. The first International Conference was held in January 2015 and its theme was Quality Management in Education. The second International Conference was held in January 2016 and its theme was Responsible Research in Management and Education and its Impact. The Conference Proceedings reports of both these Conferences have been published.

It has become increasingly clear that there is a groundswell of opinion building up towards the need to ensure that Responsible Research and Innovation (RRI) is practiced in all disciplines and industries. LSME has begun the push towards this RRI trend by ensuring that future research programmes adopt the concept of RRI. This is a concept for better alignment of research and innovation with the values, needs and expectations of key stakeholders particularly in those sectors where research is conducted. This process implies close cooperation between all the key players during research formulation and education, definition of research agendas, access to research results and the application of new knowledge in full compliance with gender and ethical considerations.

LSME supports this shift in the evolution of research for the simple reason that it is perceived as a system for inclusive and sustainable growth for its educational research agenda. The challenge for the interaction between educational research and society is the need to nurture and support the collaboration required to conduct RRI with and for society in a systemic and sustainable way. This requires open debates and learning from each other along the lines of RRI while adhering to the highest ethical standards.

LSME also jointly organised an International Conference on Managing Responsible Research in the Human Sciences and Information Management, with the Panjab University in Chandigarh, India. This Conference was held
on 12th to 13th August 2016, at Panjab University, Chandigarh. The next International Conference in London is being planned for April 2017 and the theme of this Conference is Responsible Research and Transformation in Education.

An important aspect of the Conferences organised in London is that all material emanating from these Conferences including the Abstracts, Digital Presentations and Publications are being made available on an Open Access basis via the LSME website. This first compilation of the Research Papers presented at the second International Conference is another landmark step towards the Open Access goals of LSME.

On behalf of LSME, I take the opportunity to thank the Peer Review Group comprising of Professor Stephen McKinney, Professor Mokgale Makgopa, Professor Suresh Kumar Sharma and Dr Peter Gray for their time and efforts in carrying out the Peer Review. Moreover, they also provided immense support and encouragement to all the authors.

Finally, I also thank the members of the Editorial Committee for their efforts in making this research publication a reality.

Dr Ravi Kumar

Director, LSME
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Introduction

The articles contained in this Publication are comprised of most of the Research Papers presented at the International Conference on Responsible Research in Education and Management and its Impact, which was held in London, UK, from 13th to 15th January, 2016. The Conference was organized by the London School of Management Education (LSME), UK. The Conference Proceedings Report is also available and its ISBN is 978-0-9931224-2-2.

This Conference follows on from the immensely successful inaugural International Conference on Quality Management in Education which was held in January 2015. By organising these Conferences, LSME provides a platform for the presentation, discussion and engagement with scholarly research as well as the dissemination of the research to local and international society.

Not all Research Papers that were presented at the Conference were published. This was because some presenters were preparing to submit their research for the award of tertiary degrees, and others had published their work elsewhere. Out of the twenty two Research Papers that were presented at the 2016 Conference, only 17 have been published in this Journal.

About this Publication

This Publication is the first of its kind being published by the London School of Management Education. The articles published in this book have been peer-reviewed. The Publication aims to significantly add to the body of knowledge in Responsible Research and Innovation in order to strengthen research capacities, educational capacities, knowledge management and sharing capacities. The Publication also aims to serve as a forum for experienced as well as early career educational and management practitioners in a wide range of disciplines to share their teaching and learning outcomes in a scholarly way.
This Publication will be produced annually on an Open Access basis. It will focus on publishing papers that are presented at the annual International Conferences held by LSME. Abstracts are initially reviewed and authors are then invited to present their full Research Papers. The 2016 International Conference was held over three days and comprised entirely of Plenary Sessions. A Question and Answer (Q&A) session moderated by a chairperson took place after each presentation by the author. The full Research Papers were then sent to the Peer Review Group (PRG) and each paper underwent a double blind peer review. Any re-submissions that were requested by the PRG were then vetted by the LSME Editorial Team to ensure that revisions were submitted in the manner requested by the original reviewers.

The general consensus of the PRG was that all the published papers had useful work which was of relevance to the Conference theme. The papers covered a wide range of topics, and rightly so, since the point of Responsible Research and Innovation was to bring different disciplines or sub-disciplines together. This publication has succeeded in providing a framework to enable researchers to highlight their impact and to help them work with stakeholders

As a service to the authors, the feedback from the PRG was channeled to them. The PRG noted that all papers had positive qualities though some, which were mainly from early career researchers, did not constitute as high-quality research papers. However, in order to encourage these authors, their papers have been published after revisions.

About the Conference

Approximately seventy four (74) delegates from nineteen (19) countries ranging from Africa, Europe, India, the Far East, the Middle East, the West Indies, and the USA attended the Conference. A total of forty (40) researchers responded to the call for Abstracts and after review, twenty seven (27) Abstracts were shortlisted. Due to various reasons, twenty two (22) researchers finally confirmed that they were able to present their papers to the Conference.
The other Conference highlights were speeches from Lord Navnit Dholakia, OBE PC DL, Mr Thomas Chan DL, Mr Hassan Shifau, and Mrs Margaret Lesuuda. Lord Dholakia’s message to the Conference is on page 18. There was also a Special Lecture by Mr Shantha Retnasingam from UNESCO, Paris, and Keynote Addresses by Professor Stephen McKinney and Dr Peter Gray. All of them were the Guests of Honour at the Conference. Two Guest Lectures were delivered by Dr Dan Exton and Mr Paul Loranger.


This Conference provided an opportunity for researchers to present their work in a new and exciting context. Academic conferences often situate research in the context of research themes and trends without always considering how research impacts on society or how to disseminate the research to a wider audience and consider the practical application of results to serve public good.

‘Responsible Research and its Impact’ will encourage researchers to identify, and to listen to, the users of research and to demonstrate how users’ needs have helped to shape the aims, design and implementation of research projects.

Responsible Research, especially in the human sciences, refers to research where positive impact on end users or society in general is considered to be as important as impact on research communities. This involves opening up all stages of the research process, and involving a wider range of actors in the direction, methods, ethics and reporting of research. It provides opportunities for under-represented groups to become engaged in research and to make the case for new research topics to be developed. It therefore, challenges academic norms and criteria for success in research. In the field of innovation or commercialisation of research, a responsible approach implies a more inclusive approach to the development of products, systems, services and policies. Such an approach will demonstrate that social justice, equity and sustainability have been considered in line with the needs of all relevant actors.
Objectives

1. Support the emerging movement towards Responsible Research.
2. Encourage researchers, especially research students and early career researchers, to develop new ways of thinking about dissemination, impact and social responsibility.
3. Provide examples of Responsible Research as an inspiration to others.

Outcomes

1. Recognition of participating researchers as ‘Responsible Researchers’.
2. A Conference Proceedings that reflects the importance of the inclusion of both ‘results’ and ‘impact’.
3. A network of researchers committed to Responsible Research and social impact.
4. Recognition of LSME as a leading institution in Responsible Research.

Impacts of the Proposed Activity

The areas of impact (or potential impact) of research could include impact on international policy, government or local government policy; impact on stakeholders and agencies, as well as practice in Schools, Further Education and Higher Education. This Conference is aimed at helping researchers and early career researchers to identify impact, or potential impact, and progress towards thinking more carefully about Responsible Research and articulating the practical applications and possibilities of research results.

Broader impacts that could be considered

• How well does the research activity advance discovery and understanding while promoting teaching, training, and learning?
• How well does the proposed research activity broaden the participation of under-represented groups (e.g., gender, ethnicity, disability, geographic, etc.)?
• To what extent will it enhance the infrastructure for research and education such as facilities, instrumentation, networks and partnerships?
• How will the results be disseminated broadly to enhance scientific and technological understanding?
• What may the benefits of the proposed activity be to society?

**About London School of Management Education (LSME)**

London School of Management Education is a progressive and innovative training organisation offering high quality and affordable education and with the primary aim of promoting development through skill enhancement programmes.

**Vision**

To play a leading role in the delivery of global educational 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**

To provide affordable and high quality training for aspiring and practising managers, health and social care professionals and educationalists, that is innovative and global in perspective.

**Values**

The School seeks to nurture and sustain a creative and supportive academic environment based upon an ethos of respect and transparency.

**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 is also focusing on becoming a research-led institution that strives to advance knowledge about education, policy, and other relevant fields in academia. It 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”.

The Authors and Presenters

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Dr Heather A. D. Mbaye  
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USA

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Dean, School of Human and Social Sciences, University of Venda, South Africa.

Professor Suresh Kumar Sharma  
Department of Statistics, Panjab University, India.
Messages

The Rt. Hon. Lord Navnit Dholakia, OBE PC DL, House of Lords, UK

MESSAGE TO READERS

London School of Management Education - International Conference on Responsible Research in Education and Management: Compilation of Papers, 2016.

This publication contains a compilation of the research papers presented at the International Conference on Responsible Research in Education and Management which was held in January 2016.

I was pleased to have been able to attend the Conference and to have been able to meet many of you who came from global institutions around the world. It was good to see all of you participating actively and sharing your experiences and knowledge. I am sure that it was a good opportunity for many of you to come together to interact with each other and gain some awareness of the opportunities to become involved in collaborative efforts that are taking place in many parts of the world.

I congratulate all of you who presented papers and these have now been published. I trust that many of these research papers will serve to build an expanding base for advancing educational research, practice and policy.

I once again congratulate the London School of Management Education, its Peer Review Group and the Editorial Board for finalising and publishing this compilation of research papers.

Lord Dholakia, OBE PC DL
There have now been two International conferences organized by the London School of Management Education. The papers we present in this publication were delivered at the second conference, Responsible Research in Management and Education, which was held in London on the 13th to the 15th of January 2016. Both of these conferences were highly notable for the success of the practical aspects of the conference: a highly efficient and enviable level of organization; balanced programmes; adherence to the programme and comfortable surroundings. Perhaps even more importantly, the conferences provided opportunities to create a community of scholars. By this I mean a group of academics from around the world that is brought together and who are willing to encounter each other and engage with each other in open and honest academic dialogue and exchange. A community of scholars that is created at a conference is a community that is characterised by an openness of mind and a willingness to challenge and to be challenged, but in a spirit of collegiality and generosity. This is not to deny or usurp the importance of critical questioning and informed discussion but to create an appropriate culture of academic responsibility tempered with reciprocal respect, genuine courtesy and geniality. This provides opportunities and space for researchers to learn from each other and reflect on the implications of the research findings that are presented.

We are delighted to present these papers that were delivered at the conference. The papers have been written by academics at different stages of their career trajectories and who come from a number of continents. The papers provide a valuable record of the variety of the research topics
that were discussed at the conference and, importantly, stimulus for further academic thinking and engagement. Our theme of Responsible Research in Management and Education was interpreted and exemplified in a number of ways and this added a richness to the discussions and stimulated much debate. I can only offer a few examples of this diversity. Dr Apotheker in his research has adopted the principles of RRI (Responsible Research and Innovation) and has applied these to the secondary classroom. Dr Baiju has researched the issue of multidimensional poverty in Kerala, India. The paper is focused on a particular context but addresses many of the key issues of the impact of poverty that can be discerned in different parts of the world: including lack of resources; inadequate supply of clean water and poor living conditions. Drs Agnihotri and Donde present a fascinating study of the relationship between gender and self-esteem of Muslim students in different types of schools. Dr Mbaye applies the concept of responsible research to the activities of academics.

It has been an honour to be involved in the planning and preparation and of these two conferences and to be part of the team that has prepared this compilation of papers. I take this opportunity to express my sincere and heartfelt thanks to the Conference Committee members, the Editorial Committee members and the Peer Review Team. I offer a very special thank you to Dr Ravi Kumar and Dr Sarita Parhi and the staff and students of the LSME. The LSME led by Drs Kumar and Parhi had the initial vision to organise the conferences and compile the papers. They have inspired us and energized us with their motivation, hard work, perseverance, and above all, graciousness.

**Professor Stephen McKinney**

*Leader of Creativity, Culture and Faith (Research and Teaching Group)*

*School of Education*

*University of Glasgow*

*UK*
The London School of Management Education (LSME) came up with the noble idea of bringing academics together through conferencing. This is an excellent idea that offers academics to engage in robust academic debates that benefits the academic sector. The conference draws scholars and academics around the globe and this provides a better platform in sharing knowledge, experience and expertise in education focussing on the entire world.

Early this year I attended the conference organised by the LSME under the theme: International Conference on Responsible Research in Education and Management and its Impact.” During this conference, divergent powerful papers were presented focussing on the theme of the conference. Papers presented were informative and educative about the various practices around the globe. Attending a conference of this magnitude, ends up making one to feel academically empowered and strengthened based on the knowledge accumulated.

I also had the opportunity of serving as a reviewer of some of the articles presented. Certainly, I learned a lot in terms of the various approaches followed and adopted as far as research is concerned. Some indeed are articles of a good standing in terms of the quality of work presented. However, some were found not making a significant contribution to the body of knowledge based on their scientific merits. They read more like a report of the proceedings without any scientific merits. It is imperative and advisable that for a presentation to make a contribution into the body of knowledge, scientific merits is a sine quanone.
In conclusion, I salute the idea of LSME organising conferences which each year comes up with a different theme for that particular conference. I find this to be a brilliant idea that encourages innovation, creativity and academic development on the part of the academics. Coming up with a different theme for each year plays a significant role in closing some gaps in the academia through research and publication. I would like to congratulate the college under the leadership of the Director, Dr Ravi Kumar and College Principal, Dr Sarita Parhi, not leaving out the entire staff, for their commitment and effort exerted with the intention of making sure that the goal is accomplished.

Professor Mokgale Albert Makgopa

Dean, School of Human and Social Sciences

University of Venda

South Africa
It was a great honour and privilege to have attended the International Conference on “Responsible Research in Education and Management and its Impact” which was held at the Grange City Hotel, London, in January 2016, and which was organised by LSME. Before proceeding any further, I would like to offer a word of thanks to our readers, our contributors, the conference committee members, the editorial board members, and the entire staff of LSME, for their support and encouragement throughout the conference and the process of putting together this publication. Due to the combined efforts of all, this publication has emerged with the aim to provide ‘quality responsible research techniques’ to be implemented by researchers in future.

It has also been an honour and privilege to have served as one of the Editorial Board Members of this publication. The conference was a grand success with research papers of very high quality. The overwhelming response to our call-for-papers has given a very positive indication of the popularity of this conference. This publication includes collections all peer reviewed research papers in the area of Responsible Research. The research papers carry strong emphasis on interdisciplinary issues, as we’re conscious that many complex problems in the field of responsible research require multi-disciplinary solutions.

I would like to give special mention of Dr Ravi Kumar, Director, and Dr Sarita Parhi, Principal, LSME for their vision and leadership. They are working...
very hard to make this conference an annual affair not only within the scope of the UK but also taking initiatives to hold such conferences in different countries in the years to come. One such step is that LSME is organising an ‘International Conference on Managing Responsible Research in the Human Sciences and Information Management’, in collaboration with Panjab University in the month of August 2016, in Chandigarh, India.

Once again, I thank all those who have contributed to this publication and I look forward to welcoming all of you to future conferences.

**Professor Suresh Kumar Sharma**

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Coordinator, Centre for Systems Biology and Bioinformatics
Panjab University, Chandigarh
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**Why we are focusing on ‘Responsible Research’**.

Has research ever been irresponsible? Of course it has, but the concept of Responsible Research is not about identifying examples and enforcing regulations. Rather, it is about creating collaborative and outward looking research cultures. It is about changing the governance of research, making it more open and democratic. It is about including more diverse groups in decision-making about research. It is about publishing results more widely, and using the possibilities of the Web to bring results to a wider audience. It is about questioning the purposes and consequences of research.

Some scientists are uncomfortable with this idea, feeling that it works against the possibility of ‘blue skies’ research, or research in esoteric areas that no one else understands. This is not the case. Responsible Research is not about closing off research possibilities, but rather, it opens them up to new forms of public engagement. Even in areas such as astronomy, and the study of distant galaxies, the involvement of ordinary people in ‘citizen science’ has moved research forward.

The papers in this compilation represent the start of a very long process in which all researchers, from school pupils to Nobel Prize-winners, will become attuned to the contexts in which research takes place, the need for research to benefit society and the advantages that accrue when previously excluded groups are actively involved in research. We are already seeing
examples of this, across the whole spectrum of research.

In the medical field, the concept of ‘patient involvement’ has already begun to revolutionise research in areas such as Parkinson’s disease. In education, we are beginning to consult pupils about their needs and opinions. In management, organisational learning theory stresses the need for ‘buy-in’ and ‘ownership’ of change processes. There is a convergence of opinion amongst research funders that we need more participation, more openness and more focus on impact.

When you read the papers in this compilation, read them with three simple questions in mind:

1. Why was this research carried out?
2. Who decided on its scope and content?
3. Who benefits from it?

These questions should not be thought of as criticism of individual authors, who have all done important research in their own contexts. Rather, it should lead to better research in future, and more dialogue between researchers and those connected to their research, directly or indirectly. I would especially encourage PhD and master’s thesis supervisors to reflect with their students on these questions and to build responsible research concepts into their work.

We know that future LSME conferences will continue to move responsible research forward. I would like to thank all the authors and contributors to the 2016 conference, for doing responsible research and for helping to change the world for the better.

Dr Peter Gray
European Projects Adviser
Programme for Teacher Education
Norwegian University of Science & Technology
Norway
RESEARCH PAPERS
Abstract

The article postulates on the challenges faced by the teaching and learning of folklore in South African schools and universities. In order to accomplish these goals, the researcher critically surveyed the historical development of the teaching of folklore in South African schools and universities before and after the first democratic elections in South Africa. The presentation further perused the role played by the South African policies that are supposed to protect and safeguard the Indigenous Languages, Arts and Culture of the previously sidelined and oppressed majority of South Africa. For the purpose of this article, the mixed mode approach was used. This is because both qualitative and quantitative research designs are crucial. The methodology used in the collection of data was case study. The article has sought to answer the question of how many universities offer a fully-fledged folklore programme at both undergraduate and post-graduate levels. In other words, is folklore taught as an independent programme or as an appendage of African Languages in the South African schools? Data was accumulated by using a mixed mode research design, whereby the policy statements of the African languages for schools under the Department of Basic Education (DBE) and the calendars of universities under the Department of Higher Education and Training (DHET) provided information on the programmes offered. Finally, findings and recommendation are provided about the topic under investigation. The
article provides recommendations and suggestions on how the status quo could be challenged as a way of promoting multilingualism in a multicultural and diversified South Africa. Recommendations of some new approaches, most of which are Afrocentric in nature, should be developed.

Introduction

This article seeks to investigate the teaching and learning of folklore in the South African Education System. The Education System of South Africa is differentiated into two ministries: namely, the Department of Basic Education (DBE) and the Department of Higher Education and Training (DHET). What is fascinating about both ministries is that folklore features the most. The prevalence of folklore is informed by the fact that a sub-division of folklore, known as oral folklore or traditional literature (Makgopa: 2008), was taught as an appendage within the African Language Departments in South Africa. The very same sub-section of folklore was taught at high schools and only examined at the end as a section within the literature paper. During the examination of this sub-section, emphasis was only of Dinonwane (Folktales). This was done at the expense of other sub-categories, such as physical folk life, social folk custom and performing folk Arts (Makgopa: 2008). No attempts were made to escalate the teaching of folklore to the lower levels of either secondary education or senior primary education.

Since the inception of the new democracy in 1994, the South African Education System has undergone several transformations, whereby various bands were introduced. The first education band to be introduced was Curriculum 2005, followed by the Outcomes-Based Education (OBE). These were followed by the following systems: National Curriculum Statement (NCS), Revised National Curriculum Statement (RNCS) and Curriculum and Assessment Policy Statement (CAPS). The different national statements put emphasis on various elements of learning such as Numeracy, Reading, African Languages, Mathematics, Science and Technology. The Ministry of Basic Education is the sole determiner of what is to be offered in basic
education, hence the introduction of the various education bands as stated above.

The Ministry of Higher Education and Training has twenty six institutions of higher learning. In terms of the South African Act in Higher Education, these ministries are independent and autonomous based on the University Act of each institution. The University Act protects the independence of each institution, whereby the University Council serves as the highest body which can veto some of the activities of each institution. The SENATE of each university serves as the highest academic body which approves what is to be offered at each institution pending final ratification by the university council. However, through the Council on Higher Education (CHE) and South African Qualification Authority (SAQA) and Higher Education Qualification Framework (HEQFW), the ministry provides oversight support on monitoring and evaluation on what the university intends offering.

**Aim of the Article**

This article seeks to make a significant contribution in the teaching and learning of folklore. The article will also propagate for the autonomy of folklore as an academic discipline, independent from other related disciplines, such as African Languages, Anthropology and Indigenous Knowledge Systems (IKS). In order for the aim to be accomplished, this researcher is of the opinion that the role of the two ministries: namely, DBE and DHET, should be thoroughly interrogated, as this will assist in mapping the way forward. This is because the two ministries are the sole custodians of teaching and learning. It is also the wish of the researcher to investigate the challenges that the IKS discipline is faced with as far as its teaching and learning is concerned. Once the challenges are established, it would be easier for this researcher to make some recommendations based on the findings. The recommendations would assist in charting the way forward as far as the status of the discipline is concerned.
Problem Statement

All research is characterised by a problem statement which justifies the purpose and significance of the study. The problem statement provides the groundwork of the researcher to contextualise the problem. Many researchers assert that the problem statement should be very clear, and easy to identify. Therefore, the five Ws; namely, who, what, where, when and why, play a vital role in identifying the problem. According to Lindstroom (2013) the five Ws are as follows, as formulated in the following questions:

» Who does the problem affect?
» What is the impact of the issue?
» When does it need to be fixed?
» Where is the issue occurring?
» Why is it important to fix the problem? (Chris Lindstroom 2013)

In this article, the problem statement is the challenges faced by folklore in both basic and higher education.

Research Questions

Research questions play a significant role in the search for knowledge and information. The research design also assists in terms of the type of research questions to be asked. The research questions approach to be adopted in this article is abbreviated as PICO. The acronym PICO shall be used to define the research question. The acronym PICO stands for the following:

P: Problem,
I: Intervention
C: Comparison
O: Outcome

(Kate Springett and Jackie Campbell: 2006)

The research design is a mixed mode study, whereby questions to be asked will include the principles of both qualitative and quantitative research
Research Design and Methodology

In any study or project, a particular research design needs to be followed for the purpose of data collection. There are three main approaches that are commonly used for data collection. These are qualitative, quantitative or mixed mode paradigm. Valerie Caracelli, in (Johnson et al 119) defines mixed mode paradigm as follows: A mixed method study is one that plan fully juxtaposes or combines methods of different types (qualitative and quantitative) to provide a more elaborated understanding of the phenomenon of interest (including its context) and, as well, to gain greater confidence in the conclusions generated by the evaluation study.

For the purpose of this article, the methodology adopted for data collection shall be case study. In attempting to define what case study method is, Bromley (1990), in Zucker (2009:01), defines case study as a “systematic inquiry into an event or a set of related events which aims to describe and explain the phenomenon of interest”.

Other scholars share these views on case study and define it as follows: Case study … is a way of organising social data so as to preserve the unitary character of the social object being studied (Goode & Hatt: 1952: 300).

Another view is that case studies are those research projects which attempt to explain holistically the dynamics of a certain historical period of a particular social unit (Stoecker 1991: 99).
The data used in this article will come largely from documentation, interviews, direct observation, and participant observation.

**Background Information**

This section will provide a brief overview of how folklore is being taught and treated in the entire globe. The global view of the teaching of folklore in the various continents will provide some insight to the academic status of the study and teaching of folklore. When conducting this short survey, focus will be on the various qualifications offered, the levels as well as how the curriculum offered at the different levels vary from one country to the other.

**The United States of America (USA)**

The study of folklore in the USA is differentiated into the following levels, including the universities offering the qualifications:

- Undergraduate level: 19 universities are offering the programme.
- Master’s level: 20 universities are offering the programme.
- Doctor of Philosophy: 16 universities are offering the programme.

The preceding statistics show a serious commitment by institutions of higher learning in the USA in the teaching and learning of folklore.

The curricula at these institutions use an interdisciplinary approach in the teaching and learning of folklore. At the undergraduate level, focus is on the study of folklore. However, other modules which are related to folklore are also offered, such as Language, Anthropology and Mythology. As far as the MA and PhD Programmes are concerned, the programmes are in the form of research, whereby the student is expected to write a dissertation or thesis respectively.

**India**

Unlike the USA, India has few institutions that offer folklore. Karnataka
Folklore University, in Haveri, is exclusively dedicated to the study and research on Folklore. This university was established in 2011. The focus of the university is on undergraduate studies.

**United Kingdom (UK)**

The United Kingdom (UK) has 91 universities offering 402 post-graduate qualifications in folklore studies. The qualifications include the following MA, MPhil, MLitt and PhD. At the post-graduate level, focus is on Culture and Gender Studies and Folklore.

**South Africa**

The Education sector in South Africa is differentiated into two ministries; namely, Basic Education and Higher Education. The Ministry of Basic Education is responsible for education from the primary level up to high school. Grade 12 is the highest level in high school and is considered as the bridge for accessing higher education. Under this ministry, the teaching of folklore prior to the new dispensation, involved the teaching of five literature books which focused on the following: poetry, novel, short story, drama and oral literature. However, after the first democratic elections in South Africa, the status quo changed. Poetry, the novel and drama became externally-examined genres, while the short story and oral literature continued to be examined internally and formed part of the School-Based Continuous Assessment. With the introduction of the new Curriculum Assessment Policy Statement (CAPS), the status quo changed once more. The following genres were prescribed: the novel/oral literature, poetry and drama. The choice between the novel and oral literature still marginalized the teaching and learning of oral literature. This situation still obtains today. This is despite the fact that oral literature is one of the four major categories of Folklore.

The South African higher education sector comprises of 26 Higher Education Institutions (HEIs). Since the sector comprises of three different categories of institutions of higher learning, the following differentiation is observed within the sector determined by the service offered by HEIs: University of
Technology, traditional universities and comprehensive universities. Based on this differentiation, it should be pointed out that not all the universities within the sector offer folklore. Universities of Technology focus on science and technology education. However, some universities belonging to the categories of traditional and comprehensive universities do offer folklore as an appendage within the African Languages Schools, Centres or Departments. Folklore is thus offered as part of the Bachelor of Arts qualification by the African Languages Departments, not as a stand-alone area. However, MAs and PhDs are offered in folklore, depending on the nature of the study conducted. A student may write either a dissertation or thesis on a topic that focuses on folklore. Initially, focus was on using structuralism as the theory of data collection. However, in most of the studies conducted recently, researchers are using the interdisciplinary approach. This approach propagates and supports an interdisciplinary view, cutting across all the disciplines. The University of Limpopo, one of the traditional universities in South Africa, attempted to develop a post-graduate qualification in Folklore at MA level. Admission to this programme is primarily based on intradisciplinarity.

**Indigenous Languages of South Africa Offered at Institutions of Higher Learning**

(https://www.google.co.za/map of South Africa)
Folklore and Indigenous Knowledge Systems

Definition of Folklore

This sub-section provides the views of different scholars regarding the concept folklore. In an attempt to give a concise definition of what folklore is, no other discipline is more concerned with linking us to the cultural heritage from the past than folklore; in addition, no other discipline is more concerned about revealing the interrelationships among different expressions than folklore; and no other discipline is more concerned about discovering what is human than folklore. It attempts to discover the basis of our common humanity, the imperatives of our human existence that puts folklore study at the very centre of humanistic study.

Folklore has four basic meanings. First, it denotes oral narration, rituals, crafts, and other forms of vernacular expressive culture. Second, folklore, or “folkloristics” refer to an academic discipline devoted to the study of such phenomena. Third, in everyday usage, folklore describes colourful folkloric phenomena linked to the music, tourist, and fashion industries. Fourth, like myth, folklore can mean falsehood (Barbo Klein 2001).

The British Columbia Folklore Society (BCFS) and African Folklore Society (AFS) in Makgopa (2008:51) differentiate the four parts of folklore as follows:

- Social Customs (marriage customs, funeral customs, birthing rites and household celebrations)
- Occupational folklore (blacksmithing, silver culture, navigation, architecture, farming)
- Oral literature (Folktales, Folksong, ballads, chants)
- Material culture (folk art, pottery, crafts, decorative ironwork)

Based on the preceding definitions, it is clear that folklore encompasses the four major categories of life, hence the notion that it cuts across all disciplines.
Definition of Indigenous Knowledge Systems (IKS)

IKS refers to local knowledge; that is knowledge that is unique to a given culture or society. It is the basis for local level decision-making in agriculture, health care, food preparation, education, natural resource management, and a host of other activities in rural communities (Warren: 1991).

IKS is the information base for a society, which facilitates communication and decision-making. Indigenous information systems are dynamic, and are continually influenced by internal creativity and experimentation as well as by contact with external systems (Flavier et al 1995).

From the definition presented, it is clear that both Folklore and IKS encompass the following: oral transmission, skills, experiences and insights of people and applied to maintain or improve livelihood.

Also based on the definition of the two concepts, the following questions may be asked:

» Is there any difference between folklore and IKS?
» Is IKS a modern concept that attempts to incorporate globalization?
» Will folklore survive or will it end up becoming a component of IKS?
» Are there any future prospects for folklore as an independent academic discipline in South Africa?

Findings

Folklore is not a standalone programme because it is an appendage within the African languages departments. However, attempts have been made to elevate the status of folklore to become an independent discipline. The formation of the Scallan Society and the establishment of the Southern African Folklore Society (SAFOS), together with the establishment of a peer reviewed and accredited journal, as per the South African Higher Education
parameters, titled, Southern African Journal for Folklore Studies, are some of the attempts towards this end.

The current debates on the status of folklore have aroused interest amongst a number of folklore scholars. The current debate is on the recognition of folklore as a discipline that cuts across a number of disciplines, such as humanities and social sciences, law, agriculture, science and engineering. Folklore scholars such as Masoga (2002), Mabelebele (2006), Mashige and Thosago (2005), Makgopa (2008) and Mapaya (2012) have raised some genuine concerns and debates on the marginalisation of folklore as a discipline, as well as the disregard of its interdisplinarity. These folklorists are moving away from the structural approach, in which the Eurocentric approach had an upper hand, something that was possibly influenced by Africa’s history and the legacy of colonization. Another notable proponent of the Afrocentric approach is Mapaya (2012).

The future of folklore in both the South African Basic Education and Higher Education and Training, as administered by the two ministries, looks bleak. The new dispensation in South Africa has brought about a turf among Indigenous Knowledge Systems (IKS), African Studies (AFS) and folklore. However, IKS and AFS are chosen and supported financially in preference to folklore. The Ministry of Science and Technology also provides more funding for IKS than folklore. This is further evidenced by the establishment of IKS centres at some institutions of higher learning. Although, academic bodies exist, such as the Southern African Folklore Society (SAFOS), these are just toothless watchdogs. Finally, the choice that learners have to make, of selecting either the novel or oral literature, makes folklore an endangered species in South Africa.

**Conclusion**

In conclusion, the effect of globalisation on folklore is a worrying concern as far as the status of the discipline is concerned. However, if the concept
was properly understood and interpreted, some of the current challenges facing South Africa as a nation could be addressed through folklore, such as moral decay. Sometimes the confusion is brought about by the use of concepts which are interchangeable, such as folklore, IKS and Oral Folklore. Consistency in the use of the concepts would promote a better understanding of the concepts and result in better application.

Some new approaches in the teaching and learning of folklore should be encouraged. Afrocentrism should be developed and encouraged, as it can be used to liberate African scholars from Eurocentric thinking. A Western instrument cannot be used to evaluate something that displays the elements and characteristics of African cultural beliefs and practices. The South African Constitution could be cited as an example whereby certain cultural practices and beliefs are assessed and evaluated through the Constitution. This supports the view that some of the inherent challenges in South Africa are historical in nature.

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Abstract

This paper presents the summary of a qualitative study developed during the first year of the European project ENGAGE. Our aim is to identify opportunities and challenges for equipping the next generation for responsible citizenship at scale. ENGAGE aims to spread the teaching and learning of Responsible Research and Innovation (RRI) by connecting cutting-edge Science and Technology educative materials (Sherborne et al, 2014). Our goal is to reach 12,000 teachers and 300,000 students in 14 countries within 3 years. For that, the ENGAGE Hub platform (EngagingScience.eu) combines Open Educational Resources (OER) for students, Open Online Courses (MOOC) in EdX platform and Community of Practice (CoP) for teachers. It was developed based on the CPD framework and RRI curriculum.

Introduction

This paper presents the summary of a qualitative study developed during the first year of the European project ENGAGE. Our investigation focuses on identifying opportunities and challenges for equipping the next generation for responsible citizenship at scale. ENGAGE aims to spread the teaching and learning of Responsible Research and Innovation (RRI) through educative
materials about socio-scientific dilemmas on cutting-edge Science and Technology (Sherborne et al, 2014). ENGAGE operates on a major scale, expecting to engage 300,000 students and their 12,000 science teachers across 11 countries: UK, Greece, Germany, France, Romania, Israel, Spain, Norway, Switzerland, Lithuania, and Cyprus. We will spread its legacy further, to other countries around the world.

For that, the ENGAGE Hub platform (EngagingScience.eu) combines Open Educational Resources (OER) for students, Open Online Courses (MOOC) in EdX platform and Community of Practice (CoP) for teachers (figure 1). Through a set of innovative strategies, ENGAGE Hub will shift the emphasis from transmitting a body of scientific knowledge towards applying science to real life issues that matter to students. Teachers can act as reflective practitioners (Shulman, 1986), by keeping their professional development pathway updated in the CoP through self-assessment and own online portfolio of OER that they have adapted. These features aim to build a sense of community by facilitating interaction between members and rewarding committed practitioners. The platform gathers evidence on OER usage and comments or reviews posted about achievements with OER or in the MOOC environment. Through accumulated interaction with the ENGAGE Hub they can also be recognised as experts within the CoP.

Figure 1. ENGAGE HUB (Okada, 2015).

The ENGAGE project focuses on making change easier with concrete
actions and more rewarding by generating visible interest, talking and thinking in students. Teachers will develop their understanding of RRI and how to teach RRI skills to students using authentic activities to simulate how citizens conduct inquiries based on three stages: Adopt, Adapt and Transform. These three phases indicate the degree to which science and society content is integrated with traditional science content for learning.

First, “Adopt phase” refers to minor change to embed little RRI content for motivational purposes to be applied in short lessons. ADOPT materials give practice using RRI skills in a short activity, but assume the skills and content have already been introduced.

Second, “Adapt phase” consists of significant changes through a casual infusion of more RRI content but with no explicit purpose. ADAPT materials are more ambitious. They allow teachers to teach RRI explicitly. For ADAPT we developed a novel two lesson sequence, centred around a game-like activity where students are introduced to the skill in a simple non-science content. They then reflect on this experience, before using the skill to solve the science dilemma.

Third, “Transform phase” comprises major changes based on a purposeful infusion giving even more time to RRI. We conceived the third step, called Transform, as an experiment in ‘Open Schooling’ for a small proportion of teachers who want to make RRI a major focus of a science topic. We provide the support to help them plan an issue-based project where they and their students can be mentored by practising scientists or science journalists, to learn RRI directly through experience.

ENGAGE also provides three sets of easy-to-use tools based on inquiry pedagogies for each phase. The Adopt materials help teachers to use dilemma and group discussion tools to make learning authentic. The Adapt sequences suggest problem-solving and conversation tools to build reasoning and understanding. The Transform open-ended projects indicate scenario-based learning and performance assessment tools to teach knowledge and skills.
RRI Inquiry Skills

The RRI curriculum in ENGAGE (Okada, 2016) is based on 4 areas and 10 RRI inquiry skills. It targets three components: students’ interest, science knowledge and inquiry skills. The four RRI areas are technology impact, big science, values thinking and science-media. The ten RRI inquiry skills are: devise questions, interrogate media, examine consequences, estimate risks, analyse patterns, draw conclusions, critique claims, justify opinions, use ethics and communicate ideas.

![Diagram of RRI curriculum](image)

Figure 2. RRI curriculum: four key areas and eight inquiry skills.

The four emerging areas provide relevant background for ENGAGE materials and learning activities:

1. Technology Impact: Technological and Scientific developments are the basis for a better future but must be planned carefully in order to maximise the benefits and reduce risks, particularly any harmful impact.
2. Big Science: Science is no longer an individual search for knowledge, but a collaborative and complex enterprise, done in teams. Funded largely by corporations and governments and politically determined, it favours practical applications and key areas in society. This means responsible innovations must address societal needs in accordance with societal values such as people, environment and economy.

3. Values thinking: In emerging science and technology, there are often uncertain issues with unclear implications that require socio-ethical thinking. Decisions should be made by taking into account the views and concerns of various perspectives and actors in societies.

4. Science-Media: Much of our scientific information is interpreted by the media, who may give an unbalanced, biased, black and white or sensationalised account. The source of information needs to be assessed in terms of its purpose, scientific credentials and currency. Critically read media reports about science, identify the data, evidence and values thinking used to back up the claims, as well as evaluate its strength in terms of repeatability and reproducibility.

Methodology

One of the strategies of the ENGAGE project to integrate RRI in science education, is its “materials strategy”. Teachers learn strategies by using topical issue-based materials for classroom experimentation (Sherborne et al, 2014). All the materials are OER, which can be downloaded after registration in the ENGAGE Hub.

This quanti-qualitative study first analyses the usage of RRI-support learning materials in 10 countries: Cyprus, France, Germany, Israel, Lithuania, Norway, Romania, Spain, Switzerland, UK (Bayram-Jacobs, 2015). Second, it presents teachers strategies for using RRI tools in their lessons and their achievements in the UK (Okada et al, 2015). All comments of the teachers on the ENGAGE Hub including the first MOOC in the UK were analysed.
In order to gather the opinions of the teachers about the ENGAGE RRI-support materials, the evaluation group developed a survey and piloted with 27 randomly selected teachers from 10 countries. After the pilot study, the revised version of the survey was replied by 197 teachers who used at least one ENGAGE material.

The quantitative analysis was developed through SPSS programme and the qualitative data related to comments of the ENGAGE Hub and MOOC were analysed using Lite Map application tool.

**Findings**

Data from the survey showed that there are 20 countries using ENGAGE materials. 77% of the ENGAGE users are female, 59% are older than 40 years older and 38% are Biology teachers. The largest group which refers to 41% has more than 16 years of science teaching experience and used more than 1 material.

The most used material was “Ban Cola” (f=59) which invites students to “critique claims” and “examine if there is enough evidence for causal links between sugar consumption, obesity and disease”. The second most popular material was “Ebola” (f=57) by which students “estimate risks”, “discuss the dilemma if would you try a new Ebola vaccine”, “What are the risks and benefits?”, “Is it a risk worth taking?” and “Three Parents” (f=43) which aims that “students learn how it can help women with a serious inherited condition to have a healthy baby and why it is deemed so controversial” and “they use ethical arguments to decide whether they would recommend it to help a couple in need”.

The RRI-support materials of the ENGAGE project were used mostly at general secondary schools (80%), with 16 year old students (23%), for example, “Ebola” (f=9) and “Three Parents” (f=7). “Ban Cola” was used mostly with 14 year-olds (f=9). Although the materials were developed for
11-16 year-olds, none of the materials were used with 11 and 12 year old students.

The teachers used the ENGAGE materials mainly because “the dilemma was interesting for the students” (33%) and “It was related to school curriculum” (27%). Therefore, the teachers like to attract the attention of students by using interesting materials. However, they do not want to go out of their curriculum.

In general, the teachers have found the materials at great extent helpful in the teaching process (f=169). They think that the students found the content of the materials at high extent (f=216) and at great extent (f=80) interesting. The content of the material “Ban Cola” was found to be the most interesting one for the students (f=26). Moreover, they reported that the ENGAGE materials on the “adequate” level difficult (f=231) for the students.

There are several factors influencing the acceptance of the innovative practices by teachers. How much time and effort do they need to invest are the two important factors of teachers’ decision for using or not using these practices (Guskey, 1988). The teachers who used the ENGAGE materials like to try new, innovative and interesting materials without spending extra time to prepare them, which supports Guskey’s point. For example a teacher expressed the reason of using the ENGAGE materials:

“to change the ‘diet’ of learning strategies without having to spend a lot of time producing them myself!” (More than 20 years’ experience, school leadership, UK).

On one hand, teachers appreciated to have ready to use and complete materials. On the other hand, they liked to adjust and edit it according to their aims and objectives of the lesson. For example:

“It was a different program than what we usually work with. Very nice with a complete package of slides and exercises.” (Science teacher, Norway).
“Very impressed and thank you for leaving it editable.” (Biology teacher, UK).

The great majority (92%) of the teachers mentioned that they would like to use the materials again. They think that by using the ENGAGE materials, the skill “Come to an informed opinion on a life, community or society decision, taking into account scientific and other perspectives” of the students improved at high extent (f=368).

Data from this study show that ENGAGE materials help teachers in various aspects; introducing the subject in an interesting way, improving certain skills of the students, enriching the way to teach science, embedding it in the curriculum and engaging students in science lessons. However, it sometimes requires preparation time, some teachers would like to make changes, add some more content and the materials needs to fit the curriculum in different countries. For example:

“It is difficult to find time in the school day for the use of materials.” (Earth Sciences, Germany).

“Designing courses that meet the needs of our curriculum to be used more by teachers.” (Physics teacher, Cyprus)

The ENGAGE materials aim to improve certain RRI skills of students (Sherborne et al, 2014). Mainly:

• Be able to analyse issues, apply knowledge, come to reasoned opinions, express these clearly, and consider possible actions,
• Critically evaluate the strength of the evidence for a claim about emerging science/technology, from a media report,
• Argue for his/her opinion on a socio-scientific issue related to their lives.

Teachers mentioned that by using the ENGAGE materials, the students improved the above mentioned skills at high extent. Therefore, the RRI-support ENGAGE materials helped learners improve the RRI skills which are aimed in the ENGAGE project. These teachers asked for more materials.
in their teaching subject. For example: physics (UK), health (Spain) and genetics (Lithuania).

Besides, the experiences of the teachers about using the Engage materials, we also asked them about their own teaching strategies. Although 57% of the teachers reported that they have used the inquiry-based teaching strategies before, a significant amount (43%) mentioned that they did not use it before. Since the Engage and also many other European projects which work for RRI in science education use inquiry-based learning strategies (Bayram-Jacobs, 2015), this is an important point that needs to be considered while designing inquiry-based RRI materials and tools.

Some teachers mentioned that they give a problem to the students and lead them to go through the inquiry process to solve it. For example:

“Posing a problem to students through a press release or a movie and asking a little research and the development of a monograph.” (Biology teacher, Spain).

“With teamwork, broke part in groups and students were invited through discussion to resolve related topic of the course in the worksheet.” (Physics teacher, Cyprus).

Teachers also mentioned that they use inquiry-based teaching in laboratory, during experimentation. For example:

“Through laboratory experiments.” (Chemistry teacher, Romania).

“Practical work. Short messages in research work. Laboratory work in nature and in laboratories.” (Biology teacher, Lithuania).

“Investigation of properties in Laboratory.” (Chemistry teacher, Romania).

Some teachers use this approach with 5E and Problem-based learning (PBL). For example:

“5E and PBL.” (Science teacher, Norway & Biology teacher, UK).
The teachers also reported some specific examples of using inquiry-based teaching for different lessons. For example:

“In mathematics, to prove rules and / formulas arrive at rules / find context on their own.” (Maths teacher, Norway).

“By making use of problems to launch and approach the students on topics such as photosynthesis, infectious agent or digestive system.” (Biology teacher, Switzerland).

Most of the teachers (82%) mentioned that they use discussion during their lessons. So, the respondents of our survey use discussion more than inquiry during their teaching. When we ask them how they use it, they have given the following examples.

“I use discussion in the new learning moment of the lesson when I’m asking about their knowledge or opinion related by the new theme.” (Romania, Physics).

“The students work in groups and they discuss the problem. After that we discuss in the class how the problem has been solved. Or at the beginning of the lesson we discuss the problem and the ways it can be solved.” (Lithuania, Physics).

“Mainly through question and answer sessions, use of ‘What if....?’ Questions.” (UK, Science).

“My teaching is largely dialogue-based, and allows much cooperation and discussions.” (Norway, Science).

“Using the rules of the debate ... to address the complexity and allow students to form opinions. using the rules of the debate ....” (Switzerland, Biology).

“To bring the issue, directing students to perform a little research and gathering information and then discuss the issue.” (Israel, Chemistry).

Evidence from qualitative data shows that although teachers are open to try and use RRI-support materials, it is important to design content that can fit to the curriculum in different countries. Besides, the materials should be easy-to-use, do not need much preparation time and is related to diverse
topics and subjects of science.

Qualitative analysis from teacher’s comments in the ENGAGE Hub and MOOC highlights various students’ achievements: applying their knowledge to increasing their understanding, willingness to spend more time studying the topics, ability to elaborate persuasive arguments, applying numeracy, self-regulated learning, questioning other groups’ beliefs and the level of concerns, practicing various inquiry skills to make their own conclusions or decisions. The ten RRI skills of the ENGAGE framework are described below with an example from teacher’s comments:

1. Devise Questions: Define a clear scientific question which investigates cause or correlation relationships between different factors. “The car wars project that has started a few weeks ago really inspired students to create more questions in science. It engaged them and motivated them to learn” (Car wars) 19/06/2015.

2. Interrogate Sources: being able to question different sources and assess their validity and trustworthiness by judging the reliability of the source, check for bias and evaluate evidence for claim. “Students commented that they could have been reading different stories! At this point I (teacher) explained that they were the same “issue” but in different newspapers”. OER (Giant Virus) 27/06/2014.

3. Examine Consequences: being able to evaluate the merit of a solution or competing solutions to a real-world problem, based on scientific ideas, principles and empirical evidence, by identifying and reflecting on consequences and/or logical arguments regarding relevant economic, societal, and environmental considerations. “Students were stimulated to look at all the issues surrounding the dangers of this virus and vaccination pros and cons”. OER (Ebola) 31/10/2014.

4. Estimate Risks: being able to measure risks and benefits by assessing its probability, weighing up and combining its probability and the scale of its impact as well as balancing against the benefits
to the individuals or groups affected. “A lot of pupils knew benefits but not the risks of scientific issues, e.g. they were able to explain what a tanning bed is, but not the danger linked to it. The ENGAGE activity helped them be aware of the risks”. OER (Ban-the-Beds) 14/09/2014.

5. Analyse Patterns: being able to interpret observations and data in a variety of forms to identify patterns and trends by making inferences and drawing conclusions. “Students used real data suggested in the materials to bring questions, analyse and interpret OER” (Solar roadways) 17/12/2014.

6. Draw Conclusions: Deciding whether the claim made by a piece of research is supported by sufficient data.“Twenty six secondary pupils developed three urban inquiries on: Energy Consumption (Appliance Science), Electric Cars (car Wars) and Solar panels (Solar Roadways). They used ENGAGE and two platforms weSPOT and nQuire-it for creating their investigations and interacting with researchers, science educators, non-academic experts and parents. First, learners created scientific questions and collected data in weSPOT. Second, they discussed data to facilitate their analysis in nQuire-it. Third, arguments were co-constructed to support their evidence-based reports in Litemap tool. Three posters were co-authored showing their conclusions by participants and presented at the ICTPI 2015 International Conference on Technology Policy and Innovation. MOOC UK01” 09/07/2015.

7. Justify Opinions: being able to synthesise scientific knowledge, implications, and value perspectives into an informed opinion by describing key arguments supported by empirical evidence and scientific reasoning and identifying values based thinking, to support or refute a viewpoint on an issue or a solution to a problem. “Students were able to integrate science knowledge and inquiry procedure, for instance, to elaborate the menu for the canteen by
describing sourcing the insects with detailed information.” OER (Eat Insects) 17/07/2015.

8. Critique Claims: being able to check strength (quality accuracy and sufficiency) of evidence provided and identify lack of clarity of justification, by commenting on whether the reasoning follows logically from the evidence, and provides strong support to the claim. “Students questioned other groups’ beliefs and the level of concerns.” OER(Giant Virus)” 27/06/2014 JT1.

9. Use Ethics: Being able to understand and use three kinds of ethical thinking: utilitarianism, rights and duties, virtues in order to make informed decisions and explain why different people may have different viewpoints about an issue.“The series of lessons offered an extra dimension for the students to hook their knowledge and understanding scientific issues, for example: genetic inheritance onto, the issues/dilemmas of taking a test, the ignorance of some and possible prejudice of others”. OER (Take test) 21/04/2014.

10. Communicate Ideas: Being able to effectively describe opinions and accomplishments with text and illustrations, both orally and in writing, in a range of formats, using the major features of scientific writing and speaking.“Students questioned other groups’ beliefs and the level of concerns OER” (Giant Virus) 27/06/2014.

Conclusion
The evidence from this study revealed challenges and opportunities for equipping teachers through the European Project ENGAGE. This work based on the RRI principles (Owen, 2015; von Schomberg, 2013) highlighted how important it is to engage participants - researchers, teachers and students - to contribute to the process of innovating science education by considering their needs and expectations of society. This reflexive and participatory process allows improvements and innovation by reaching various components of a RRI inquiry ecosystem: materials for students and pedagogical tools, CPD
workshops and online course for teachers. It is important to stress that the results of the current study are limited to our participants’ experiences and opinions related to the first year of the ENGAGE project.

Our materials attracted mostly experienced teachers. Although it is very positive that we could motivate this group of teachers to use innovative educational materials, we are aware that there is a need to develop strategies to motivate young teachers also.

We agree that the materials should fit the science curriculum. For this reason, we have done a curriculum comparison study with the partner countries of the Engage project. Although it is difficult to make the materials to fit with different curricula in different countries, it is clear that this is crucial to make them usable in different education systems.

In general, most of the teachers like to use innovative educational materials which have interesting topics for students. The teachers of this study are open to use such innovative educational materials if they do not have to spend extra time for preparation. They appreciate the use of the complete pack of the ready materials.

ENGAGE HUB might contribute to innovative teaching and learning particularly when all social actors involved in the process of science education can act as reflective practitioners. This will be the focus of our next studies.

From our findings we can also point out the importance of professional learning opportunities for the teachers who do not use inquiry-based teaching, discussion or dilemma.

The questions this study raises are “How to ensure the sustainability of these resources and opportunities for teachers?” and “how to ensure that teachers will change their teaching practice to teach RRI skills?”
Acknowledgments

The authors are grateful to various collaborators of the ENGAGE team who helped us disseminate the questionnaire. The research leading to these results has received funding from the European Community’s Seventh Framework Programme FP7/2007-2013 under grant agreement No [612269].

References


MULTIDIMENSIONAL POVERTY –
A MICRO LEVEL STUDY IN KERALA, INDIA

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Abstract

This paper studies the residential variation in the incidence of multidimensional poverty in rural and urban areas of Kasaragod District, Kerala, India. This is a micro level study conducted in Kasaragod district of Kerala, India. Multidimensional Poverty Index (MPI) is the main tool used in this study. MPI, is calculated through the formula or methodology developed by OPHI for UNDP’s 2011 HDR. (Alkaire & Santos, 2010) The study areas are selected through simple random method from one Municipality out of three Municipalities and one Grama Panchayath out of thirty-eight Grama Panchayaths. Kanhangad Municipality represents urban Kasaragod and Pilicode Grama Panchayath represents rural Kasaragod. Systematic sampling methods are used in the selection of sample households, 50 from each rural and urban area. The study elicits the disparity in the estimated values of the 10 indicators of the three broad composite indices of MPI among the households. The present study has also identified the prevailing deprivations in urban and rural segment, social groups and gender dimension. Indices wise data and the social group wise data analyses allows ramifications in policy making, decentralised governance and local development. The study could bring forth better understanding of the magnitude and dimension of poverty at grass roots level within the MPI framework and recommend the required policies.

Keywords: Multidimensional poverty, social groups, deprivation,
decentralised governance, local development.

**Background of the Study**

Persons or households who cannot afford the minimum necessities for leading healthy, active and decent living are generally referred to as poor. This way of conceptualisation pertains to both income and non-income dimensions of poverty. Poverty is a complex, multifaceted concept that requires a comprehensive analysis in all of its many dimensions. (Amartya Sen, 1991). The argument is that deprivations in literacy, schooling, child mortality, malnutrition, housing, safe water and sanitation must be considered in the analysis of poverty. Incidence of poverty changes from place to place, among social groups and across time depending upon the socio-economic characteristics prevailing in the society. Prior to 1990s, United Nations defined poverty solely in income terms, where people, who are not able to attain a minimum level of income which is required to enjoy a minimum living standard is considered as poor. In 1980s and 90s, the concept underwent further compositional changes by considering non-monetary aspects such as isolation, powerlessness, vulnerability and lack of security, as well as an individual’s capacity and capability to experience wellbeing. This new perspective accepts individuals as wealth of a nation. Its fundamental objective is to create an environment which offers the population the opportunity to live long in good health and to acquire knowledge that will help them in their choices and to have access to resources that will ensure a decent standard of living (UNDP, 1990). Human Development Reports gave a new measure of human deprivation. The International Labor Organization (ILO) defines poverty, not just as a lack of income, but also as lack of health, education and other services (Maxwell, 1999). In the process, the capability approach of poverty put forward by Amartya Sen in 1980’s became the core focus of discussion on poverty and standard of living. This approach focuses on, functional capabilities such as the ability to participate in economic processes and political activities or in having the ability to live long, rather than having mere access to resources
or utilities. Thus, poverty is defined as deprivation of basic capabilities.

The path-breaking Human Development Report, 1996 introduced the Capability Poverty Measure (CPM), which was the first “multidimensional index of poverty focused on capabilities”. It supplemented the income poverty measurements and complemented the Human Development Index (HDI). It mutated to the Human Poverty Index (HPI) in 1997. The Human Development Report 2000 focused on ‘Human Rights and Human Development’ and expanded the linkage between human freedom and human development. In 2010, the United Nations Development Program (UNDP) discarded the HPI and introduced the ‘Multidimensional Poverty Index’ (MPI) which considers deprivations more comprehensively within a larger set of capabilities.

From time to time the concept of poverty has been modified by economists and various institutions. The popular income measurement of poverty is now replaced by Poverty Index. In the recently evolved Multidimensional Poverty Index (MPI, 2010), three dimensions such as health, education, and standard of living are measured by using 10 indicators. Each dimension is equally weighted; each indicator within a dimension is also equally-weighted. MPI gives a broader picture of poverty and helps to understand and elicit the indices on which the households under study seemed to be deprived. The MPI is the product of two numbers: the Headcount H or percentage of people who are poor, and the average intensity of deprivation A – which reflects the proportion of dimensions in which households are deprived (Alkire and Santos, 2010). Alkire and Foster (2007) argued that this measure is very easy to calculate, interpret and satisfies many desirable properties. The MPI further exposed the inadequacy of income poverty lines which are blind towards the multiple deprivations faced by the poor. So the concept of multidimensional poverty got prominence among researchers and policymakers.
The Problem

In the premise of the development experience of India, ever since its independence, the main concern of economic growth was income growth and poverty rather than the comprehensive human development as visualised by UNDP, 1990. This approach exhibited a deviant development experience from the virtuous dynamic sequence of development as entitlement-access-freedom. At the same time, a small region, Kerala, within the federal country, India, experienced a distinct pattern of development divulging from the national stream. Kerala presented a unique phenomenon of human development without the corresponding capability that sought to disprove the accepted paradigm of the Harrod-Mahalanobis Model (Kannan & Pillai, 2004). This process of development ushered into the region a distinct human development track record, which enabled it to acquire a high HDI comparable to that of the developed countries. However, in this state of affairs, it will be worthwhile to look into the incidence of multidimensional poverty in the state among different social groups and between rural and urban areas at household level.

Even though the regional economy of Kerala experienced high growth rate during the last decade, it was not free from poverty. Reports show that there was a rural urban disparity in the state in poverty level (GoK, 2013). Within the given alternate approach in measuring incidence of poverty, it would be a revealing exercise as one looks into the magnitude of poverty among households in a socio-economic backward area where there is wide spread prevalence of deprivation and bad governance. In this context the proposed study looks into the incidence of multi-dimensional poverty in the rural and urban areas of Kasaragod district, Kerala, India, with the help of the MPI. Hence, the research problem is stated as ‘Multidimensional Poverty: A Micro Level Study in Kerala, India’.

Research Questions

1. Is there any difference existing in the incidence and intensity of multidimensional poverty among the households residing in rural
and urban areas of Kasaragod, Kerala, India?

2. Is there any difference existing in the incidence and intensity of multidimensional poverty among the households of Kasaragod, Kerala, India belonging to different social groups?

3. What is the nature of deprivation in the various dimensions of multidimensional poverty in both rural and urban households of Kasaragod, Kerala, India?

Objectives of the Study

1. To find out the incidence of multidimensional poverty among the households in rural and urban areas of Kasaragod, Kerala, India.

2. To compare the intensity of poverty in households in the study area with that at the state and national level.

3. To analyze the deprivation among the various dimensions of multidimensional poverty in rural and urban households of Kasaragod, Kerala, India.

4. To find out the incidence and intensity of multidimensional poverty among the households of Kasaragod, Kerala, India, belonging to different social groups.

Relevance of the Study

The methodology for estimation of poverty in India has been modified from time to time. Measuring deprivation by using Multidimensional Poverty Index gives a broader picture of poverty to understand which dimension among the ten indicators makes a society deprived. Poverty has a wider implication in a country’s growth process. Denial of opportunities and choices to human beings adversely affects the quality of human life, and thereby human capital. With the help of MPI measurement one could calculate the disparity in rural-urban deprivation in a microscopic manner, which may shed light into the extent of success of various government policies. Similarly, the incidence of poverty may not be the same in different social groups. A micro level study
on different social groups and on rural-urban areas using MPI may enable the policy makers to formulate appropriate strategies to tackle the incidence of poverty among the households. Hence a rural-urban specific micro level study on poverty with the help of a multidimensional tool such as MPI, gains significance in micro level planning and governance.

**Methodology and Sample**

A descriptive cum analytical study was conceived using primary data to find out the incidence and intensity of multidimensional poverty in the study area. Kasaragod District, Kerala, India, was selected as the study area, as it remains a district known for its limited socio-economic development among the 14 districts of Kerala, India. Sample households were selected through systematic sampling method from one Municipality out of three Municipalities and one Grama Panchayath out of thirty-eight Grama Panchayaths of Kasaragod District, Kerala, India. Sample areas were selected randomly. In the study, Pilicode Grama Panchayath represents rural Kasaragod and Kanhangad Municipality represents urban Kasaragod.

Primary data: Survey method was adopted in the primary data collection. MPI clubs together the three dimensions of deprivation, such as, health, education and living standard. A pre tested structured questionnaire was used to collect the data relating to these three dimensions from sample households.

Population and sample: Population of the study included the households residing in rural and urban Kerala. The samples representing rural and urban areas were selected from a Panchayath (Pilicode Grama Panchayath) and a Municipality (Kanhangad Municipality) of Kasaragod district respectively.

Sampling Method and Sample Size: Systematic sampling methods were used in the sample selection. The total sample taken from Pilicode Grama Panchayath was 50, which represents the rural households. Similarly, the sample size of urban Kasaragod, Kanhangad Municipality was also 50. The
sample households were selected by fixing a sample interval of five from Ward I of both rural and urban areas.

**Break-up of the Sample Households**

Social group wise classification is essential to understand the grass roots reality of deprivation among these groups. ‘Sample households by caste’ is detailed as General, OBC (Other Backward Castes) & SC-ST (Scheduled Castes – Scheduled Tribes).

Table 1. Break up of Sample households by Social Groups / Place of Residence (50 Rural + 50 Urban=100 Households).

<table>
<thead>
<tr>
<th>Place of Residence</th>
<th>Social Groups</th>
<th>Total Households</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General</td>
<td>OBC</td>
</tr>
<tr>
<td>Rural</td>
<td>3 (6%)</td>
<td>36 (72%)</td>
</tr>
<tr>
<td>Urban</td>
<td>14 (28%)</td>
<td>35 (70%)</td>
</tr>
<tr>
<td>Total</td>
<td>17 (17%)</td>
<td>71 (71%)</td>
</tr>
</tbody>
</table>


The sample size of the study consists of 100 households living in both rural and urban areas in which 50 per cent of the households belong to the rural area and the rest belong to the urban area. In the rural area, the caste composition of the sample is 6 per cent General, 72 per cent OBC, and 22 per cent SC-ST households. Likewise in the urban area, share of social groups to total sample are 28 per cent General, 70 per cent OBC and 2 per cent SC-ST categories. Out of 100 samples irrespective of rural urban classification, the OBC category constituted the major share, 71 percent. The share of OBC in rural and urban centers is 70 to 72 percent. There were 12 SC-ST households in the entire sample. Within this 12, around 92 per cent were residing in rural centers (See Table 1). Many studies have found that SC-ST households are vulnerable and marginalised groups (Scaria & Irfan, 2010). This may increase the probability to raise deprivation in the rural segment compared to urban centers.
Tools and Techniques Used in the Study

Multidimensional Poverty Index (MPI) is the main tool used in this study. It assesses the nature and intensity of poverty at the individual level, creating a vivid picture of people living in poverty within and across the regions. MPI, is calculated through the formula or methodology developed by the Oxford Poverty and Human Development Initiative (OPHI) for UNDP’s 2011 HDR. Computing the MPI requires two aspects:

1. The proportion or incidence of people (within a given population) who are experiencing multiple deprivations.

2. The intensity of their deprivation: the average proportion of (weighted) deprivations they experience.

The first component is called the Multi-dimensional headcount ratio (H):

\[ H = \frac{q}{n} \]

\( q = \) number of people, who are multi-dimensionally poor; \( n = \) total number of people.

The second component is called the intensity (or breadth) of poverty (A). It is the average deprivation score of the multi dimensionally poor people and can be expressed as:

\[ A = \frac{\sum_{i=1}^{n} ci(k)}{q} \times \frac{\sum_{i=1}^{n} ci(k)}{q} \]

Where \( ci(k) \) is the censored deprivation score of individual \( i \) and \( q \) is the number of people who are multi dimensionally poor. The MPI is the product of both: \( MPI = H \times A \)
Analysis and Interpretation

An attempt was made to estimate incidence of poverty among the households living in the rural and urban areas with the help of Multidimensional Poverty Index (MPI) which is constructed within the multi-dimensional framework. An attempt is also made to trace out the contradictions in the poverty status of people based on the uni-dimensional approach and multidimensional approach.

Incidence of Poverty among Households in the Study Area: A Uni-Dimensional Approach

The analysis proceeds with a broad classification of the universe as Above Poverty Line (APL) and Below Poverty line (BPL). Such an APL/BPL classification is important to compare uni-dimensional poverty and multi-dimensional poverty in the selected sample area. Data base reveals that 60 per cent of sample households in rural area belong to APL while 36 per cent represents BPL category (see Table 2). Of the rural sample, 4 per cent households are identified as ‘not a card holder’. At the same time the urban sample constitute 66 per cent APL, 30 per cent BPL and the remaining 4 per cent ungrouped households. Irrespective of the rural and urban classification, 63 out of 100 households are APL and only 33 households belong to BPL category. Survey has identified 4 per cent of total households as ‘not a card holder’. From the field, the researcher observed that these 4 per cent households are socially and economically advanced. So it can be added along with APL households.
Table 2. Incidence of Poverty as per Uni -Dimensional Approach (50 Rural + 50 Urban=100 Households).

<table>
<thead>
<tr>
<th>Place of Residence</th>
<th>Poverty Status</th>
<th>Total Households</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>APL Households</td>
<td>BPL Households</td>
</tr>
<tr>
<td>Rural</td>
<td>30 (60%)</td>
<td>18 (36%)</td>
</tr>
<tr>
<td>Urban</td>
<td>33 (66%)</td>
<td>15 (30%)</td>
</tr>
<tr>
<td>Total</td>
<td>63 (63%)</td>
<td>33 (33%)</td>
</tr>
</tbody>
</table>


Rural Kerala experienced 9.14% (15.48 Lakh people) and urban Kerala faced 4.97% (8.46 Lakh people) poverty as per the estimates of the Planning Commission in 2011-12 (GoI, 2013). Based on Kerala Perspective Plan 2030, Kasaragod district performs poorly in its economic development compared to that of other districts of Kerala (GoK, 2013). Survey results well matched with the fact that the Kasaragod district is one of the economically deprived districts, because the study area belongs to this district and the researcher identified a higher number of BPL families in these areas. Out of 100 samples, 33 are under BPL list, showing a higher level of uni-dimensional poverty in the district compared to that of the state average (7%). Of which, 18 households belong to rural and 15 belong to urban segments (See Table 2 for details).

**Incidence of Poverty among Households: A Multi-Dimensional Approach**

There are ten indices within these three dimensions and one can classify the household as either poor or non-poor based on the deprivation cut off of each index. Many of the indices of MPI are included in the Millennium Development Goals (MDGs) 2000. In the year 2015, MPI dimension wise analysis had an added significance to provide maximum information regarding the achievement and welfare of society and thereby incidence and intensity of poverty at present.
Table 3. Incidence of Poverty as per Multi-Dimensional Approach (50 Rural + 50 Urban=100 Households).

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Dimension</th>
<th>Indicator</th>
<th>Non Deprived Households</th>
<th>Deprived Households</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rural</td>
<td>Urban</td>
<td>Total</td>
</tr>
<tr>
<td>1</td>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Student's Enrolment</td>
<td>50 (100%)</td>
<td>50 (100%)</td>
<td>100 (100%)</td>
</tr>
<tr>
<td>2</td>
<td>Years of Schooling</td>
<td>23 (46%)</td>
<td>30 (60%)</td>
<td>53 (53%)</td>
</tr>
<tr>
<td>3</td>
<td>Health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Child Mortality</td>
<td>5 (10%)</td>
<td>2 (4%)</td>
<td>7 (7%)</td>
</tr>
<tr>
<td>4</td>
<td>Nutrition</td>
<td>17(44%)</td>
<td>5 (10%)</td>
<td>22 (22%)</td>
</tr>
<tr>
<td>5</td>
<td>Cooking Fuel</td>
<td>10 (20%)</td>
<td>04 (6%)</td>
<td>14 (14%)</td>
</tr>
<tr>
<td>6</td>
<td>Electricity</td>
<td>49 (98%)</td>
<td>50 (100%)</td>
<td>99 (99%)</td>
</tr>
<tr>
<td>7</td>
<td>Sanitation Facilities</td>
<td>49 (98%)</td>
<td>50 (100%)</td>
<td>99 (99%)</td>
</tr>
<tr>
<td>8</td>
<td>Drinking Water</td>
<td>45 (90%)</td>
<td>50 (100%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>9</td>
<td>‘Floor of the House’</td>
<td>43 (86%)</td>
<td>50 (100%)</td>
<td>93 (93%)</td>
</tr>
<tr>
<td>10</td>
<td>Asset Holding</td>
<td>9 (18%)</td>
<td>16 (32%)</td>
<td>25 (25%)</td>
</tr>
</tbody>
</table>


Deprivation in Education: The dimension, ‘Education’ in the MPI compiles ‘child enrolment’ and ‘years of schooling’. Under the ‘child enrolment’ indicator, if any school-aged child in a household is not attending school in years 1 to 8, the household is considered as deprived. The deprivation cut-off of the second indicator of education dimension, ‘years of schooling’ says that a household is said to be deprived if any one of the household member has not completed five years of schooling.

Field survey results give a positive sign of future prosperity of the nation in that the present generation are sending their children to school irrespective
of APL/BPL households, social groups and gender. The second indicator, years of schooling, is an important determinant of deprivation in the education dimension. According to deprivation cut off, the proportion of deprivation is higher in the rural area. This is not the case in the urban area where 60% are non-deprived. Of the total 100 sample households, 53% are non-poor and 47% are poor (See Table 3). The data shows concentration of deprivation in rural centers according to the ‘years of schooling’ indicator.

It is observed that hundred per cent of the children are enrolled in the primary schools both in urban and rural areas. Kerala has been internationally acclaimed for its attainment of educational indicators. The enrolment ratio is high in Kerala. According to the Statistics of School Education 2010–11, the Gross Enrolment Ratio (GER) in the state was 91.5 for class 1 to 5 and 103.9 for class 6 to 8. This is higher than that of other states in the country. This better performance of the state can be visible in the sample area also. Hence incidence of deprivation seems to be small in the realm of education both in rural and urban areas.

Deprivation in Health: The Health dimension of MPI include two indices namely, Child Mortality and Malnutrition. A household is considered as deprived under the child mortality indicator if any child has died in the family before it attains five years of age. Under the malnutrition indicator, households are considered as deprived if any one member of the family is found to be deprived. Data shows that 7% of the sample households are deprived under the ‘child mortality’ indicator implying children in these households died before attaining the age five. Incidence of child mortality is high in rural segment compared to urban area, i.e., 10 per cent in rural area and 4% in urban area (See Table 3). An Integrated Child Development Scheme (ICDS), a centrally sponsored scheme implemented in the year 1975 became strong in the year 2005 for children and women care. However even after 39 years of existence, there is still child mortality and this reflects some weakness in the ICDS programme. So an evaluation and reframing of the scheme is required.
Deprivation in Living Conditions: Based on the Multi-dimensional Poverty Index, the living condition can be measured by using fuel use, access to electricity, type of floor of the house, access to drinking water, sanitation and asset holding of the households. Standard of living can be determined by the type of fuel used by the households for the purpose of cooking. Those who are using Liquid Petroleum Gas (LPG) as cooking fuels will not be considered as deprived. On the other hand, wood/dung etc., are unimproved cooking fuel. Households using such unimproved cooking fuels will be considered as deprived in this indicator.

From the field study, the number of households using unimproved cooking fuel is higher in the rural area (20%) compared to the urban segment (6%) (see Table.3). Only 2 per cent households in the urban area produce fuel out of waste, i.e., these households constructed biogas plants in their houses and produce fuel for cooking. This has a larger implication to every day household budgeting. Creation of energy out of waste is the best way of money management as well as waste management. All households in the study area are purchasing electricity from the Kerala State Electricity Board (KSEB), a Government of Kerala undertaking. It is evident that 99% electricity connection shows greater improvement of society in achieving one of the MDG goals to a greater extent. Improved sanitation facilities in a house reflect how much improvement they have in their living conditions, thereby it enables us to assess the probability of a household being poor or not (Refer Table 3).

Households which do not have access to clean drinking water regularly or no access to clean water within 30 minutes walk from home are considered as deprived. The survey results show that 100% of sample households in the urban area are not deprived under the ‘access to drinking water’ indicator. On the other hand, in the rural segment, five households (10 per cent) in the rural area were found to be deprived (see Table 3). They depend on pipe water provided by government agencies free of cost. As there is irregularity in water supply to these households on a daily basis, it affects the day to day work and livelihood of household members.
Type of floor is one of the 6 indices under the dimension ‘living condition’. If the household has dirt, sand or dung floor, they are considered as deprived. From the field study, 7 rural households have an unimproved floor (14%), whereas in the urban segment, 100% households have an improved floor. Seven deprived households in the rural area comprise of six SC-ST families and one OBC family.

If the household does not own more than one of the items viz; radio, TV, telephone, bike, refrigerator, and does not own a car or truck, it is considered as deprived. Among the total 100 households, 75 per cent are deprived under this indicator. Most of the households considered radio as an inferior good and the researcher observed that most of the rural households purchase either a bike or car. Like other indices, the number of deprived household according to ‘asset holding’ is also higher in rural area (82%).

**Incidence of Poverty: Uni-Dimensional vs Multi-Dimensional Approach**

A comparison of income poverty status with multidimensional poverty status can reveal the contradictions and the differences in the estimation of poverty. Uni-dimensional poverty status of households belonging to the study area are identified from the ration card they hold, where BPL card holders are considered as poor. Whereas the multidimensional poor households in sample areas are identified based on the ‘deprivation cutoff’ also called ‘poverty cut-off’ (UNDP, 2010). As per this methodology those households having a ‘poverty cut-off’ of more than 30% deprivation are considered as ‘multidimensional poor’. Compared to the incidence of multi-dimensional poverty, incidence of uni-dimensional poverty is higher in the selected areas of study (See Table 4).
Table 4. Differences in the Incidence of Poverty

<table>
<thead>
<tr>
<th>Place of Residence</th>
<th>Uni – Dimensionally Poor Households</th>
<th>Multi-Dimensionally Poor Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>18 (36%)</td>
<td>16 (32%)</td>
</tr>
<tr>
<td>Urban</td>
<td>15 (30%)</td>
<td>4 (8%)</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td>20</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2015 & Estimation based on Primary Data.

Even though the variation of income poverty and multi-dimensional poverty among rural households is very low, it is not the case in the urban segment. In urban centre, there exists a wide disparity between the incidence of ‘income poverty’ and the incidence of ‘multi-dimensional poverty’. Of the total 50 urban sample households, 30 per cent fall below the poverty line. While the incidence of poverty is measured by considering multi-dimensional aspects of poverty, the study identified that only 6 per cent are found to be poor. This means that there is a wrong inclusion of non-poor into the list of poor. This will raise the government expenditure as a result of larger coverage of government welfare measures. The municipal authority has to recheck the current classification of households as BPL and APL. Local Self Government (LSG) can greatly help the state and central government to make their fund allocation efficient and to formulate the target and specific beneficiary policies.

**Incidence and Intensity of Multidimensional Poverty – The Rural Urban Difference**

MPI can be calculated as the product of the headcount or incidence of poverty—the percentage of people who are multi-dimensionally poor—and the intensity or average proportion of weighted deprivation indicators a poor person experiences. Since 2011, two additional categories of multidimensional poverty have been reported. These are called the ‘population vulnerable to poverty’ and the ‘population in severe poverty’. The population vulnerable to poverty is defined as the percentage of the population at risk of suffering multiple deprivations—that is, those people with a deprivation score of
20–33 percent. The population in severe poverty, meanwhile, measures the percentage of the population in severe multidimensional poverty—that is those with a deprivation score of 50 percent or more.

Table 5. Rural Urban Difference in Incidence and Intensity of Multidimensional Poverty

<table>
<thead>
<tr>
<th>Category</th>
<th>Head Count Ratio (H)</th>
<th>Intensity of Poverty (A)</th>
<th>MPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>0.106</td>
<td>0.415</td>
<td>0.044</td>
</tr>
<tr>
<td>Rural</td>
<td>0.335</td>
<td>0.444</td>
<td>0.149</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2015 and Estimation based on Primary Data.

Data collected from 50 rural and 50 urban households depicted different dimensions of life with varied magnitude at micro level. The respective family size for the total 50 rural sample household is 218, whereas it is 246 in the case of urban sample households. The total number of persons in the sample base is 464.

Figure 1. Rural-Urban Difference in Intensity & Incidence of Multi-dimensional Poverty.

Source: Figure based on Table 5.

From Table 5, it is seen that among the total sample size of 464, it is identified that 99 are multidimensional poor. Within this 99, the rural poor is 73 and urban poor is 26. In the urban area, the Head Count Ratio (H) is 0.106, and intensity of poverty (A) is 0.415 (see Table 5 & Fig. 1). The magnitude of poverty on the basis of multi-dimensional approach is estimated as 0.043 in the urban area. At the same time the collected data from the rural area...
identified 73 multi-dimensionally poor persons with a Head Count Ratio of 0.335, intensity of poverty(A), 0.444 and both these resulted in MPI, 0.149 (see Table 5 & Fig. 1). The MPI values in the study areas show that the poverty is higher in the rural area when compared to the urban area. The rural area stands behind the urban area both in ‘intensity’ and ‘head count ratio’, eliciting higher magnitude of poverty and its socio-economic implication. This would be a significant trait of rural urban divide resulting in a higher computed value of MPI in the rural segment and comparatively low value of MPI in the urban segment (Refer Fig.1).

Dimension Wise Deprivation in Rural and Urban Areas

Dimension wise comparison of poverty in rural and urban areas is having its own implication as these two segments come under the governance of different constitutionally established local self government bodies under 73rd and 74th ‘Constitutional Amendment Act’ (GoI, 2010). Different combinations of deprivation may be there. If dimension wise rural-urban specific deprivation data is made available, appropriate policy could be formulated by policy makers to go ahead with target specific deprivation alleviation measure.

As one looks into the dimension wise rural-urban specific poverty data in the study area, one would find that it is ‘living condition’ which contributes mostly to rural poverty (57.8%). Contribution of education and health dimensions is 23.3% and 18.9% respectively. At the same time in the urban area, poverty is also due to deprivation in ‘living condition’ (58.5%). Share of health deprivation to multidimensional poverty in the urban area is 10.7%, whereas, 30.8% is the contribution of the education dimension. Education and health policies can improve people’s standard of living because of the
link between education-health dimensions and ‘living condition’ (see Figure 2 for details). Based on the results of the survey, immediate policies should be in the realm of education in the form of informal education to those deprived in the ‘years of schooling’ dimension both in rural and urban areas. In the rural area there is a necessity of programmes to improve living condition, because SC-ST families and a Muslim household residing in the rural area are having poor living conditions. There is a higher share of deprivation from ‘living condition’ dimension in the case of the urban segment and it is due to the changing consumption pattern. Many items in the list of assets under the ‘asset holding’ indicator is not much needed to Keralites. Policies are also required in health sector to avoid problems of malnutrition.

Figure 2. Dimension Wise Deprivation: Rural - Urban Comparison of the Study area.

Source: Figure based on Primary Data.

Incidence and Intensity of Multidimensional Poverty by Social Groups

Incidence of multi-dimensional poverty is relatively high among Muslims; the estimated value of MPI is 0.269 with a headcount ratio value of 0.627
and intensity of 0.429. In the sample households which belong to people of the Hindu religion, there is a lesser incidence of multi-dimensional poverty (0.072 MPI value) with relatively low head count ratio (0.144) and a higher intensity of poverty (0.504) (See Table 6). Data show that there is ample evidence of disparity among households by religion in the study area. The incidence of multi-dimensional poverty is comparatively low among the Hindus where the estimated MPI Value among SC/ST households is 0.294. There is no incidence of multidimensional poverty among General category (people come under forward castes and a creamy layer of OBC category) and poverty exists among Other Backward Castes (OBC) and SC/ST category. MPI is higher in the case of SC/ST category; they are the vulnerable section in the society, their Intensity of poverty is 0.601 and Head Count Ratio is 0.489. (See Figure 3).

Table 6. Incidence and Intensity of Multidimensional Poverty by Social Groups.

<table>
<thead>
<tr>
<th>Social Groups</th>
<th>Head Count Ratio (H)</th>
<th>Intensity of Poverty (A)</th>
<th>MPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hindus (forward castes &amp; creamy layer OBC)/General category</td>
<td>0.144</td>
<td>0.504</td>
<td>0.073</td>
</tr>
<tr>
<td>Muslims</td>
<td>0.627</td>
<td>0.429</td>
<td>0.269</td>
</tr>
<tr>
<td>OBC (other than Muslims)/ Non -creamy layer</td>
<td>0.219</td>
<td>0.426</td>
<td>0.093</td>
</tr>
<tr>
<td>SC &amp; ST</td>
<td>0.489</td>
<td>0.601</td>
<td>0.294</td>
</tr>
<tr>
<td>All sample</td>
<td>0.213</td>
<td>0.437</td>
<td>0.093</td>
</tr>
</tbody>
</table>

Source: Estimation based on Primary Data.

In this study, eleven out of twelve SC/ST households in the total sample are from the rural area. These insights and data remain an eye opener to the policy makers as well as people at the helm of governance to revisit and reframe the existing policies and programmes with special emphasis to target specific service delivery.
Comparison of the dimension wise deprivation in the study area, Kerala, and India, is essential to understand how much the deprivation condition of the study area is similar to state and national deprivation. This enables the researcher to compare macro-micro realities existing in a country. This study would become more pertinent at micro level as one looks into the values of Head Count Ratio (H), Intensity (A) and MPI at state and national level. In India, a larger proportion of deprivation is from ‘Living Condition’. India’s MPI value is 0.296 with 55% headcount and 0.535 incidence. Kerala, famous in its spectacular achievements in the realm of economic and social development, stands ahead in India in the rate of incidence of multidimensional poverty (Alkire & Santos, 2010). Value of the MPI in the state Kerala is 0.065 with a 0.198 Head Count Ratio and 0.438 Intensity of multi-dimensional poverty (See Table 7). The health dimension of MPI...
attributes larger proportion to the incidence of multi-dimensional poverty in the state despite its much acclaimed social development. At the same time the study area had relatively higher multidimensional poverty with larger head count ratio and intensity than the state level (See Table 7 for details). This shows the need for separate policies in different areas within the state. Unlike Kerala, deprivation is larger in the dimension ‘living condition’ in the study area.

Table 7. Dimension wise Deprivation Details of Study Area, Kerala and India.

<table>
<thead>
<tr>
<th>Area</th>
<th>Dimensions</th>
<th>H</th>
<th>A</th>
<th>MPI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Education (%)</td>
<td>22.7</td>
<td>0.213</td>
<td>0.093</td>
</tr>
<tr>
<td></td>
<td>Health (%)</td>
<td>14.5</td>
<td>0.437</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Living condition (%)</td>
<td>62.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study Area*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kerala**</td>
<td></td>
<td>20.3</td>
<td>0.159</td>
<td>0.065</td>
</tr>
<tr>
<td>India **</td>
<td></td>
<td>24</td>
<td>0.554</td>
<td>0.296</td>
</tr>
</tbody>
</table>

Source: *Sample Data; ** Alkire & Santos, 2010.

Actually higher deprivation in this dimension is because of the indicator, ‘asset holding’ (See Table 8). In the case of the health dimension, the survey result shows less incidence of deprivation in the study area. Indices wise comparison of study area Kerala-India enables the researcher to get the grass-roots reality of poverty in a microscopic manner. In the study area deprivation is mostly seen in the ‘asset holding’ indicator, followed by ‘years of schooling’, ‘cooking fuel’ and ‘nutrition’ indices. In the Kerala context, it is the nutrition indicator which is showing a high deprivation followed by the cooking fuel and asset holding indicators.

Table 8. Indices Wise Deprivation Details of Study Area, Kerala and India.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Indices</th>
<th>Study Area*</th>
<th>Kerala**</th>
<th>India**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>Schooling</td>
<td>0.47</td>
<td>0.01</td>
<td>0.18</td>
</tr>
<tr>
<td></td>
<td>School Enrolment</td>
<td>0</td>
<td>0.07</td>
<td>0.25</td>
</tr>
<tr>
<td>Health</td>
<td>Mortality</td>
<td>0.07</td>
<td>0.04</td>
<td>0.12</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Nutrition</td>
<td>0.23</td>
<td>0.23</td>
<td>0.39</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Living Condition</th>
<th>Electricity</th>
<th>0.01</th>
<th>0.05</th>
<th>0.29</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitation</td>
<td>0.01</td>
<td>0.04</td>
<td>0.49</td>
<td></td>
</tr>
<tr>
<td>Drinking Water</td>
<td>0.05</td>
<td>0.09</td>
<td>0.12</td>
<td></td>
</tr>
<tr>
<td>Floor</td>
<td>0.07</td>
<td>0.03</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>Cooking Fuel</td>
<td>0.14</td>
<td>0.15</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>Assets</td>
<td>0.75</td>
<td>0.11</td>
<td>0.38</td>
<td></td>
</tr>
</tbody>
</table>

Source: *Sample Data; ** Alkire & Santos, 2010.

At the national level, the most deprived indicator is ‘cooking fuel’, followed by ‘sanitation’, ‘floor’, ‘nutrition’, ‘asset holding’, ‘electricity’, ‘school enrolment’, ‘years of schooling’, ‘mortality’, and ‘drinking water’ indices (See Table 8 for details).

In the case of the study area, except for ‘years of schooling’, ‘nutrition’, ‘cooking fuel’ and ‘asset holding’ indices, all other indices have a less than 10% deprivation (See Figure 4). In Kerala, the ‘years of schooling’ indicator is improved according to Alkire and Santos (2010). Apart from the relatively lesser deprivation in the ‘years of schooling’ indicator in the state, the situation is almost similar in the study area. At the national level, all indices have more than 10% deprivation.

The present study was carried out through the dimension and indices wise deprivation in the rural and urban areas using the MPI tool. This tool has shown the composition and magnitude of poverty both across countries, regions and the world and within countries by ethnic group, urban/rural location, as well as other key household and community characteristics. This is why the OPHI (Oxford Poverty and Human Development Initiative) describes the MPI as a ‘high resolution lens’ on poverty.
Major Findings of the Study

The study found that there are a considerable number of households under the BPL list showing a higher level of uni-dimensional poverty in the district, Kasaragod, compared to that of the state average of Kerala, India.

Even though the study found incidence of deprivation in the rural area according to the ‘years of schooling’ indicator, it was observed that there was a 100% enrolment of children in the primary schools of both the urban and rural areas. Hence the incidence of deprivation seems to have no impact on the realm of education in the rural and urban areas.

It was found that in the sample households, there was deprivation as per the ‘child mortality’ indicator, implying that children in these households died before attaining the age of five. Incidence of child mortality is high in the rural area compared to urban area.

With regard to the dimension, ‘living condition’, the number of households using unimproved cooking fuel is higher in the rural area when compared to the urban segment. All the households except one or two in the study area were purchasing electricity from KSEB, a Government of Kerala undertaking,
showing greater improvement of society in achieving one of the MDG goals. To a greater extent, the sample of households in the urban area were not deprived under the ‘access to drinking water’ indicator. However, in the rural segment a few households were found to be deprived. Likewise, only a few rural households had unimproved floors, whereas in the urban segment all the households have improved floors. Among the total households, a majority were found to be deprived in the ‘asset holding’ indicator.

Even though the variation of income poverty and multi-dimensional poverty among rural households was very low, it is not the case for the urban segment. In urban areas, a wide disparity existed between the incidence of ‘income poverty’ and the incidence of ‘multi-dimensional poverty’. This meant that there was an incorrect inclusion of non-poor into the list of the poor. This would have raised the government expenditure as a result of larger coverage of government welfare measures.

The rural area trails behind the urban area both in ‘intensity’ and ‘head count ratio’, eliciting higher magnitude of poverty and its associated socio-economic implications. This would be a significant trait of the rural urban divide resulting in a higher computed value of MPI in the rural segment and a comparatively low value of MPI in the urban segment.

While comparing the social groups, it was found that the incidence of multi-dimensional poverty is relatively high among Muslims; the estimated value of MPI is 0.269 with a headcount ratio value of 0.627 and intensity of 0.429. In the sample households which belong to those of the Hindu religion, there is a lesser incidence of multi-dimensional poverty (0.072 MPI value) with relatively low head count ratio (0.144) and a higher intensity of poverty (0.504). The estimated value of MPI among the social groups reveal the fact that there are instances of grey areas with high incidence of poverty, especially among SC-STs even in the midst of the much acclaimed and showcased high human development in the Kerala region. So the fact is that the trickledown effect didn’t taken place and the neediest vulnerable section of the society were not captured by the government’s safety net measures.
The health dimension of MPI attributes a larger proportion to the incidence of multi-dimensional poverty in the state despite its much acclaimed social development. At the same time a part of the state, the study area, experienced relatively higher multi-dimensional poverty with larger head count ratio and intensity than the state level.

Indices-wise comparison of the study area, Kerala and India enabled the researcher to get the grass-roots reality of poverty in a microscopic manner. In the study area deprivation is mostly seen in the ‘asset holding’ indicator, followed by ‘years of schooling’, ‘cooking fuel’ and ‘nutrition’ indices. In the Kerala context, it is the ‘nutrition’ indicator which showed a high deprivation followed by ‘cooking fuel’ and ‘asset holding’. At the national level, the most deprived indicator was ‘cooking fuel’, followed by ‘sanitation’, ‘floor’, ‘nutrition’, ‘asset holding’, ‘electricity’, ‘school enrolment’, ‘years of schooling’, ‘mortality’, and ‘drinking water’ indices.

**Conclusion**

The difference in the incidence, intensity and MPI value of the rural and urban segments is a significant trait of the rural-urban divide in the study area. There is a significant difference in the incidence of multi-dimensional poverty among the households residing in the rural and urban segment. The rural area is more deprived than the urban area. There is variation in the combinations of deprived indices among nation, state and the area within the state. Social group wise and gender wise differences in the incidence of multi-dimensional poverty should get attention from the LSG (Local Self Government) institutions through target specific service delivery networks.

**Recommendations**

The respective governing authority of rural area grama panchayath should take care of the irregularity in water supply.
Provide free electricity to the un-electrified rural SC-ST households. They were found to be the most deprived.

Local Self Government Institutions should focus on target specific service delivery as there is a wide spread prevalence of deprivation among marginalized social groups.

Self employment training with stipend should be given to SC-ST households and the training should be conducted in their locality instead of other places which are far away from their place of living.

As there is an incorrect inclusion of non-poor households in the list of the poor households, the LSG institution of the urban area has to devise a scientific and systematic approach in the classification of households as APL and BPL, and should submit the report to the state government.

Set up a separate research institution to conduct social surveys and research in each rural and urban segment and allot the responsibility to conduct annual surveys on various dimensions of multi-dimensional poverty. Based on that database, the government could tailor / continue the current welfare programmes.

Give informal education to the people who are deprived in the ‘years of schooling’ indicator. Based on the facts and figures, such a programme could lead to specific improvements in the areas of women empowerment and gender equality, rejuvenate old aged people, make some of the working age population more productive and efficient, and thereby improve the overall welfare.

Acknowledgement: The primary survey details of the study conducted by Ms Jithina and Dr Baiju K.C were adopted for analyses in the present study.
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Alkire, Sabina and Santos, Maria Emma (July 2010) “Multi-dimensional Poverty Index” OPHI.

Sabina Alkire, Mihika Chatterjee, Adriana Conconi, Suman Seth and Ana Vaz (2014 June) “Poverty in Rural and Urban Areas - Direct Comparisons Using the Global MPI 2014” OPHI.


Abstract

Responsible research and innovation has become a core concept in some of the Horizon2020 programs. In this article the concept of RRI is discussed and the interpretation used within the project ‘Irresistible’ is introduced. In the article several ways in which RRI can be introduced in secondary education are discussed, coupled to contemporary research taking place in universities as well as recent innovations coming from industry.

The discussed modules are designed in groups in which teachers work together with science researchers, educational researchers and people
from science centers. Part of the educational material is the development of exhibits in which both the science content as well as the RRI concepts related to the science are demonstrated for the general public. These exhibits have been very successful as a learning tool.

**Keywords**: Secondary school education, science education, formal learning, informal learning, exhibits, Responsible Research and Innovation

### Introduction

The project ‘Irresistible’ is the result of a proposal that was accepted within the FP-7 program of the EU under number 612367. The proposal was made in response to call SIS.2013.2.2.1. (Workprogramme 2013 capacities part 5, science in society.2012):

**Area 5.2.2.1. Supporting formal and informal science education in schools as well as through science centres and museums and other relevant means.**

**SiS.2013.2.2.1-1: Raising youth awareness to Responsible Research and Innovation through Inquiry Based Science Education**

Within the project IRRESISTIBLE activities are designed that foster the involvement of students and the public in the process of responsible research and innovation. The project raises awareness about RRI in two ways:

- Increasing content knowledge about research by bringing topics of cutting edge research into the program.
- Fostering a discussion among the students regarding RRI issues about the topics that are introduced.

In these activities both formal and informal learning environments play an important role.

In this article the description of the concept’ Responsible Research an Innovation’ as well as the way it is introduced to students in secondary education is the central topic.
The concept of ‘Responsible Research and Innovation’

Throughout the world ideas about the interaction between science and innovation with societal issues has become a subject of discussion. The UN for example has formulated millennium goals (http://www.un.org/millenniumgoals/) for science. The OPCW has formulated the ‘The Hague Ethical guidelines’ (https://www.opcw.org/special-sections/science-technology/the-hague-ethical-guidelines/) with a direct link to the Chemical Weapons Convention’. Within the industrial society the idea of ‘responsible care’ (http://www.cefic.org/Responsible-Care/). Within the EU this discussion has been going on for a while resulting in several framework programs.

Within the EU the Framework programs about science and society have shifted in title from ‘Science and Society’ to ‘Science in Society’, indicating the change in perception within the EU about the role of science (Hoven, 2013). Within the EU the concepts of Responsible Research and Innovation have become more and more important. In Hillary Sutcliff’s report (Sutcliffe, 2011) she identifies six key concepts in RRI (see table 1).

Table 1. Aspects of RRI as identified by Sutcliff and RRI leaflet.

<table>
<thead>
<tr>
<th>Sutcliff</th>
<th>RRI leaflet</th>
</tr>
</thead>
<tbody>
<tr>
<td>The deliberate focus of research and the products of innovation to achieve a social or environmental benefit.</td>
<td>Engagement</td>
</tr>
<tr>
<td>The consistent, ongoing involvement of society, from beginning to end of the innovation process.</td>
<td>Gender equality</td>
</tr>
<tr>
<td>Involvement of the public &amp; non-governmental groups, who themselves are mindful of the public benefit.</td>
<td>Science education</td>
</tr>
<tr>
<td>Assessing and effectively prioritizing social, ethical and environmental impacts, risks and opportunities, both now and in the future, alongside the technical and commercial.</td>
<td>Ethics</td>
</tr>
</tbody>
</table>
Where oversight mechanisms are better able to anticipate and manage problems and opportunities and which are also able to adapt and respond quickly to changing knowledge and circumstances.

Where openness and transparency are an integral component of the research and innovation process.

In a later leaflet published by the EU in 2012 (http://ec.europa.eu/research/science-society/document_library/pdf_06/responsible-research-and-innovation-leaflet_en.pdf) six key issues are identified (see table 1).

Van Hoven (Hoven, 2013) indicates:

“RRI refers to ways of proceeding in Research and Innovation that allow those who initiate and are involved in these processes at an early stage (A) to obtain relevant knowledge on the consequences of the outcomes of their actions and on the range of options open to them and (B) to effectively evaluate both outcomes and options in terms of ethical values (including, but not limited to well-being, justice, equality, privacy, autonomy, safety, security, sustainability, accountability, democracy and efficiency) and (C) to use these considerations (under A and B) as functional requirements for design and development of new research, products and services.”

Schomberg (von Schomberg, 2013) defines RRI as follows:

Definition: Responsible Research and Innovation is a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society).

Both Schomberg and van Hoven focus on the interaction between society and research and innovation. They demonstrate how important this interaction
in order for innovations to succeed in society. An example is genetically modified food, which has not been accepted in Europe. Especially the steps formulated by van Hoven are not common as yet even though governments have started to formulate policies on this subject. In the Netherlands for example a new report was published indicating the view of the Dutch government on the future development of policies regarding scientific research, which are solidly based on these RRI concepts (Wetenschapsvise 2025.2014).

Within the project we decided to use the six key issues from the leaflet as a starting point in the design of the activities within the project. They provide a more concrete set of issues that can be incorporated within educational activities. The underlining idea, that both research and innovation should be closely linked with society and with societal needs is the background of the use of these six dimensions. Using the six key issues gives the project a solid base to discuss how the research is being introduced to the students. In Table 2 the six dimensions of RRI are explained a bit further.

Table 2. The 6 Dimensions of RRI (text taken from leaflet) used in the project.

<table>
<thead>
<tr>
<th>1. Engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>The first key to RRI is the engagement of all societal actors - researchers, industry, policymakers and civil society – and their joint participation in the research and innovation process, in accordance with the value of inclusiveness, as reflected in the Charter of Fundamental Rights of the European Union. A sound framework for excellence in research and innovation entails that the societal challenges are framed on the basis of widely representative social, economic and ethical concerns and common principles. Moreover, mutual learning and agreed practices are needed to develop joint solutions to societal problems and opportunities, and to pre-empt possible public value failures of future innovation.</td>
</tr>
</tbody>
</table>
### 2. Gender Equality

Engagement means that all actors—women and men—are on board. The under-representation of women must be addressed. Research institutions, in particular their human resources management, need to be modernized. The gender dimension must be integrated in research and innovation content.

### 3. Science Education

Europe must not only increase its number of researchers, it also needs to enhance the current education process to better equip future researchers and other societal actors with the necessary knowledge and tools to fully participate and take responsibility in the research and innovation process. There is an urgent need to boost the interest of children and youth in maths, science and technology, so they can become the researchers of tomorrow, and contribute to a science-literate society. Creative thinking calls for science education as a means to make change happen.

### 4. Open Access

In order to be responsible, research and innovation must be both transparent and accessible. This means giving free online access to the results of publicly-funded research (publications and data). This will boost innovation and further increase the use of scientific results by all societal actors.

### 5. Ethics

European society is based on shared values. In order to adequately respond to societal challenges, research and innovation must respect fundamental rights and the highest ethical standards. Beyond the mandatory legal aspects, this aims to ensure increased societal relevance and acceptability of research and innovation outcomes. Ethics should not be perceived as a constraint to research and innovation, but rather as a way of ensuring high quality results.
6. Governance

Policymakers also have a responsibility to prevent harmful or unethical developments in research and innovation. Through this key we will develop harmonious models for Responsible Research and Innovation that integrate public engagement, gender equality, science education, open access and ethics.

In order to get a clear idea about the use of these six dimensions of RRI in the project a workshop was organized in which the coordinators in each participating country participated. During that workshop two issues were discussed in which the six dimensions could be applied.

The first issue that was discussed was the use of asbestos. The group discussed whether the use of RRI policies would have changed the use of asbestos in society. Main question to be answered during the workshop was how the problems with asbestos could have been avoided, using RRI-policies.

For the second issue nano socks were introduced (see figure 1).

Figure 1. nanosocks.
Nano socks (https://www.nanosilver.eu/Tema/Why-Nanosilver/Magical-
Socks-Nano silver with Silver-Nanoparticles) contain nano silver particles that inhibit bacterial growth and thus prevent smelly socks. This innovation was used for a discussion about the six dimensions of RRI and the way they could be applied to nano socks. Through this discussion participants got an idea about the way the six dimensions could be applied to an innovation like nano socks. This experience was taken by the participants to be used during the development of educational material.

The Development of the Material

Within the project Community of Learners have been formed to develop educational materials (Loucks-Horsley, Stiles, Mundry, Love, & Hewson, 2010). Both in the Netherlands in the development of ‘Nieuwe Scheikunde’ (Apotheker, 2008) as well as in Germany in ‘Chemie in Kontext’ (Nentwig, Demuth, Parchmann, Gräsel, & Ralle, 2007) these communities have been used and are still used in the development of new material.

Within the Community of Learners experts from science research, educational research, science centres and teachers are brought together. When possible someone from industry was included as well. Together they worked on the development of new material.

Inquiry based science education as well as context oriented chemistry education has been developed and worked on during the past 10 years (Kennedy, 2014) (Pilot & Bulte, 2006) (Apotheker 2008). In this project the partners chose to use the 5 E method developed by Roger Bybee (Bybee, Powell, & Towbridge, 2007) as a framework for the modules to be developed. This 5 E model has been extended to a 7 E model by Arthur Eisencraft (Eisenkraft, 2003), in which he decided to expand the first and last step in the model. The Irresistible group decided to expand the 5 E model with a step called Exchange, in which the students exchange their results. In table 3, the 6 E model is represented.
Table 3. The extended 5 E Model.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
<th>Techniques used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engage</td>
<td>In the engage phase students are getting interested in the subject of the module. Both formal and informal learning activities will be planned.</td>
<td>Applications, visit to science centre, video introduction, lecture by researcher. Students may gather information using smartphones to make videos, photos or other data that can be shared in a Facebook group for example.</td>
</tr>
<tr>
<td>Explore</td>
<td>In the explore phase students start formulating questions.</td>
<td>A Web platform is used for gathering data and comparing and sharing results.</td>
</tr>
<tr>
<td>Explain</td>
<td>In the explanation phase knowledge is gained, data collected and scaffolded.</td>
<td>The teachers and the students will scaffold the content knowledge on the web platform.</td>
</tr>
<tr>
<td>Elaborate</td>
<td>In the elaboration phase the attention shifts to RRI-questions. Students will confront researchers with challenges to be answered by the scientists.</td>
<td>Using the web platform students will match questions and answers by scientists.</td>
</tr>
<tr>
<td>Exchange</td>
<td>One of the assignments will be the design of an exhibit, which will be displayed in the science centre in the partners' local group. Posters or other presentation modes may also be used.</td>
<td>Contest for best exhibits, which will participate in an exhibit on a European scale, hosted by one of the partners.</td>
</tr>
<tr>
<td>Evaluate</td>
<td>In the evaluation phase the students are tested on their content knowledge. The students themselves determine by an interview/ discussion with the researchers what they learned from the project.</td>
<td>Online tests and surveys can be used for testing and for discussion with the researchers.</td>
</tr>
</tbody>
</table>

Results

In Table 4 the titles of the modules developed by each partner are given.
Table 4. Produced modules, with science content.

<table>
<thead>
<tr>
<th>Country</th>
<th>Title</th>
<th>Research subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Portugal</td>
<td>Geo-engineering and climate control</td>
<td>Geo-engineering</td>
</tr>
<tr>
<td></td>
<td>Evaluate earth health through polar regions</td>
<td>Polar eco systems</td>
</tr>
<tr>
<td>2 Finland</td>
<td>Atmosphere and Climate change</td>
<td></td>
</tr>
<tr>
<td>3 Turkey</td>
<td>Nanotechnology applications in health sciences</td>
<td>Nanomaterials used in health issues</td>
</tr>
<tr>
<td>4 Poland</td>
<td>The catalytic properties of nanomaterials</td>
<td>Role of nano particles as catalyst</td>
</tr>
<tr>
<td>5 Netherlands</td>
<td>Carbohydrates in breastmilk</td>
<td>Specific carbohydrates</td>
</tr>
<tr>
<td>6 Romania</td>
<td>Solar energy and specific nanomaterial</td>
<td>Graetzel cells</td>
</tr>
<tr>
<td>7 Italy (Bologna)</td>
<td>Nanotechnology for solar energy</td>
<td>Graetzel cells</td>
</tr>
<tr>
<td></td>
<td>Nanotechnology for information by exploiting light/ matter interaction</td>
<td>Luminescent nanosensors</td>
</tr>
<tr>
<td>(Palermo)</td>
<td>Energy sources</td>
<td>Graetzel cells</td>
</tr>
<tr>
<td>8 Israel</td>
<td>The RRI of Perovskite based photovoltaic cells</td>
<td>Perovskite solar cells</td>
</tr>
<tr>
<td>9 Germany</td>
<td>Oceanography and climate change</td>
<td>Off shore wind energy</td>
</tr>
<tr>
<td></td>
<td>Plastic, Bane of the Oceans</td>
<td>Plastic waste in oceans</td>
</tr>
<tr>
<td>10 Greece</td>
<td>Nanoscience applications</td>
<td>Several nano-applications like the lotus effect</td>
</tr>
</tbody>
</table>

All modules that were developed have included the 6E framework. The teachers in the CoL have tried out all modules in their own classrooms. The modules have been adapted using their experiences in the classroom.

The modules are available through the Irresistible website: http://www.irresistible-project.eu/index.php/nl/.

**Implementation of RRI**

The implementation of RRI in the modules has been done in different ways. In the modules of Israel, Turkey and Germany the students are given a
specific role. Incorporated in the role-play are the different RRI aspects. In the Turkish module the students are given the role of an advisor. A hospital is asking them whether or not the hospital should introduce towels etc treated with nano silver particles. They then investigate the properties of cotton treated with silver nanoparticles and finally by discussing the consequences of washing textile containing silver nanoparticles, they highlight the key aspects of RRI and come up with an advice.

The main question in the Israeli module is whether the windows in the school should be replaced with Perskovite solar cells.

Figure 2. Example of perovskite solar cells used in windows(http://news.sciencemag.org/node/112358).

In the German module a game has been developed in which the students play using a different role and that way learn about off shore wind energy. Since the Fujiyama disasters in Japan, Germany decided to invest heavily in wind energy.

In other modules the RRI dimensions were introduced during the ‘Elaborate’
step of the framework as a separate chapter (Figure 3).

Figure 3. Introduction of RRI in a chapter of a module.

Students were then asked to apply the RRI dimensions to the science content they studied in the first part of the module. Presentation of the results of these studies were various in nature.

Figure 4. Students debating about propositions.
In some cases a debate was organized around specific propositions. An example is: ‘a company has the right to market their products all over the world’ taken from the module about formula milk.

In all cases the students were asked to make an exhibit demonstrating the dimensions of RRI focused on the science content they learned about. These exhibits were taken to the science centre involved in the project and displayed there. In Germany a system for the exhibits was developed using a cupboard from ‘Ikea’ (Figure 5).

The cupboard was designed by the students to illustrate the issues involved. In this case the module is about the differences between human milk and cow milk.

In other cases cartoons were used (Figure 6). In figure 7 an overview of the exhibition in Greece is shown.

Students are very creative in designing exhibits. By careful guidance by the experts from the science centres exhibitions are made that can actually be used within the science centres.

Figure 5. Use of an Ikea cupboard as base for an exhibit.
Figure 6. Cartoons made to illustrate RRI -issues.

Figure 7. Overview of exhibition in Greece.

Students are able to use the advice they have received about exhibits in innovative ways. In Italy for example a table football game was adapted to demonstrate principles of RRI (figure 8).

Figure 8. Table football game adapted in Italy with male and female players.
Table 5. Rules of the soccer game and their link to RRI.

<table>
<thead>
<tr>
<th><strong>RRI dimensions</strong></th>
<th><strong>Rules to demonstrate dimension</strong></th>
</tr>
</thead>
</table>
| Engagement         | Red ball. Play the citizens only (Red)  
                      Public opinion often puts a brake on scientific progress. |
| Gender equality    | Yellow ball  
                      Keep your eyes closed while playing!  
                      Why use sight when you’ve got hearing too? |
| Science education  | Question mark ball  
                      Science has the answer to many questions |
| Ethics             | X-ball, Science discoveries are unexpected. Change team but not the score. |
| Open access        | Green ball  
                      Interlock your arms with your mate  
                      Collaboration is necessary for playing, experimenting and working.  
                      Collaborate if you want to win. |
| Governance         | Blue ball  
                      Twist your arms  
                      Science is regulated by government. |

**Conclusions and Recommendations**

Looking at the modules and more specifically at the exhibits that have been produced by the students it becomes clear that the irresistible modules are able on the one hand to introduce cutting edge science research into the secondary school classroom. In most cases this fits in with the curriculum in a country, in other cases the material is extra curricular.

What also becomes clear is that the students are very able to link the RRI dimensions to the science they have been studying. In Israel it has become more or less a verb: ‘let’s RRI this issue’.

The exhibits are an important factor in the modules in bringing together the science and the RRI. Designing the exhibits forces the students to think about the issues and come up with ways to demonstrate to society the RRI dimensions of the research and/or innovation.
In most modules all six dimensions were addressed. During the presentations of the modules during a meeting of the project in Bologna, it became clear that the gender dimension as well as the science education dimension were not always easy to implement in the modules.

Acknowledgements

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References


Abstract

Education creates appropriate leadership for social change by preparing an individual with healthy and creative mind. The challenge in front of today's techno-globalism is moulding individuals with social responsiveness. Social responsiveness is the imitation of behaviour that is shaped in response to the actions of other persons and accomplishes social functions. It focuses on the nature of a person's relationship with others and with the larger social and political world. A system of education that provides opportunities to reflect and discuss on the social issues in their own way can only develop social responsiveness in young minds. The present study tried to understand the social responsiveness of secondary school students through a normative survey using Social responsiveness scale (Asha & Jyothisree, 2010) so that some concrete suggestions may be forwarded for policy makers and curriculum designers. The sample for the study constituted a representative group of secondary school students selected using stratified random sampling- gender, locality, and type of school being the different strata. The study found that majority of the secondary school students, studying through critical pedagogy and issue based curriculum (state syllabus) have high levels of social responsiveness than their counterparts who follow activity based constructivist curriculum (CBSE syllabus).

Keywords: Social responsiveness, issue based constructivist curriculum,
objective based activity curriculum, democratization of education, learner autonomy, critical pedagogy

**Introduction**

In the contemporary world, based on science and technology it is education that determines the quality of individual development. Education could transform the individual and it could help the individual to become instrumental in developing and reshaping the nation. Education helps the individual to make deliberate and conscious efforts to live comfortably and happily in his physical and social environment. The NPE (1986) says “in the Indian way of thinking, a human being is a positive asset and a precious national resource, which needs to be cherished, nurtured and developed with tenderness and care, coupled with dynamism”. Education is the most effective instrument to develop the human resource of the nation. (Toffler, 1973).

In ancient times, the education system was mostly individualistic. The ancient teachers in India tried to teach subjects and impart wisdom. Their ideal was wisdom along with knowledge, ‘jnanaṃ vijñāna sahītam’ (Bhagavat Gita), i.e., by knowledge we don’t mean mere intellectual awareness. It stands for wisdom, which consists in a practical sense of values. Emancipation from the worldly bondages and barriers was the main aim of Vedic education. The ‘Bhagavat Gita’ said that action and contemplation must go together to make education successful. Even though the philosophies were high sounding in the vedic period, the education provided was always related to the life and aspirations of the society (The World Fact Book, CIA. 2004 estimate). Its aims and objectives were determined and defined according to the local, regional, national and global needs. The designers of modern India had meaningful and sustainable visions regarding education as well.
The Context of the Study

Deterioration of social responsiveness is the most important challenge before society. In the era of globalization, society changes rapidly. The need for the stimulation and promotion of social responsiveness of students is the crying demand of our society. The modern age of science and technology has created certain evils like industrialism, mechanism and materialism. The world has already experienced the horrors of modern war. In the midst of material prosperity, a large section of humanity is under the grip of poverty, immorality, corruption, violence, terrorism and unscientific ways of living. Such unsatisfactory situations arose due to the crisis of value, responsiveness and character. At this point, there arose the need to find out a ‘solve all’ solution for these problems. The future of a nation depends upon their knowledge, responsiveness, skill, character and values of its people.

The educational system of the country has effected changes both structurally and functionally to keep pace with the global arena. Curricular revisions coupled with congruent changes in transactional strategies are transforming the scenario at primary and high school level. Based on the objectives of National Curriculum Frame Work (2005), the SCERT Kerala implemented issue based curriculum for State schools and the CBSE has brought forth a national curriculum which aims at making children capable of becoming active, responsible, productive, and caring members of society. The formation and promotion of social responsiveness has always been an important objective of education in both the curricula. How far did the two streams of learning succeed in accomplishing their goals is analysed in this paper.

Statement of the Problem

In a democratic country like India, every citizen has to play a pivotal role in the upliftment of the nation. The society today has become complex and sophisticated through a millennium of social evolution. The social reformation
achieved through education is embedded in the school curricula. The present study aimed at understanding the social responsiveness of secondary school students, who study in state schools and CBSE schools. Hence the study has been entitled: ‘Social Responsiveness of Secondary School Students of Kerala, India- A comparison of State and CBSE Curricula’.

Operational Definition of Key Terms

Social responsiveness: “Social responsiveness is the personal investment in the well-being of others and the planet.” In the present study the extent of awareness of students to be responsive, in discharging the delivery of service at the desired rate in consonance with the vision or mission and objectives of the social organizations and engage in public actions for fulfilling the mission with respect to the components of social responsibility i.e., social and political consciousness, a sense of connectedness, action on ethical considerations, pro social behavior, integrity of action, and active participations.

Secondary school students: The students of standard VIII, IX and X (of age group 13-16 years) are called secondary school students. In the present study, the investigator collected data from IX standard students (14-15years) only.

State schools: The schools run by Kerala State Government under the Directorate of Public Instruction, following the new curriculum implemented by SCERT, Kerala, adapted and modified form of NCF-2005. The revised curriculum promotes student centred and active pedagogies on issues based on social constructivism and critical pedagogy.

CBSE: The schools following the Central Board of Secondary Education (CBSE) following the NCERT curriculum i.e., based on NCF-2005. The revised curriculum promotes lifelong learning and development of innate potentialities of the learner through constructivist activity method.
Objectives of the Study

The objectives of the investigation are:

1. To find out the level of social responsiveness of secondary school students studying in State schools following critical pedagogy and issue based curriculum

2. To find out the level of social responsiveness of secondary school students studying in CBSE schools following constructivist approach and activity curriculum

3. To compare the level of social responsiveness of secondary school students studying in State schools and CBSE schools of the total sample and the sub samples selected on the basis of
   a. Gender of students
   b. Type of school
   c. Locality of school

Hypothesis

The major hypothesis of the study is stated in the null form as: There exists no significant difference in the level of social responsiveness of secondary school students studying in State schools and in CBSE schools with respect to the total sample and the selected sub-samples based on Gender of students, Type of school and Locality of school.

Methodology in Brief

The present study tried to understand the social responsiveness of secondary school students through a normative survey using Social responsiveness scale (Asha & Jyothisree, 2010) so that some concrete suggestions may be forwarded for policy makers and curriculum designers.
Sample: The sample for the study constituted a representative group of secondary school students selected using simple random sampling techniques. Out of the 14 (Revenue) Districts of Kerala, India, 4 districts (viz: Kasaragod, Palakkad, Eranakulam and Trivandrum) were selected as Sample Districts for the Study by choosing variant characteristics so that the chosen population effectively represents the School Education scenario in Kerala in its totality. From the 4 districts, 16 schools were selected out of which, 2 are state syllabi Schools and 2 are CBSE schools covering one from rural and one from urban area. In total, from the 16 schools, 1120 students were selected using stratified random sampling; gender, locality and type of school being the different strata. Table 1 gives details of the sample taken.

Table 1. Break up of the final sample and sub samples based on Gender, Locality of School and Type of school.

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Sample Type</th>
<th>Classification</th>
<th>State Schools</th>
<th>CBSE schools</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gender</td>
<td>Girls</td>
<td>312</td>
<td>295</td>
<td>550</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Boys</td>
<td>258</td>
<td>255</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Locality</td>
<td>Rural</td>
<td>290</td>
<td>255</td>
<td>550</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Urban</td>
<td>280</td>
<td>295</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Type of school</td>
<td>Govt.</td>
<td>300</td>
<td>286</td>
<td>550</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aided/unaided</td>
<td>270</td>
<td>264</td>
<td></td>
</tr>
</tbody>
</table>

Relevance of the Study

The present study ventures to compare the level of social responsiveness of secondary school students of State schools and CBSE. This study would be helpful to find out how far issue based curriculum is effective in enhancing social responsiveness of students. Analysis of the problem will shed light on the present condition. Based on that, suggestion for the improvement can be done. The study helps the educationalists to make suitable frame
work of various policies. It gives an account of differences in the gender of students, type of school, locale of school while analyzing the level of social responsiveness. It is believed that the findings of the study will be a beacon of light for the teacher as well as curriculum constructors to make readjustment in curriculum if necessary, which will enable the future citizens to cope up with the new challenge of the nation and the world and to make the students socially responsive citizens.

### Analysis of the Social Responsiveness of Secondary School Students in State and CBSE Schools

In this section an attempt was made to categorize the secondary school students as having high, average and low level of social responsiveness by calculating the scores of social responsiveness by working out the mean and standard deviation. The sample ranging in between $M+\sigma$ and $M-\sigma$ were considered as Average, those in the category above $M+\sigma$ were as high and those falling below $M-\sigma$ were considered as low level of social responsiveness. The details of the analysis of level of social responsiveness of secondary school students studying in issue based curriculum and CBSE curriculum for the total sample are presented in Table 2.

Table 2. Social responsiveness of students in State & CBSE schools.

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Groups</th>
<th>No. of students (%)</th>
<th>State schools</th>
<th>CBSE schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High level of social responsiveness</td>
<td>114(20.72)</td>
<td>74(13.45)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Average level of social responsiveness</td>
<td>352(61.75)</td>
<td>319(58)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Low level of social responsiveness</td>
<td>104(18.24)</td>
<td>157(28.5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>570</td>
<td>550</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 shows that out of 570 students from state schools following issue
based curriculum, 114 (20.72%) possess high level of social responsiveness, 352 (61.75%) possess average level of social responsiveness and 104 (18.24%) possess low level of social responsiveness. Out of 550 students following CBSE curriculum, 74 (13.4%) possess high level of social responsiveness, 319 (58%) possess average level of social responsiveness and 157 (28.5%) possess low level of social responsiveness. So at a glance, it can be seen that the level of social responsiveness of secondary school students studying in issue based curriculum is higher than that of the secondary school students following CBSE curriculum.

This analysis gives deeper insight into the curricular objectives, content and methodology of both curricula as to bring about the desired changes in moulding individuals with social responsiveness. In the Kerala state curriculum, the traditional methodology has been modified or changed to give thrust to the aspects like social constructivist mode of learning, learning based on critical thinking, learning to be sensitive to and find solutions for the issues in the society. Based on NCF (2005) and KCF(2007), the Kerala state has revised the curriculum and text books to a research embedded mode. The students are provided with problems, and they are provided with many traditional ways and approaches adopted to tackle the problems. They search various sources for finding out the strength and weakness of the existing methods. They then formulate or innovate a method to solve that problem. The solution will be discussed in detail in the classroom and a final feasible solution is arrived at. As extension programmes, the schools take up and try the solutions in the community with the help of local self government institutions, NGOs, PTA or the public. Thus there are instances of student participation and success stories in organic farming, waste management, unauthorised mining and like issues.

Majority of CBSE schools in Kerala are run by private agencies and they are largely involved in preparing the younger generation for developing their cognitive domain (PRATHAM, 2005). The trade mark of these schools is based on the predominance in public examination and as such they concentrate
much on the competitive domain. They are educating the heads and hands and forgetting the hearts of students. In this context, these schools forgo the challenges of the contemporary world in fostering essential values suiting the 21st century hidden in the CBSE curriculum, which is essential to sensitize the young generation about various issues that confront them in the new world order. The flexibility of the curriculum to accommodate various issues is purposively kept aside and the students are taught in an exam/ result oriented way (Pandey, Goyal Sundararaman, 2008). However, the aim of education is defined as providing quality education, preparing the students for higher education and competitive examinations and promoting cultural pluralism and preparing a global citizen (Quality Council of India, New Delhi). In this context, the analysis of the present study is reflected in the global positioning of Indian schooling made when the British Council notes that the Indian Secondary School Certificate (awarded by all school boards after grade 10) may generally be considered slightly below the British General Certificate of Secondary Education (GCSE) or the International GCSE High School Examinations standard. The content is considered equivalent, but students are not expected to problem solve or apply their knowledge in the same way (NCEE, 2005).

Comparison of the Level of Social Responsiveness of Secondary Schools in State and CBSE Schools

In this section, the investigator compared the level of social responsiveness of secondary school students in State and CBSE schools of the total sample, boys and girls, Urban area and rural area, Govt. Aided/unaided schools. Comparison of various sub groups in pairs was done using two tailed test of significance between mean scores of their social responsiveness. Comparison of mean scores of social responsiveness of secondary school students in state curriculum and CBSE curriculum was done by testing the significance of differences in mean values computed for the two groups. The results are summarized in Table 3.
Table 3. Comparison of the level of social responsiveness of secondary school students in State and CBSE schools based on the total sample.

<table>
<thead>
<tr>
<th>Group</th>
<th>Curriculum</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Students</td>
<td>CBSE</td>
<td>550</td>
<td>66.11</td>
<td>11.21</td>
<td>20.20</td>
</tr>
<tr>
<td></td>
<td>State</td>
<td>570</td>
<td>77.59</td>
<td>7.32</td>
<td></td>
</tr>
<tr>
<td>Girls</td>
<td>CBSE</td>
<td>295</td>
<td>65.08</td>
<td>11.37</td>
<td>14.39</td>
</tr>
<tr>
<td></td>
<td>State</td>
<td>312</td>
<td>77.33</td>
<td>7.55</td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>CBSE</td>
<td>255</td>
<td>66.98</td>
<td>11.04</td>
<td>14.44</td>
</tr>
<tr>
<td></td>
<td>State</td>
<td>258</td>
<td>77.80</td>
<td>7.10</td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>CBSE</td>
<td>255</td>
<td>65.47</td>
<td>11.31</td>
<td>11.19</td>
</tr>
<tr>
<td></td>
<td>State</td>
<td>290</td>
<td>77.18</td>
<td>8.14</td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>CBSE</td>
<td>295</td>
<td>65.13</td>
<td>10.82</td>
<td>12.82</td>
</tr>
<tr>
<td></td>
<td>State</td>
<td>280</td>
<td>77.37</td>
<td>7.31</td>
<td></td>
</tr>
<tr>
<td>Govt.</td>
<td>CBSE</td>
<td>286</td>
<td>67.11</td>
<td>11.02</td>
<td>13.43</td>
</tr>
<tr>
<td></td>
<td>State</td>
<td>300</td>
<td>77.69</td>
<td>7.58</td>
<td></td>
</tr>
<tr>
<td>Aided/unaided</td>
<td>CBSE</td>
<td>264</td>
<td>65.01</td>
<td>11.34</td>
<td>14.64</td>
</tr>
<tr>
<td></td>
<td>State</td>
<td>270</td>
<td>77.25</td>
<td>7.62</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 shows that the t-value is 20.20, which is significant at 0.01 level. This indicates that there is significant difference in the level of social responsiveness of secondary school students studying in CBSE and State curriculum based on total sample. This result supports the inferences made from the percentage score given in Table 2. The t-value for the sub-samples also is significant at 0.01 level. This indicates that there is significant difference in the level of social responsiveness of the subgroups (state) following issue based curriculum is greater than that of the subgroups (CBSE). Therefore, it can be interpreted that the level of social responsiveness of students following issue based curriculum is higher than that of the students following the CBSE curriculum.

The mean and standard deviations of the subgroups of boys, girls, govt. aided/unaided schools and rural and urban students in the state curricula and the subgroups of boys, girls, govt. aided/unaided schools and rural and
urban students in the CBSE curricula show variable social responsiveness.

**Comparison of the Level of Social Responsiveness of Secondary School in State and CBSE Schools**

In this section, the social responsiveness of secondary school students in the State schools of the sub samples of boys and girls, Urban area and rural area, Govt. Aided/unaided schools are compared. Similarly, the comparison of the sub groups in the CBSE schools was also done using two tailed test of significance between mean scores of their social responsiveness. The results are summarized in Table 4.

Table 4. Gender, locale and type of school wise comparison of social responsiveness of secondary school students in state curriculum and CBSE curriculum.

<table>
<thead>
<tr>
<th>Sl No.</th>
<th>Groups</th>
<th>State schools</th>
<th>CBSE schools</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N₁, Mean, SD</td>
<td>N₂, Mean, SD</td>
<td>t-value</td>
</tr>
<tr>
<td>1</td>
<td>Boys</td>
<td>258, 77.8, 7.1</td>
<td>255, 66.98, 11.04</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>312, 77.33, 7.55</td>
<td>295, 66.11, 11.21</td>
</tr>
<tr>
<td>2</td>
<td>Rural</td>
<td>290, 77.8, 7.1</td>
<td>255, 65.47, 11.31</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>280, 77.37, 7.31</td>
<td>295, 65.13, 10.82</td>
</tr>
<tr>
<td>3</td>
<td>Govt. Aided/unaided</td>
<td>300, 77.69, 7.58</td>
<td>286, 67.11, 11.02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>290, 77.62, 7.62</td>
<td>264, 65.01, 11.34</td>
</tr>
</tbody>
</table>

The mean and SD scores do not show any significant difference, confirming that there is no gender, locale or type of school difference in both the curricula, even though there exist significant difference between the two curricula the difference is insignificant.
Major Findings

The major findings that emerged from the present study are:

1. Out of 570 secondary school students of issue based curriculum, 76 (13.33%) possess high level of social responsiveness and 329 (57.7%) possess average level of social responsiveness and 165 (28.94%) possess low level of social responsiveness. Out of 550 secondary school students of CBSE curriculum, 124 (22.54%) possess high level of social responsiveness and 352 (64%) possess average level of social responsiveness and 74 (13.34%) possess low level of social responsiveness. It shows that secondary school students studying in state schools with issue based curriculum have more social responsiveness than those studying in CBSE schools.

2. The mean and standard deviations of secondary school students (CBSE) 66.11, and 11.21 and those for secondary school students (State schools) following issue based curriculum was 77.59, and 7.32 respectively for the variable social responsiveness. The critical ratio obtained was 20.20 which were significant statistically. This result was supporting the inference made from the percentage scores.

3. The mean and standard deviations of the subgroups of boys, girls, govt. aided/unaided schools and rural and urban students in state and CBSE schools show variable social responsiveness. The t value obtained in each case was statistically significant.

4. The mean and standard deviations of the subgroups of boys and girls, govt. and aided/unaided schools and rural and urban students in state and similar subgroups of CBSE schools show variable social responsiveness. The mean and SD scores do not show any significant difference. This means that there is no gender, locale or type of school difference in both the curricula, even though between the two curricula the difference is significant.
Summary and Discussion

Based on the major findings of the study, the following conclusions are arrived at and respective suggestions were made. The study found that the majority of the secondary school students in issue based curriculum have high level of social responsiveness than the secondary school students following CBSE curriculum. It is highly appreciated that the pattern was similar in the sub samples too. While comparing the level of social responsiveness of secondary school students in issue based curriculum and CBSE curriculum based on total sample, it was found that there is significant difference in the level of social responsiveness of secondary school students following two different adaptations of the NCF. The secondary school students following issue based curriculum have high level of social responsiveness than the secondary school students in the CBSE curriculum. This was true when the sub samples taken for the study were analysed. Hence, it may be concluded that the issue based curriculum is highly relevant for promoting social responsiveness of students.

While comparing the level of social responsiveness of secondary school students following CBSE curriculum and state curriculum, it was found that there is no significant difference between male and female students in their social responsiveness. Both the curricula are gender free in promoting social responsiveness. Likewise, the type of school and locality differences shows little influence on the social responsiveness of students. However, while comparing the level of social responsiveness of secondary school students in CBSE and issue based curricula each of these sub groups show significant difference.

The study highlighted the comparison of two active working models of the principles of constructivism and a learner centered, activity based and process oriented critical pedagogy. The state curriculum focused on a Social constructivist mode of learning based on critical thinking to be sensitive and responsive to the issues in the society. According to the new curriculum, the teacher is expected to bring about active participation and free interaction
in the classroom. The child is expected to gain experience in looking on the real problems of the society and find suitable, plausible solutions to these problems. As a result the child responds to the social issues in and around her immediate society at elementary level and the larger society at secondary and higher secondary levels. The result would be that the child would become proactive in the context of social changes. This has been reflected in the results of the present study also.

The study also hints that the process of education aims at social change which can only be brought through social intervention. Our social life consists of physical, social and cultural spheres. Each of these spheres has numerous problems. The curriculum framers have identified and focused on certain issue domains that are felt throughout the state. The major problems identified were related to scientific land-water management, agriculture, cohesive universal vision, human resource development, cultural consciousness, eco-friendly industrialization and urbanization, marginalized people and public health. These issues are developed and sensitized using various discourses which provide a linguistically rich environment in the classroom. They have to deal with the problems and formulate their ideas, opinions and attitude about them. The study shows that the issue based curriculum has succeeded in igniting the thoughts and activities of students to enable them to be responsive.

On the other hand, the National Curriculum Framework (NCF 2005) is the framework on the basis of which the Central Board of Secondary Education (CBSE) formulates its own curriculum and syllabus document by adopting and adapting the guidelines and syllabus provided. The core values of CBSE School Curriculum draw its strength, by keeping pace with the 21\textsuperscript{st} century and the global trends of educational transformations, as well as keeping in view that India is an independent nation with a rich variegated history, extraordinarily complex cultural diversity, and commitment to democratic values and general well-being. However, the study shows that the schools fail to accomplish such standards through the promotion of values based
learning activities. As majority of the schools are in the private sector, and the teachers are overloaded with the task of guiding students in the patterns and requirements of the examination system, rather than by the needs determined by a mix of criteria based on the child’s learning requirement, aims of education and the socio-economic and cultural contexts of learners. A marked feature of educational practices in school is a dull routine, bored teachers and students and rote system of learning (NCERT, 2006). The study shows that there is a need to include activities involving collaborations between oneself and others, individuals and the community, as well as humans and nature. To achieve this, proper training should be provided to teachers in the pre-service teacher preparation courses. Also refresher courses may be given to teachers with due emphasis to make them know how to impart social responsiveness to the students of higher education level.

The study clearly indicates that both the curricula have all that is needed for quality and value based outcome. But it is imperative that each teacher should make it a point that the wisdom of sages of yore is brought back into educational institutions. It is also necessary that quality process and practices are adopted to help learners leave the institutions as good citizens.

**Acknowledgement**

The Social responsive scale used in the present study was prepared under the supervision of the researcher by Jyothisree R.S. (Jyothisree R.S., (2010). Social Responsiveness of High school students prior to and after implementation of Issue based Curriculum, Unpublished M.Ed Dissertation, University of Kerala).
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OPEN EDUCATIONAL GAMES FOR RESPONSIBLE RESEARCH AND INNOVATION: A STUDY WITH BRAZILIAN UNIVERSITIES AND OPEN SCHOOLS

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Abstract

This paper was a practical application study. This work presents the summary of a qualitative investigation developed by associate partners of the European project ENGAGE. Our research question focused on how open educational resources based on games for Responsible Research and Education can foster the development of inquiry skills. This investigation included 55 facilitators in the UK and in three states in Brazil (Ceará, Santa Catarina and Paraná): 43 educators, 3 research-students, 4 research coordinators and 5 teachers, who used ENGAGE GM decision game and various technologies such as weSPOT, Google Hangout, nQuire tools and LiteMap. This group developed GM decision projects with 439 learners: 30 pre-service and in-service teachers, local communities, 40 in-service educators 16 teachers and 353 students. Findings of this study highlighted strategies developed by facilitators and their perceptions related to benefits, challenges and inquiry skills developed during the project such as: devise questions, interrogate source, examine consequences, justify opinions and use ethics.

Keywords: ENGAGE, Responsible Research, COLEARN, OER, RRI.


Introduction

This study, developed by the COLEARN research network, investigates how Open Educational Resources (OER) for Responsible Research and Innovation (RRI) can foster the development of inquiry skills described by the ENGAGE framework. The European project ENGAGE aims to spread the teaching and learning of RRI by connecting cutting-edge Science and Technology with educative materials (Sherborne et al, 2014). Its platform (EngagingScience.eu) combines OER with game-based activities for students, open online courses and community of practice for innovative teaching (Okada et al., 2015). ENGAGE aims to identify key strategies on how to increase RRI awareness at scale through OER in countries beyond Europe (Okada, 2016).

This research focuses on open schools and universities located in different states in the south and north regions of Brazil that used the “GM decisions” OER of the ENGAGE project about genetic modified (GM) food. The COLEARN community performed several webinars about the ENGAGE project and the concept of RRI (see Figure 1 and Figure 2 ) in which participants reflected on the dilemma of buying or not buying GM food and deciding if this kind of food is desirable or not in our society through evidence-based opinions.

Participants in the UK and in three states in Brazil (Ceará, Santa Catarina and Paraná) were 43 educators in various classrooms, 3 research-students, 4 research coordinators and 5 facilitators, who used Google Hangout, ENGAGE OER weSPOT and nQuire tools. Some of them used laptops and mobile phones to capture their group discussion for co-authoring posters. The video clip of the webinar is available at YouTube with 119 views (on the 30th of November, 2015).
The European Commission has highlighted the importance of RRI in Education through its Science in Society programmes FP7 and Horizon2020 (EC, 2010; 2012). Thus, our RRI approach focuses on inclusive engagement for responsible citizenship through the discussion of key questions: “Why do it? For what purpose and goals? Are these desirable? What are the

The concept of RRI has been introduced by the European Commission during this decade to highlight the transparent and interactive process by which citizens and innovators help each other. All societal actors should share informed-based opinions and ethical views about an innovative product or a new method. They must discuss potential risks and benefits during the whole process of scientific development (Sutcliffe, 2011; EC, 2012).

Scientist and non-scientists must reflect together on the applications and implications of innovations for society. This process should be inclusive, interactive, anticipatory and transparent, being based on societal needs, expectations and ethical values as to better align innovation outcomes.

Science education has a crucial role in educating the next generation for scientific literacy, responsible research and public engagement in scientific processes and decisions for innovation (Ratcliffe, 2003; Ryan, 2015). Science educators/teachers might meet various challenges to:

1. Support students to discuss and develop evidence-based opinions;
2. Equip students to be responsible citizens with and for society;
3. Develop their own skills for embedding authentic socio-scientific issues and inquiry projects into their curricula.

In order to overcome these challenges, Okada (2015) highlight three requirements: inquiry based science education tools, topical issues for authentic learning and teachers’ continuing professional development.

The first challenge, inquiry based science education tools are considered the basis for helping learners develop scientific skills, responsible values and lifelong learning. Inquiry based learning is a constructivist approach, which supports students in active experimentation (Dewey, 1933). It is based on a cycle of various steps: questioning, planning method, obtaining
and analysing data, drawing conclusions, reviewing outcomes and communicating results. These steps foster scientific reasoning, which is essential for learners to act as responsible citizens representing society’s needs in new scientific developments. They also need to be equipped to work as qualified professionals responsible for innovation that is desirable, acceptable and sustainable.

The second challenge requires integrating topical issues and authentic scenarios into the curriculum. This means also connecting informal and formal learning to enrich teachers’ lessons. Topical science from science-in-the news and open resources available in science centres or museums will help students connect science to contexts (Ratcliffe, 1997). Collaborative learning with peers, educators and experts will foster meaningful science learning, which is connected to students’ lives (Solomon, 1987). Science educators play an important role. They need to equip students for making sense of the cutting edge technology and science that affect their lives to make better decisions collaboratively in the present and for the future.

Finally, the third challenge is that teachers will need continuing professional development (CPD). They need to feel capable of using socio scientific dilemmas and topical issues related to emerging innovations to scaffold students inquiry based learning. They need to develop pedagogical know-how and experience to help students integrate conceptual and practical knowledge into ethical values for developing evidence-based thinking (Harris & Muijs, 2001). Science teachers must also be equipped for supporting students to understand how scientific research is developed in a responsible way.

**RRI Curriculum Framework**

RRI is an inclusive approach to ensure that societal actors can understand risks and benefits of scientific developments and make responsible decisions (Von Schomberg, 2013). RRI considers that technology and science progress
are the basis for a better future. However, innovations must be planned carefully to address societal needs in accordance with societal values in order to maximize the benefits and reduce any harmful impact (Sutcliffe, 2011). The ENGAGE RRI materials aim to help teachers equip students with RRI inquiry skills to form evidence-based opinions on societal needs and social values. The RRI curriculum developed by ENGAGE presents a framework which integrates 4 areas of science-in-society knowledge: technology impact, Big Science, values thinking and Science-Media.

Scientific inquiry skills for RRI focus on ten abilities with the aim to equip students for active engagement in contemporary science. These skills are: interrogate sources, use ethics, examine consequences, estimate risks, analyse patterns, critique claims, justify opinions, communicate ideas, devise questions and draw conclusions (Okada, 2015).

Findings
Data collected during the period of one month shows that the ENGAGE project “GM decisions” was used in various scenarios, disciplines, age-groups and with different learning outcomes. A large amount of data was captured through these initiatives via different technologies, such as Google (hangouts and semi-structured interviews), weSPOT (teaching-learning notes, photos, maps, and discussion), nQuire (images), LiteMap argumentative dialogue mapping, Facebook messages, Youtube videos and institutional websites where new OER related to GM food were published and co-authored collaboratively.
Table 1 provides an overview of the three initiatives which occurred in October - November 2015. These initiatives involved multiple societal actors from various disciplines, in both higher education and secondary school, formal and informal learning settings and face-to-face and online events supported by technologies developed at the OU-UK.

<table>
<thead>
<tr>
<th>States</th>
<th>Ceará</th>
<th>Santa Catarina</th>
<th>Paraná</th>
</tr>
</thead>
<tbody>
<tr>
<td>GM decision activity</td>
<td>CPD Programme - 1 month 300 attendees face-to-face activities</td>
<td>CPD event - 1 day 150 attendees face-to-face activities</td>
<td>Research network - 1 month 17 courses in H.E. and 1 school face-to-face and online activities</td>
</tr>
<tr>
<td>Area</td>
<td>Education and technology in digital centers for people who do not have access to internet in their houses</td>
<td>Education for secondary schools</td>
<td>Higher Education courses: Digital Design, Chemistry, Physics, Maths, Sports, Social Science, Portuguese, English, Spanish, Biology, History, Philosophy, Music and Pedagogy</td>
</tr>
<tr>
<td>Organised by</td>
<td>Secretary of the State of Ceará - Brazilian government</td>
<td>Federal University of Santa Catarina (UFSC)</td>
<td>Pontifícia Catholic University of Paraná (PUC-PR)</td>
</tr>
<tr>
<td>Purpose</td>
<td>Digital inclusion</td>
<td>Learning beyond school</td>
<td>Participatory innovative learning</td>
</tr>
<tr>
<td>Coordination team</td>
<td>1 coordinator, 3 facilitators 2 technologists</td>
<td>1 coordinator 2 facilitators 2 technologists</td>
<td>1 coordinator 13 lecturers and PhD students 10 researchers</td>
</tr>
<tr>
<td>Technologies</td>
<td>GoogleHangout, Facebook, Youtube, weSPOT (European inquiry platform), Mobile apps, nQuire-it, LiteMap.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td>30 pre-service and in-service teachers, local communities</td>
<td>40 in-service educators</td>
<td>16 teachers, 353 students, 500 visitors 498 users</td>
</tr>
</tbody>
</table>
Outcomes co-authored by participants

<table>
<thead>
<tr>
<th></th>
<th>1 workshop, 2 video clips</th>
<th>2 posters, 1 workshop, 2 video clips</th>
<th>1 exhibition, 9 games, 4 new OER, 42 illustrations, 1 webinar, 28 concept-maps, 1 sign-language activity for deaf people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Challenges</td>
<td>Preparation and dissemination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits</td>
<td>It is easy to embed the lesson in the curriculum and to promote collaboration among teachers researchers and students.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Brazilian initiatives on GM decisions (http://www.engagingscience.eu/en/2015/02/20/gm-decision/).

Evidence reveals that the “GM decisions” integrated to two pedagogical tools (dilemma and group discussion) increased teachers-participants’ awareness on RRI. It inspired reflective practitioners to adapt the ENGAGE OER to their different contexts and also recreate new ones (Figure 3, Figure 4).

Figure 3. OER including gamification and games developed by the PRAPETEC research group with educators, students in various course areas at PUC-PR.
In addition, some participants proposed several suggestions for extending the activity into RRI projects. Students interacted with researchers and scientists and co-created various examples to communicate their results. Qualitative data illustrates the ten skills that can be fostered not only in the European curriculum, but also in many Brazilian states. The uses of technologies to capture the RRI group discussions helped groups organise the debate, complete the game as learners and co-author posters to justify their opinions based on the arguments risk-analysis provided by the GM decision game (Figure 5). The new OER contextualised by the own societal actors who participated in the initiatives aim to increase RRI awareness in Brazil through an inclusive approach that goes beyond the ENGAGE project target, including deaf people, older citizens, primary school and local communities.
Figure 5. ENGAGE “GM decision” game developed by two educator groups in Santa Catarina who played the game as if they were students. The results of the games were captured with weSPOT app on a mobile phone and the photos are also available at weSPOT to facilitate co-investigation of teachers’ practices.

Figure 6. ENGAGE “GM decision” game using LiteMap developed by facilitators.

Two key benefits were identified by the facilitators of the events, educational
researchers and teachers in the three initiatives:

1. GM decision can be easily embedded in the Brazilian curricula in various states as it engages a participatory community of students, researchers from schools and universities.

“The GM decision dilemma promotes open-ended discussion engaging participates to take initiatives to co-investigate the issue beyond the face-to-face lesson.” (Research-coordinator from Ceara).

“Teachers who participated in the CPD event indicated that the activity allows interdisciplinary and collaborative work” (Educator from Paraná).

“The teachers from Santa Catarina who participated in the GM decision workshop have shown commitment. They were able to link the lesson with their curricula and have shown interest in using and integrating the technologies presented in workshops to encourage and motivate students in the classroom” (Facilitator from Santa Catarina).

“All activities performed in Parana were included in the curricula for undergraduates or secondary schools in the classroom. The work involved: teachers, students, contents and schools” (Researcher-Lecturer from Paraná).

“The GM decision activity facilitated multidisciplinary work among students and teachers from other disciplines. Participants mentioned that the lessons were very interactive and meaningful” (Teacher from Paraná).

2. “GM decisions” also engage participants to reflect on dilemmas which are relevant to society and develop useful RRI skills through formal and/ or informal learning.

“In Ceará, when teachers completed the “GM decision” lesson in groups, they mentioned that their engagement helped them reflect on how they could use it in the classroom for their students to feel engaged with the GM dilemma as well. They also found the technologies used during the event helpful to connect formal and informal learning as well and applying
“The involvement of students in activities in Paraná exceeded expectations. The tasks introduced helped students to generate more questions and arguments resulting in very reflective interaction in the classroom” (Education and Technology researchers from Paraná).

Additionally, participants also highlighted key challenges related to three issues:

1. **Preparation:** The majority of educators’ teams responsible for the three initiatives emphasised that collaborative planning is essential for deploying the GM lesson successfully at scale in a short time. All actors who are supporting the initiative should prepare the tasks, time, interaction and support before, during and after the event. This will help the coordination team to assure that the objectives will be addressed during the available period, the problems will be minimised and the impact maximised. This means selecting the resources (print materials), checking technology (URLs), anticipating problems (no internet connection) and identifying extra resources (post-its, poster paper, video clips about the issue and local science-in-the-news).

2. **Extra technology** (hangouts, weSPOT, nQuire and LiteMap) might be useful and relevant for promoting digital literacy integrated to scientific literacy. The coordination team tested the tools in their cities. They also prepared local guidelines to facilitate access and use of the tools, particularly for those who were not.

3. **Dissemination:** All collaborators from the three initiatives mentioned that dissemination is the key for large scale participation. In order to facilitate this process, clear and brief news via blogs, newsletters, videoclip invitations and social media will be useful. The other
motivation is to disseminate how participants’ needs or interests will be approached (e.g. certificate, networking, badges, awards, partnerships, professional development, etc.).

Various comments were described by educators related to six RRI inquiry skills presented by the ENGAGE project.

1. Devise Questions: Define a clear scientific question which investigates cause or correlation relationships between different factors.

   “Educators used the GM activity to help students draw up new questions and investigate answers based on their curiosity. They created these questions: “Do we know what we eat?”, What is the origin of our school lunch food? Is there any GM food in our lunch?” (Educational researcher) 30/11/2015.

   “The exhibition propitiated reflection on the knowledge related to agricultural biodiversity. The exhibition presented the GM dilemma to all visitors: Do you know what is transgenic? Would you buy (T) transgenic? Do you think that it is possible to eliminate all pesticides from food? Do you know what the symbol to represent transgenic foods is?” (Exhibit: Agrobiodiversity) 16/11/2015.

2. Interrogate Sources: being able to question different sources and assess their validity and trustworthiness by judging the reliability of the source, checking for bias and evaluating evidence for claim. “Undergraduates selected sources of information recommended by educators and they also brought other references from the web. They discussed the reliability of open sources including articles, reports and videoclips. They also had to explain why they selected the sources to use in their projects” (Lecturer) 30/11/2015.

3. Examine Consequences: being able to evaluate the merit of a solution or competing solutions to a real-world problem, based on scientific ideas, principles and empirical evidence, by identifying and reflecting on
consequences and/or logical arguments regarding relevant economic, societal, and environmental considerations. “Visitors of the exhibition were able to reflect on the transgenic dilemma through the questions highlighted in the exhibition. They also shared their opinions about the consequences of non-transgenic food on the Facebook page about the event. They became more aware that there is no symbol representing transgenic foods in the products in Brazil. They think that people consume transgenic food without knowing its origin. Consumers do not know the amount of pesticides in the food and consequences to their health” (Exhibition organiser) 16/11/2015.

4. Justify Opinions: being able to synthesise scientific knowledge, implications, and value perspectives into an informed opinion by describing key arguments supported by empirical evidence and scientific reasoning and identifying values based thinking, to support or refute a viewpoint on an issue or a solution to a problem. “Secondary school students supported by academic researchers, specialists and their teachers explained their opinions based on the information that they collected and evidence that they selected from various sources.” (Secondary school teacher) 30/11/2015.

5. Use Ethics: Being able to understand and use three kinds of ethical thinking: utilitarianism, rights and duties, virtues in order to make informed decisions and explain why different people may have different viewpoints about an issue. “Ethics is not discussed in the secondary school. Pre-service educators in their inquiry projects about GM discovered that there is no symbol to represent transgenic in Brazil and the references are not enough for people with special needs. They developed a sign language symbol for GM food” (Lecturer in education) 30/11/2015.

6. Communicate Ideas: Being able to effectively describe opinions and accomplishments with text and illustrations, both orally and in writing, in a range of formats, using the major features of scientific writing and speaking. “The participants of the PRAPETEC group from PUC-PR
produced videos answering questions and created and shared various photos of the exhibition. The exhibition, academic posters and students’ inquiry projects were widely disseminated among educators, learners and citizens” (Exhibit: Agrobiodiversity) 16/11/2015.

The other skills described by the ENGAGE project, such as: estimate risks, analyse patterns, draw conclusions and critique claims were not visible in the Brazilian initiatives due to the tasks selected by the educators and the time available to develop the project. However, the research team and educators are planning to extend the project for the next term and include tasks to cover the ten skills with other OER available in the ENGAGE website.

**Final Remarks**

This study is timely since Responsible Research and Innovation (RRI) for equipping teachers and learners has become more important and there is a lack of studies in this field. Although there are various RRI projects funded by the European Commission, such as ENGAGE (engagingscience.eu), most of these initiatives are recent. Further research will be necessary, especially on the learning outcomes and inclusion approach to promote digital and scientific literacy (Ratcliffe, 2003).

Previous research (Kikis-Papadaskis & Chaimala, 2015) shows various barriers and challenges for teachers to innovate in RRI teaching in Europe. By discussing together both the ENGAGE framework for teachers’ CPD, which considers those challenges, as well as strategies suggested by the teachers of the ENGAGE community, we hope to find practical ways of approaching the initial key issues in this area: How could teachers use OER game – based activities to foster inquiry based learning for RRI? What might be the initial effect of teaching innovation through dilemma and group discussion on students’ learning (Smith et al., 2005)? What are the next challenges for ENGAGE CoP of innovative teachers (Hoban, 2002)?
Our findings related to one month of the three ENGAGE initiatives in Brazil are encouraging and the lessons learned might be useful in Europe. The outcomes and impact will also benefit both countries. As part of the legacy plan, the resources produced and translated into Portuguese will be used in Portugal and other Portuguese-speaking countries. Even though initiatives were developed in a short period of time, participants’ comments show various strategies about how to innovate in formal or informal learning with ENGAGE OER and its pedagogical tools for dilemma and group discussion in Higher Education and schools interested in open schooling. They also mentioned challenges and recommendations to overcome their difficulties. The next stage of our work is to translate and localise the ENGAGE online courses (MOOC) in Brazil, which initiative will be coordinated by the COLEARN research network. Our next investigation will also focus on the uses of problem-based solution materials and argumentative conversation tools. If ENGAGE CoP in Brazil can be fostered successfully, this might help a higher number of teachers to reach a transformation phase through inquiry based projects and case studies developed by students. Therefore, it will be possible to find new ways to address the problem outlined at the beginning of this paper - how to use OER games on RRI for equipping the next generation for responsible citizenship at scale.

Acknowledgments

The authors are grateful to various collaborators of the COLEARN research network, including educators, technologists, researchers and project coordinators. We are also grateful to all contributors on the three initiatives in Ceará, Paraná and Santa Catarina as well as to Dr. Cíntia Rabello and Dr. Danilo Rothberg who were scientific reviewers of this work. The research leading to these results has received funding from the European Community’s Seventh Framework Programme FP7/2007-2013 under grant agreement No [612269].
References


A GENDER WISE STUDY OF RELATIONSHIP OF SCHOOL TYPE AND SELF-ESTEEM OF MUSLIM STUDENTS

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Abstract

Every child must have the ability to express himself and possess self-belief. Earlier researchers reported that children’s self-esteem depends upon organisational and educational characteristics of their school. Smith and Mackie (2007) define it by saying ‘The self-concept is what we think about the self’. Self-esteem plays a very important role in building the confidence of a person. Schools will be successful in their educational mission if they integrate efforts to promote Self-esteem in children together with their education. The adolescent years are a key period in which children develop their identity, emotional intelligence, self-esteem and personality.

India is a diversified country based on religion, caste and creed. Muslims have minority status in India. Articles 29 and 30 of the Indian Constitution give them the right to establish and administer educational institutions which are known as Muslim Minority schools. Many Muslim students attend Muslim Minority schools where they get integrated education through which their Muslim religious identity is maintained and they are prepared for modern professional life. Some Muslim students attend General schools where the students from all religious sects of society study together. The Researcher has been observing a difference in the personality and confidence of male and female Muslim students and wanted to explore the factors responsible for it.
Many research studies have explored the impact of school characteristics on the self-esteem of racial and ethnic group children.

This study examined the relationship between the type of school attended and Self-esteem of male and female Muslim students. The sample consisted of 335 students (167 males and 168 females) studying in standard X, selected randomly from 15 different Muslim Minority and General Schools in the city of Mumbai.

Descriptive survey method was used to collect the data and t-test was used to find out the differences in Self-esteem of male and female Muslim students, studying in Muslim Minority and General Schools.

This study showed a clear gender difference in the Self-esteem of male and female Muslim students studying in both the schools.

Findings of the study revealed that there is a strong relationship between Type of school and the Self-esteem of male Muslim students. Muslim male students studying in Minority Schools show lower Self-esteem than those studying in General Schools. This study also showed that there was no significant relationship between the Self-esteem of female Muslim students and the type of school they attended. The Self-esteem of Muslim female students was found to be significantly higher than that of male students in both type of schools.

**Keywords:** Self-Esteem, Muslim Minority Schools, schools, Minority students, Muslim students.

**Introduction and Relevance**

The concept of Self-esteem first appeared in ‘Principles of Psychology’ by William James in 1890. In this book he argued that Self-esteem is a comparison between ideal self and actual self. According to him, Self-esteem is an expression of approval or disapproval, indicating the extent to which
a person believes himself or herself, competent, successful, significant and worthy. When children enter school, their self-concept is already substantially formed, primarily through the influence of family (Purkey, 1970). Although nothing impacts the development of a child’s Self-esteem as significantly as the family (Trautwein, Ludtke, Koller, & Baumert, 2006) the impact of the school environment cannot be overlooked. Academically and interpersonally, students’ Self-esteem is affected daily by evaluations not only from school personnel but also from peers (Cynthia, Gerald, Carol, & Richards, 1996). Self-esteem is one of the many outcomes of good school experiences (Smith, 2002). There is ample empirical evidence showing a close relationship between Self-esteem and school achievement. Self-esteem is influenced by achievement and appreciation shown by others at school and is a good predictor of educational outcomes (Trautwein, Ludtke, Koller, & Baumert, 2006). Children have a right to feel good about their personal and ethnic group identity. Children’s personal and ethnic group identity depends on the organisational and educational characteristics of schools (Verkuyten 2004).

Schools are expected to have caring and supportive settings that help students to develop positive Self-esteem. Many studies revealed that schools play a crucial role in the development of adolescent Self-esteem. During this period, children evolve in a context where they implicitly and explicitly learn about themselves, while experiencing the major physical, cognitive, emotional and social changes of adolescence.

The school plays a very crucial role in the development of children’s Self-esteem. During years of schooling, children spend good time with their peers as well as with the teachers. Peers and teachers may have influence on children’s Self-esteem.

Children’s experiences at school may comprise of positive experiences such as teachers’ warmth and support, peaceful learning environment or negative experiences such as bullying by peers, insensitivity of teachers, poor academic performance etc. Theories attempting to explain the relations
between school life and psychosocial development invoke the fact that children’s experiences at school play a determining role in the fulfilment of their basic developmental needs.

India is a diversified country based on religion, caste and creed. Muslims have minority status in India. Articles 29 and 30 of the Indian Constitution, give them the right to establish and administer educational institutions which are known as Muslim Minority schools. Generally, Muslim students in India can attend Muslim Minority schools where the majority of students are Muslims or general schools where students from different religions, caste and creed study together. The Researcher is a teacher in a Muslim Minority junior college, and observed that in these schools most of the teachers and students are from the Muslim community and feel oneness among them. It also appears that many Muslim parents believe that the Muslim Minority schools provide the best education and opportunities for their children, have a more holistic approach, provide strong cultural and religious instruction and also prepare them for modern professional life. Some Muslim students attend General Schools where students from all religious sectors of society study together. In this scenario, the Researcher identified a need for more attention on the comparative study of different educational settings and its impact on the Self-esteem of the respective students.

**Aims & Objectives**

The objective of the study is to measure the Self-esteem of male and female Muslim students studying in Muslim Minority Schools and General Schools and then to establish a relationship between the Self-esteem of male and female Muslim students and the type of schools they attended.
Hypothesis

1. There is no significant difference in the Self-esteem of Muslim males and females studying in Muslim Minority schools.
2. There is no significant difference in the Self-esteem of Muslim males and females studying in General Schools.
3. There is no relationship between the Self-esteem of Muslim male students and the type of school they attended.
4. There is no relationship between the Self-esteem of Muslim female students and the type of school they attended.

Methodology

Variables:

Independent Variable

1. Type of school
   - Muslim Minority Schools - Government aided Minority Schools, established and administered by Muslims according to Articles 29 & 30 of the Indian Constitution and affiliated to the Maharashtra State Board of Secondary & Higher Secondary Education in India.
   - General Schools - Government aided, not established and administered by Muslims. Affiliated to the Maharashtra State Board of Secondary & Higher Secondary Education in India.
2. Muslim male students
3. Muslim female students

Dependent Variable

1. Self-esteem - It is a judgment and an attitude toward the self. Self-esteem encompasses beliefs (for example, “I am competent”),
“I am worthy”) and emotions such as triumph, despair, pride and shame (Hewitt, 2009). It is a person’s overall emotional evaluation. An extent to which a person believes himself competent, successful, significant and worthy.

Descriptive survey method of investigation was used in the present study. The study was conducted on a representative sample of 335 students (167 males and 168 females) studying in standard X, selected randomly from 15 different Muslim Minority Schools and General Schools in the Mumbai region.

Self-Esteem Scale by Santosh Dhar and Uoinder Dhar (2014) was used in the present study. It was ten items Likert scale, with items answered on four points from strongly agree to strongly disagree.

T-test was applied to find out the differences between self-esteem of male and female Muslim students and type of school.

Reliability

The reliability of the scale was determined by the split-half method corrected for full length by applying Spearman Brown Prophecy formula on the data collected from the sample of 277 subjects. The reliability coefficient was found to be 0.87.

Validity

In order to determine validity from the coefficient of reliability (Garrett, 1981), the reliability index was computed. The index of reliability has maximum coorelation which the given test is capable of yielding in its present form. The validity of this scale was found to be 0.93.

Self-esteem is defined by William James in 1890. He defined Self-esteem as ‘success divided by Pretensions’. Self-esteem is a person’s overall emotional evaluation of his or her own worth. It is a judgment and an attitude toward the self. Teachers and parents always focus their efforts on boosting
self-esteem, on the assumption that high self-esteem will cause many positive outcomes and benefits for their wards. Appraisal of the effects of self-esteem is complicated by several factors. Because many people with high self-esteem exaggerate their successes and good traits, we emphasize objective measures of outcomes. High self-esteem is also a heterogeneous category, encompassing people who frankly accept their good qualities along with narcissistic, defensive, and conceited individuals.

Analysis and Findings

Table 1. Self-esteem of Muslim students studying in General Schools & Muslim Minority Schools.

<table>
<thead>
<tr>
<th></th>
<th>SELF ESTEEM (SE) STUDENTS General Schools</th>
<th>SELF ESTEEM (SE) STUDENTS Muslim Minority Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>36.36021505</td>
<td>36.12751678</td>
</tr>
<tr>
<td>Variance</td>
<td>56.66413833</td>
<td>44.69308906</td>
</tr>
<tr>
<td>Observations</td>
<td>186</td>
<td>149</td>
</tr>
<tr>
<td>t Stat</td>
<td>0.295377156</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) two-tail</td>
<td>0.767889868</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Self-esteem of Muslim male students studying in General and Muslim Minority Schools.

<table>
<thead>
<tr>
<th></th>
<th>SELF ESTEEM (SE) MALE General Schools</th>
<th>SELF ESTEEM (SE) MALE Muslim Minority Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>35.56097561</td>
<td>32.59090909</td>
</tr>
<tr>
<td>Variance</td>
<td>60.85485806</td>
<td>39.45665962</td>
</tr>
<tr>
<td>Observations</td>
<td>123</td>
<td>44</td>
</tr>
<tr>
<td>t Stat</td>
<td>2.27409848</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) two-tail</td>
<td>0.024248552</td>
<td></td>
</tr>
</tbody>
</table>
Self-esteem is one of the many outcomes of good school experiences (Smith 2002).

The result obtained from t-test (Table 1), t=0.767, suggests that there is
no significant difference in the Self-esteem of Muslim students attending General and Muslim Minority Schools. It reveals that Self-esteem of Muslim students of Std X do not differ significantly irrespective of the type of school they attended.

The result obtained from t-test (Table 2), t= 0.0242, revealed that male Muslim students studying in General Schools have higher Self-esteem than those studying in Muslim Minority Schools.

The result obtained from t-test (Table 3), t= 0.763, shows that Self-esteem of female Muslim students studying in General Schools and Muslim Minority Schools do not differ.

The result obtained from t-test (Table 4), t= 1.78441E -05, shows that Self-esteem of male and female Muslim students studying in Muslim Minority Schools differ strongly and significantly. Muslim female students have higher Self-esteem than Muslim male students, studying in Muslim Minority Schools.

The result obtained from t-test (Table 5), t= 0.0427, shows that Self-esteem of male and female Muslim students studying in General Schools differ strongly and significantly. Muslim female students have higher Self-esteem than Muslim male students, studying in General schools.

Therefore, the study revealed that Self-esteem of Muslim female students is higher than Muslim male students irrespective of the type of school they attended.

However, there is no strong and significant relationship between the Self-esteem of Muslim students of standard X and the type of school they attended.
Conclusion

Education is a basic human right of all children, but according to many researchers, minority children in all regions of the world continue to suffer disproportionately from unequal access to quality education. Failure to ensure equal opportunities and equal access to education creates new generations of disadvantaged people in all walks of life, and these disadvantaged people are unable to fulfil their potential in employment as well as contribute fully to their own communities or to the wider society.

“All minorities shall have the right to establish and administer education institutions of their own” as mandated by Article 30(1) of the Indian Constitution. The Government is committed to address the existing deprivation in education of minorities, especially the Muslims, who constitute the major chunk of the minorities.

The specific goal of the present study was to investigate whether different school types might account for higher or lower Self-esteem of Minority Muslim students. The types of schools considered for this study are Government aided Muslim Minority Schools, established and administered by Muslims as per the Article 29 & 30 of the Indian Constitution, and affiliated to the Maharashtra State Board, and Government aided General Schools which are not established and administered by Muslims, and are affiliated to the Maharashtra State Board. In this study, an overall difference in Self-esteem between students attending Minority and General Schools was not apparent but a clear gender difference was found. The Self-esteem of Muslim female students was found to be significantly higher than that of Muslim male students in both types of schools. The reasons may be due to different gender roles and cultural emphasis. Male students may face somewhat different challenges that lead to lower Self-esteem when compared to their Females counterparts.

It was also found that the Self-esteem of Muslim male students is higher in General Schools than in Muslim Minority Schools. In the present study, only
type of school has been taken into consideration, but there may be many other factors such as parental support, family background, socio-economic status, peer pressure etc. that have an impact on Self-esteem.

In this study, the impact of type of school on Self-esteem was examined only on adolescents, these findings cannot be generalised to other age group students and hence further studies have to be conducted for these other groups.

To conclude, the findings of the study make an important contribution to our understanding of the Self-esteem of Muslim students. Muslim female students have higher Self-esteem than Muslim male students irrespective of school type. Muslim male students studying in Muslim Minority schools have lower Self-esteem than those studying in General schools, which may make them feel incompetent, unsuccessful, insignificant and unworthy in real life settings. Low Self-esteem produces feelings of unworthiness, inadequacies and deficiencies as reported by (Rosenberg M, 1995). It may also affect their academic achievement. In spite of inconsistency between school performance and Self-esteem, the two do have a positive relationship (Carl & Min, 2002).

**Recommendations**

Keith, Rebecca, Beth and Warren (2002), in their research ‘Increasing Self-esteem and school connectedness through a multidimensional mentoring programme’ found that, school based interventions indicated programmes offering safe environment, encouragement and support, empowering activities and specific guidelines for appropriate behaviour contribute to increased Self-esteem. School based programmes can enhance student Self-esteem by focusing on academic achievement and school, peer and family based connectedness. Minority schools must organise workshops and Programmes offering safe environment, encouragement and support, empowering activities and specific guidelines for appropriate behaviour.
which will contribute to increase Self-esteem of Minority students. Literature suggests that Minority schools provide a positive educational experience for minority students. Minority schools have a challenge to create an environment where the children can feel valued and secured which will help them develop Self-esteem.

Self-esteem is influenced by achievement and appreciation shown by parents and others at school. Adequate Self-esteem has been related to the capacity to cope with school tasks by employing effective study methods and actively participating in the learning process, both of which are required in achieving set objectives (Croker & Wolf 2001). Parents should try to build confidence in their children by appreciating achievements however small it may be.

Policy makers must arrange compulsory training programmes for the teachers and social workers from the Muslim Minority to make them sensitive enough to handle the problems of minority students.

Muslim Minority Schools should provide the best education and opportunities to their children, have a more holistic approach and provide strong cultural instructions to the students. Muslim students attending Minority and General Schools should not differ in Self-esteem. It means Muslim Minority Schools should make extra efforts to develop Self-esteem in their students. Awareness about government policies and welfare schemes which are available for the Minority Schools to upgrade the infrastructure, facilities and to support proper development of students should be created. Programmes like Social and Emotional Learning (SEL) should be introduced which may positively influence Self-esteem of the students.
Bibliography


SAMPLE SIZE AND ETHICAL ISSUES IN RESPONSIBLE RESEARCH: A REVIEW

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Abstract

As a researcher, one makes new contributions to the existing field of knowledge and helps in the economic, political and social development of any nation. Scientists and researchers have long been regarded as the “seekers of truth”. Statistical studies (surveys, experiments, observational studies, etc.) are always better when they are carefully planned. Good planning has many aspects. The problem should be carefully determined and operationalized. Sample size determination is often an important step in planning a statistical study and it is usually a difficult one. Among the important hurdles to be surpassed, one must obtain an estimate of one or more error variances and specify an effect size of importance. This article offers some suggestions for successful and meaningful sample size determination, particularly, in responsible research. Another important issue that we discussed in the article is of ethics. Ethics is an integral part of any research from the beginning to the end. It is only by getting the ethics right that research excellence can be achieved. Ethical decision-making depends on the goal of educational and managerial research and how the study relates to policy-making or interventional practices. Once the optimal sample size and ethical issues are in place, the research can be used to discover new facts, verify and test the discovered facts. This will also help
us to analyse an event or process or phenomenon to identify the cause and effect relationship to develop new scientific tools, concepts and theories to solve and understand scientific and nonscientific problems, find solutions to scientific, nonscientific and social problems and to overcome or solve the problems occurring in our everyday life.

Keywords: Sample size, ethics, observational studies, power, significance, responsible research.

Introduction

Most societies also have legal rules that govern behavior, but ethical norms tend to be broader and more informal than laws. Although most societies use laws to enforce widely accepted moral standards and ethical and legal rules use similar concepts, it is important to remember that ethics and law are not the same. An action may be legal but unethical or illegal but ethical. We can also use ethical concepts and principles to criticize, evaluate, propose, or interpret laws. Indeed, in the last century, many social reformers urged citizens to disobey laws in order to protest what they regarded as immoral or unjust laws. Peaceful civil disobedience is an ethical way of expressing political viewpoints. Another way of defining ‘ethics’ focuses on the disciplines that study standards of conduct, such as philosophy, theology, law, psychology or sociology. For example, a “medical ethicist” is someone who studies ethical standards in medicine. One may also define ethics as a method, procedure or perspective for deciding how to act and for analyzing complex problems and issues. For instance, in considering a complex issue like global warming, one may take an economic, ecological, political, or ethical perspective on the problem. While an economist might examine the cost and benefits of various policies related to global warming, an environmental ethicist could examine the ethical values and principles at stake.

There are several reasons why it is important to adhere to ethical norms in research. First, norms promote the aims of research such as knowledge,
truth and avoidance of error. For example, prohibitions against fabricating, falsifying or misrepresenting research data promote the truth and avoid error. Second, since research often involves a great deal of cooperation and coordination among many different people in different disciplines and institutions, ethical standards promote the values that are essential to collaborative work, such as trust, accountability, mutual respect and fairness. For example, many ethical norms in research, such as guidelines for authorship, copyright and patenting policies, data sharing policies, and confidentiality rules in peer review are designed to protect intellectual property interests while encouraging collaboration.

Scientists and researchers have long been regarded as the “seekers of truth” (LaFollette, 1994). Rajasekar et al. (2013) identified the following objectives of research: (1). to discover new facts, (2). to verify and test important facts, (3). to analyse an event or process or phenomenon to identify the cause and effect relationship to develop new scientific tools, concepts and theories to solve and understand scientific and nonscientific problems, (5). to find solutions to scientific, nonscientific and social problems, and (6). to overcome or solve the problems occurring in our every day life. Considering the importance of research in our daily life, one must take care of conducting it with great responsibility.

Before planning a research, the following questions often arise:

- Is this ethical?
- Do I have the required competency and knowledge regarding the field of study?
- How can I contribute to society through this research?

Therefore, in reference to the above-mentioned questions one can say that the concept of ‘Responsible conduct of research’ (RCR) involves the following key characteristics:

- Knowledge of ethical principles involved in research,
• Conceptual clarity regarding the topic of interest, and
• Knowledge of appropriate research techniques required to analyze data.

Ethical Principles

Ethics as an academic discipline is a branch of philosophy that is concerned with answering questions about duty, honor, integrity, virtue, justice, the good life and so on. Research ethics studies the ethical problems, dilemmas and issues that arise in the conduct of research (Shamoo & Resnik, 2003). As a school of thought, objectivism views ethical principles to be universal and applicable at all times and in all situations to everyone. On the other hand, what is ethical varies from culture to culture and situation to situation according to the relativism school of thought. The latter view does not see ethical principles as universal and is flexible in approach (Bernstein, 1983). However, ethical decision-making depends on researcher’s insight, knowledge, expertise and experience.

Ethics are not only limited to the participants of the study but also extend up to the general population including the organization involved in research, particular culture and countries related to the topic of interest and those interested in using the findings to their benefit. These broader relationships must be taken into account before making an ethical decision (Hammersley & Traianou, 2012). Ethical decision-making also depends on the goal of educational and managerial research and how the study relates to policy making or interventional practices.

According to Hammersley and Traianou (2012), the prime ethical responsibility of the researcher is to pursue worthwhile knowledge; no other goal should be substituted for this, nor should it be compromised by other concern. Moreover, there may need to be resistance against attempts to impose excessive ethical or practical requirements that make it impossible to carry out research effectively. The authors advice flexibility and knowledge as priorities in the ethical decision making process. They also state that research
and ethical principles are continuous in nature and demand flexibility and ongoing adjustment as the process of conducting research goes on.

**Hammersley and Traianou (2012) summarized five commonly recognized ethical principles as:**

1. **Minimizing Harm:** Researchers must ensure that the research process does not cause any physical or psychological harm to participants such as children and educators or managers involved in the study and must reduce harm where it is foreseeable.

2. **Respecting Autonomy:** Allow individuals to decide for themselves whether they would like to be an active part of the study. This principle takes into account the freedom and self-determination of individuals and also requires that the researcher creates conditions for autonomous choice by explaining the risks, time and benefits involved in the research. In some cases where the subjects belong to a vulnerable group and cannot take the decision to participate for themselves, such as mentally retarded children, the responsibility lies in the hands of the guardians or parents.

3. **Protecting Privacy:** The principle of confidentiality is very important to initiate trust and rapport building between the researchers and the participants. It is important to maintain the confidentiality of the identity and information revealed by the participants in the study. Not taking care of this principle, results in feelings of betrayal and an attitude of suspicion towards researchers in general among the research subjects.

4. **Offering Reciprocity:** Participants give up their valuable time in order to be a part of the study. Therefore, it is desirable for researchers to reciprocate their subjects’ participation by giving incentives, such as, money or tokens.

5. **Treating People Equitably:** It means that the researchers must not discriminate against any particular group of subjects.
In addition to the above-mentioned ethical principles, Shamoo and Resnik (2003) included further elements, such as:

1. **Honesty**: Honestly report data, results, methods and procedures, publication status, research contributions and potential conflicts of interest. Do not fabricate, falsify or misrepresent data.

2. **Objectivity**: Strive for objectivity in experimental design, data analysis, data interpretation, peer review, personnel decisions, grant writing, expert testimony and other aspects of research where objectivity is expected or required.

3. **Integrity**: Maintain integrity by being truthful in one’s practice. Do not fraud the research results and findings.

4. **Carefulness**: Record one’s research work carefully and maintain a diary recording of each step involved in the research. Critically examine one’s own work and decide the appropriate technique for analyzing data carefully.

5. **Openness**: Be open to criticism and exchange of new ideas from other researchers, seniors and critics.

6. **Respect for Colleagues**: Respectfully take fellow researchers’ advices into consideration and promote their well being.

7. **Respect for Intellectual Property**: Honor patents, copyrights and other forms of intellectual property. Do not use unpublished data, methods or results without permission. Give credit where credit is due.

8. **Freedom**: Allow everyone involved in research to exert their freedom of thought and expression during the research process.

9. **Social Responsibility**: Be motivated by the ultimate goal of social welfare and social good through the particular research undertaken.

10. **Competence**: Conduct research only within the boundaries of one’s competence and existing knowledge. Whenever the researcher is
required to work in a research area that is new to him or her, it is necessary to gain the relevant training, education and experience from an already trained and experienced supervisor. Therefore, it is important for researchers to update themselves and maintain their efficacy and competency.

Apart from the ethical principles mentioned above, a few codes of conduct are imperative to educational and management research, such as:

**Informed consent to research**

When obtaining informed consent, researchers must inform participants about (1). the purpose of the research, expected duration and procedures; (2). their right to decline to participate and to withdraw from the research once participation has begun; (3). the foreseeable consequences of declining or withdrawing; (4). reasonably foresee factors that may be expected to influence their willingness to participate such as potential risks, discomfort or adverse effects; (5). any prospective research benefits; (6). limits of confidentiality; (7). incentives for participation; and (8). whom to contact for questions about the research and research participants’ rights. They provide opportunity for the prospective participants to ask questions and receive answers.

**Deception in research**

Deception is used when the researcher is able to justify that the study doesn’t allow non-deceptive techniques. For example, observing students in classroom settings may make them conscious and increase social desirability in their behavior if they know the purpose and the goal of the study. This would effect the purpose of the study and the results found thereby would not be genuine. Therefore, in such settings the researcher must use deception in order to capture the behavior of subjects in real settings and not let it get confounded by social desirability.
Debriefing
Upon the completion of the study, researchers must provide appropriate information about the nature and results of the research and clear any misconceptions that participants may have regarding the design of the study, their confidentiality and the role that they played. In case the study requires withholding or delaying information then reasonable measures need to be taken to minimize harm.

Research misconduct
Being irresponsible while conducting research can have undesirable consequences, such as lack of originality in the study, possible harm to the subjects, negative perception of researchers among the general population, type 1 or type 2 errors in result interpretation and various others which are currently beyond the scope of this article.

Commission on Research Integrity proposed definition of research misconduct as “significant behavior that improperly appropriates the intellectual property or contributions of others, that intentionally impedes the progress of research or that risks corrupting the research record or compromising the integrity of research practices. Such behaviors are unethical and unacceptable in proposing, conducting, or reporting research, or in reviewing the proposals or research reports of others (Sigma, 1999).”

Some of the factors that may lead to research misconduct are as follows:

Failure to conduct review of literature exhaustively and critically
Researchers must always assume that some amount of research has already been conducted on their topic of interest. Prior studies must be exhaustively examined. If a researcher is unable to find specific studies related to the topic, then it is acceptable to quote studies done on variables that are conceptually closer to the variable of interest. After finding sufficient articles, it is necessary to critically examine the research gaps commonly found in them and mention what is novel about one’s study (Clark, 2011).
Failure to examine the normality of data

It is important to see whether the raw data is normally distributed or not and apply the appropriate techniques of transformation. One may draw histogram, box-plot or normal quantile plot to check the normality of the data. Failure to do so leads to misinterpretation of results.

Plagiarism

It is difficult to assess the difference between deliberate or accidental plagiarism. Researchers must present ideas and findings into a research paper with great care. Stolley et al. (2013) summarized a few actions that undoubtedly fall under the misconduct of plagiarism, namely,

- Buying or stealing a research paper for yourself;
- Copying sentences or passages verbatim. If one writes more than two words consecutively, then quotation marks and page number become necessary to avoid plagiarism;
- Not giving the due credit to other researchers for citing/referring their work.

When do we give credit?

- Words or ideas presented in a magazine, book, newspaper, song, TV program, movie, Web page, computer program, letter, advertisement, or any other medium;
- Information you gain through interviewing or conversing with another person, face to face, over the phone or in writing;
- When you copy the exact words or a unique phrase;
- When you reprint any diagrams, illustrations, charts, pictures or other visual materials;
- When you reuse or repost any electronically available media, including images, audio, video, or other media (as cited in Stolley et al., 2013).
Failure to point out the weaknesses in one’s work

It is highly helpful for future researchers to know any weaknesses of study pointed out by the author(s)’ perspective. This helps both future researchers as well as the authors of the paper to understand how to avoid the current gaps and flaws in case of any continuation of the study.

Questions for discussion:

How can one be trained in responsible conduct of research?

What factors influence researcher’s attitude towards conducting a research responsibly?

Now, we shall discuss research responsibility in management and education.

Research Responsibility in Management

Management research has consistently drawn on techniques and practices established in other social sciences because it is an applied subject that crosses established disciplinary boundaries (Knights and Willmott, 1997). Bell & Bryman (2007) questioned whether management researchers can continue to rely on this approach in the context of increased regulation of social research and to consider whether there are certain ethical issues that are affected by the specific context of management research. An exploratory analysis of the content of ethics codes formulated by nine social scientific associations was undertaken to identify the main ethical principles they covered and to analyse their underlying ethical tone.

Management research can be understood as a community of practice (Wenger, 2000; Bell & Bryman, 2007) that relies on commitment to a specific domain or body of knowledge for its development. However, management research is not a single community of practice; instead it consists of multiple, overlapping communities, each with its own sense of joint enterprise, mutuality and shared repertoire. In order to achieve consensus under
conditions of moral disagreement, the code’s authors are forced to settle on the ‘highest common factor’, leading to the production of guidelines that consist of principles so abstract or uncontentious that they fail to give guidance.

Conflicts of interest and affiliation bias: Furedi (2002) suggested that universities have developed an obsession with research ethics driven by risk assessment and a fear of litigation that leads them to act more conservatively than the law requires, being more concerned with the reputation of the university than with the ideals of research. He is particularly critical of university research ethics committees, seeing them as a bureaucratic device that threatens academic freedom to pursue research. Another argument against the adoption of ethics codes relates to the perceived threat to researcher autonomy that formal regulation is suggested to pose. This stems from the idea that managerialism threatens the values that are central to the formation of academic identity (Prichard, 2000).

Power relations: In psychological research, power relations tend to favour the researcher who is often a professional psychologist carrying out research on their own patients (Brown, 1997). In education, research participants are often children who are at a power disadvantage relative to those who are carrying out the studies. The question for management researchers is whether the principle of informed consent is an appropriate mechanism for dealing with the ethical implications of relationships with research participants in this field of study.

Informed consent: The principle of informed consent can make it difficult to gain the understanding of groups that do not want to be studied, such as business and government elites, even if it may be argued that it is in the interests of public accountability that such groups should be studied. Organizations are also powerful in determining what may be considered to be a legitimate focus of study by employing systematic screening devices that ensure their protection from the effects of research. This can be observed in relation to the increasing tendency for companies to ask
researchers to sign confidentiality agreements restricting what information can be disclosed about them.

**Harm, wrong doing and risk:** It may also be suggested that management researchers are more likely to do wrong rather than harm research participants, and this should be taken into account when formulating ethical principles. Cassell (1982) proposes a continuum through which to distinguish between the possibilities of harm and wrong doing that can result from research. In the biomedical sciences the possibility and magnitude of physical or psychological harm that can be felt by research subjects is considered to be greatest. Cassell’s definition of wrong in this context draws on Immanuel Kant’s notion of the categorical imperative, involving the unconditional moral obligation to preserve the dignity, humanity and values of others. Wrong doing in research thus involves a failure to treat research participants as important in themselves, instead of viewing them as a means to an end.

**Confidentiality and anonymity:** Like other social scientists, management researchers face increasing pressure to protect the confidentiality and anonymity of research participants in order to avoid harmful effects such as victimization. For example, in notes to contributors to the journal work, employment and society authors are informed that they are required to protect the identity of research participants by ‘using pseudonyms’ and ‘removing any information leading to identification of any of the individuals described in the study.’ Although confidentiality and anonymity are often treated as overlapping concepts, there are important differences between them. Confidentiality relates to the protection of information supplied by research participants from other parties whereas anonymity involves protecting the identity of an individual or organization by concealing their names or other identifying information. The protection of anonymity is a particular issue for management research because it is not clear from many ethics codes whether this ethical principle applies to the organization as well as individual research participants.
Comments

In management research the researcher owes great responsibility towards a community or an organization and it can be challenging to keep all elements of management/committees satisfied through the application of ethical principles. It can also be challenging to resolve any conflicts between the researcher’s demands and the demands of organization’s senior members, or employees. Striking a balance between the researcher’s needs and the organization’s goal through the research process is an art that requires great practice by management researchers.

The formulation of an ethics code for management research is therefore not simply a matter of seeking to protect individuals from potential allegations of wrong doing in a research context. Instead, or in addition, it could be used to encourage the formulation and interpretation of ethical principles, such as reciprocity which define the relationship between the researcher and the society being studied in a way that draws attention to its moral aspect. This would be to focus on making an ethics code aspirational rather than enforceable, concerned with furthering the aims of management research instead of enforcing compliance to a series of minimal ethical obligations. It would rely principally on education rather than regulation and forcing the participants compliance (Bell & Bryman, 2007).

Responsible Research in Education

Educational research is primarily based on Care Theory. Noddings (1986) applied the ethics of care specifically to educational research. According to Noddings, the choice of research questions and overall conduct of research ought to be based on their potential to contribute to caring school communities. Educational research should not be conducted on the basis of mere intellectual curiosity; much less should it be conducted in a way that is likely to be harmful to individual students or groups of students or destructive of school communities. Educational research should be “for teaching” not simply “on teaching”. Ignoring these concerns renders the
traditional emphasis on autonomy and privacy incomplete at best.

Within educational research, the main objective of the current American Educational Research Association (AERA) ethical standards is “to remind us, as educational researchers that we should strive to protect these (children and other vulnerable populations) and to maintain the integrity of our research or our research community and of all those with whom we have professional relations (AERA, 1992)”. The standards follow the federal code of regulations. It is important, within educational research to highlight the protection of vulnerable populations.

Educational research differ from other areas of research in reference to the ethical principle of ‘informed consent’ as the area deals with those sections of society which may not be mature enough to provide a consent for themselves. This area of research has dealt with the protection of student’s rights to participate in the study and give their consent. It has underscored the need for parental consent regarding researches in school (Hecht, 1996; Howe & Moses, 1999).

Educational researchers are expected to protect the privacy of research participants as much as possible since the research results have a direct impact on the student’s schooling experiences, self-esteem and educational opportunities. Social desirability may be higher among students as they would like to impress the teacher or researcher in anticipation for brownie points. To minimize this social desirability, ensuring confidentiality is a foremost requirement of educational research.

Children over the age of 16 are deemed to be competent to give consent for themselves. However, consent from parents, guardians or other representatives is generally necessary in relation to research with children and adults who lack the ‘capacity’ to give consent for themselves (this relates to people with mental health problems or learning disability who do not have the ability to understand fully what taking part in a specific research project would comprise or what the consequences of their involvement might be).
Apart from this, in reference to information presentation, childhood researchers and researchers working with people having learning disabilities must demonstrate the importance of keeping written information to a minimum and incorporating pictures and graphics into the information they provide (Connors and Stalker, 2003; Alderson, 2004). Researchers have also experimented with a range of ways of providing information to meet these needs including the use of photos, videos and computers to gain student’s participation (Dunn et al, 2001).

Comments

Research in education is therefore a very sensitive issue as every step in the research process, right from obtaining consent to applying the findings of the study effects the students (gifted or learning disabled), educators and parents in a huge way. Nature of research in education is often qualitative and the educational researchers must be trained in techniques of qualitative analysis.

Responsibility comes with right mentoring from supervisors, experience in research work and interviewing the subjects of interest. Responsible conduct of research also depends on the motivating factors of researchers, their attitude towards research and morality in general. To conclude, students, academicians and research mentors must often engage in discussions regarding ethical dilemmas in research practices.

Sample Size Issues in Responsible Research

Statistical studies (surveys, experiments, observational studies, etc.) are always better when they are carefully planned. Good planning has many aspects. The problem should be carefully defined and operationalized. Experimental or observational units must be selected from the appropriate population. The study must be randomized correctly. These procedures must be followed carefully. Reliable instruments should be used to obtain measurements. Finally, the study must be of adequate size relative to the goals of the study. It is just as important, however, that the study not be “too big,” where an effect of little scientific importance is nevertheless
statistically detectable. Sample size is important for economic reasons: An undersized study can be a waste of resources for not having the capability to produce useful results, while an oversized one uses more resources than are necessary. For such an important issue, there is a surprisingly small amount of published literature. Important general references include Cohen (1988), Desu and Raghavarao (1990), Lipsey (1990), Shuster (1990) and Odeh and Fox (1991).

**Error Estimation**

Cochran’s (1977) formula uses two key factors: (1) the risk the researcher is willing to accept in the study, commonly called the margin of error or the error the researcher is willing to accept, and (2) the alpha level, the level of acceptable risk the researcher is willing to accept that the true margin of error exceeds the acceptable margin of error; i.e., the probability that differences revealed by statistical analyses really do not exist; also known as Type I error. Another type of error is Type II error, also known as beta error. Type II error occurs when statistical procedures result in a judgment of no significant differences when these differences do indeed exist.

**Alpha Level**

The alpha level used in determining sample size in most educational research studies is either .05 or .01. In Cochran’s formula, the alpha level is incorporated into the formula by utilizing the t-value for the alpha level selected (e.g., t-value for alpha level of .05 is 1.96 for sample sizes above 120). Researchers should ensure they use the correct t-value when their research involves smaller populations, e.g., t-value for alpha of .05 and a population of 60 is 2.00. In general, an alpha level of .05 is acceptable for most research. An alpha level of .10 or lower may be used if the researcher is more interested in identifying marginal relationships, differences or other statistical phenomena as a precursor to further studies. An alpha level of .01 may be used in those cases where decisions based on the research are critical and errors may cause substantial financial or personal harm.
Acceptable Margin of Error

The general rule relative to acceptable margins of error in educational and social research is as follows: For categorical data, 5% margin of error is acceptable, and, for continuous data, 3% margin of error is acceptable (Krejcie & Morgan, 1970). For example, a 3% margin of error would result in the researcher being confident that the true mean of a seven point scale is within ±.21 (.03 times seven points on the scale) of the mean calculated from the research sample.

For a dichotomous variable, a 5% margin of error would result in the researcher being confident that the proportion of respondents who were male was within ±5% of the proportion calculated from the research sample. Researchers may increase these values when a higher margin of error is acceptable or may decrease these values when a higher degree of precision is needed.

Variance Estimation

A critical component of sample size formulae is the estimation of variance in the primary variables of interest in the study. The researcher does not have direct control over variance and must incorporate variance estimates into research design. There are four ways of estimating population variances for sample size determinations: (1). take the sample in two steps, and use the results of the first step to determine how many additional responses are needed to attain an appropriate sample size based on the variance observed in the first step data; (2). use pilot study results; (3). use data from previous studies of the same or a similar population; or (4). estimate or guess the structure of the population assisted by some logical mathematical results.

Before calculating sample size one has to decide on the following: Study design, type of outcome measure, guess at likely result, required level of significance and required precision power. The procedures for sample size estimation provide a rough estimate of the required study size, as they are often based on approximate estimates of expected disease rates and subjective decisions about the size of effects.
Wrongly rejecting a true null hypothesis is called type I error. The probability of this error is referred as p-value. The maximum p-value allowed in a problem is called the level of significance (α). In a diagnostic set up, this is the probability of declaring a person sick when he is actually not. In a court set up, this corresponds to convicting an innocent. For this reason, p-value is kept at a low level (≤5%). The second type of error is failure to reject null hypothesis when it is actually false. This corresponds to missed diagnosis as also to pronounce a criminal not guilty. The probability of this error is denoted by β. In a clinical trial set up, this is equivalent to declaring a drug ineffective when it is actually effective. The complimentary probability of type II error is the statistical power (1 - β). Thus, the power of a statistical test is a probability of correctly rejecting a null hypothesis when it is false.

**Formula for Sample Size Determination**

**Continuous Data**

Cochran’s (1977) sample size formula for continuous data is:  
\[ n_0 = \frac{t^2 \times s^2}{d^2} \]

where

- \( t = \) value for selected alpha level in each tail (the alpha level of .05 indicates the level of risk the researcher is willing to take that true margin of error may exceed the acceptable margin of error);
- \( s = \) estimate of standard deviation in the population;
- \( d = \) acceptable margin of error for mean.

Cochran’s (1977) correction formula should be used to calculate the final sample size:

\[ n_1 = \frac{n_0}{(1 + n_0/P)} \]

where

- \( P = \) population size;
\[ n_0 = \text{required return sample size according to Cochran’s formula}; \]

\[ n_1 = \text{required return sample size because sample exceeds required % of population.} \]

**Categorical Data**

The sample size formulas and procedures used for categorical data are very similar to continuous data, but some variations do exist. Cochran’s (1977) sample size formula for categorical data is:

\[
n_0 = \frac{t^2 \times pq}{d^2}
\]

where

\[ t = \text{value for selected alpha level in each tail (the alpha level indicates the level of risk the researcher is willing to take that true margin of error may exceed the acceptable margin of error)}; \]

\[ pq = \text{estimate of variance (maximum possible proportion) \times (1 - maximum possible proportion)}; \]

\[ d = \text{acceptable margin of error for proportion}. \]

Cochran’s (1977) correction formula should be used to calculate the final sample size. These calculations are as follows:

\[
n_1 = \frac{n_0}{(1 + n_0/\text{Population})}
\]

where

\[ n_0 = \text{required return sample size according to Cochran’s formula}; \]

\[ n_1 = \text{required return sample size because sample > required % of population}. \]

These procedures result in the minimum required sample size.

Table 1. Minimum sample size required for Continuous and Categorical data

<table>
<thead>
<tr>
<th>Population size</th>
<th>Continuous data (margin of error=.03)</th>
<th>Categorical data (margin of error=.05)</th>
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<td>10,000</td>
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</table>

Accordingly, researchers may use this table if the margin of error shown is appropriate for their study, however, the appropriate sample size must be calculated if these error rates are not appropriate (Bartlett, et al., 2001).

References


RESPONSIBLE RESEARCH IN SOCIAL SCIENCE: ACADEMIA IN SERVICE TO STAKEHOLDERS?

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Abstract

In the United States, education is under siege. It’s not a literal siege – no armies are yet invading our campuses to prevent our freedom of academic speech – but nonetheless, Universities are feeling great pressure to conform to a new conception of the University. Universities are businesses, to provide a service to their customers (students). We find that our funding is greatly reduced, tuition must be increased, and what funding is left is based on formulas that prize the teaching of skills and the number of students who pass a class or graduate in a given number of years (never mind whether the students actually learn to think). Traditional liberal arts – learning research techniques, questioning authority and thought, critical thinking and writing skills – these are falling to a focus on the student as a customer – and as the students must pay greater and greater amounts via student loan, who can blame them for wanting quick degrees that nearly guarantee a job?

Politicians are behind this shift. In reducing the support that public Universities receive, treating higher education as a means to an end rather than important in an of itself, attacking tenure and professor lay offs, creating the much-hated formula funding requirements, and making students customers, they have created an anxiety in the academy as never before. Professors are seen as lazy – after all, they are only “working” 9 hours per week, right (the perception being that we don’t do anything worthwhile unless we are actually in front of a classroom)? Academics produce irrelevant research
that doesn’t really matter in the “real world” and the university is overpriced and doesn’t deliver valuable services.

This paper first reviews the relevancy of the university and the role of universities in communities. Then, it turns to the applicability of academic research completed in a university setting, arguing that the way social scientists have been taught to regard their research is unproductive in this larger debate. Then, it reviews ways that the university can create better connections to local politicians and the communities that they serve. Academics make a number of assumptions about the desirability of responsible research to local, state, national, and international officials. The paper reviews a survey conducted to ask local officials their perceptions of academic research and the responsibilities of the university. Finally, the paper makes concrete recommendations to academics and to universities in order to change the negative perceptions that politicians hold. By doing so, the researcher hopes that politicians will once again become the allies of higher education.

**Beyond “Teaching Skills”**

“Universities should be required to teach employment skills as part of degree courses because employers believe too many graduates are unfit for the workplace” (Paton, 4 June 2011). Universities should prepare their students for the workplace. In fact, much red ink has been spilled over this very subject, and the teaching of skills is not the subject of this paper. Beyond the teaching of job skills, however, universities have much to offer their local communities. Many universities operate a number of community partnerships. Chibucos and Lerner (1999) describe a number of very successful such partnerships, from Head Start initiatives to small business incubators. In addition, universities’ economic impact on their communities is undoubted, as is the cultural impact.

“Virtually every institution, whether public or private, urban or rural, large or small, residential or commuter, two-year or four-year, technical or liberal
arts, impacts its local community in many significant ways” (Nichols 1990, 4). How, then, can we think of all the ways that academics in a University setting can influence their communities? The impacts can be broken down into three rough categories: 1. economic, both direct and indirect; 2. cultural, both direct and indirect; and 3. educational, both direct and indirect.

Economic impacts have been studied for a number of years. The first set of economic impacts is direct. That is, universities are significant employers, creating a number of jobs at many levels that are typically filled by local community members. According to the University of West Georgia’s website (the home of the writer), the university is home to over 1300 employees. According to the website BuyGeorgia.com, the university is the fourth largest employer in the county (the first is the county school system, the second is the hospital system, and the third is a private company, Southwire, that produces wire and cable). This plays an important role and gives the university a great deal of political clout. In addition to direct job creation, 12,000 students create demand in real estate (apartment rentals), commercial goods (groceries, gasoline), and many other local services (doctors, hair dressers, restaurants, etc).

In addition to the many direct economic effects that universities have on their communities, the indirect effects can be significant as well. I include here the fact that a large pool of labor is brought into the university community as well as many other factors. For example, human resource development (and transfer): that is, universities train their workers, who then go on to work in private industry or in health care, and universities provide flexible training programs to locally employed individuals.

In addition, I return to the small business incubator example above. Many universities provide assistance and information to local individuals who want to start a small business or a non-profit. In providing entrepreneurs start-up assistance, local employees with knowledge and training, and other such information, universities indirectly impact their communities.
Beyond economic impacts, colleges and universities have a strong cultural impact on their communities. Universities have a responsibility as a neighbor. The character of a community changes with the influx of 18-24 year old residents. Sometimes those young, university-affiliated residents can come into conflict with traditional community residents, and strong town-gown relations led by the University President and the Mayor, with the cooperation of University Police Departments and local PD can ameliorate some of the potential negative effects.

Universities bring many positive cultural effects. University theatre programs produce plays; music departments provide jazz ensembles and other musical acts; student services bring in nationally known acts and Nobel-prize winning speakers. All of these are open to community attendance, and often an incredibly low cost very close to home. In addition, universities employ New York Times bestselling authors; accomplished scientists; renounced artists, actors, and musicians; and nationally known poets. All of these people live as well as work in the community, and all benefit.

Finally – and I am saving the most critical impact for last – Universities have both a direct and indirect educational impact on their communities. Many of the books and articles that review university-community relations actually gloss over these impacts, calling them “obvious” without actually detailing what they are. Universities pursue a number of scholastic activities. Courses, degrees, certificates – all of these provide educational opportunities both to local traditional students and to local non-traditional students. Many of the so-called economic impacts of the University have educational components. Clearly, a university educates the workforce, whether traditional students or those who are going back to school after a period of time working. In addition, universities pay attention to and seek to meet the needs of the local economy: at the University of West Georgia, for example, a Bachelor degree in nursing has been expanded to an entire school of Nursing that even confers a Doctorate in Nursing education (recall that the second largest employer in the county is a hospital system; recent additions to the
local economy include a Veterans Administration Hospital).

Many of the cultural impacts also trace their root to the educational mission of the university. Nobel prize laureates are, first and foremost, brought to campus to speak to our students. Theatre, art, and music productions are part of the hands-on education of a new generation of performers and artists. The professors whose books top the New York Times best seller list are also teaching English seminars.

As discussed above, the liberal arts education is under fire. Students are expected to learn job skills – and so they do. University departments have responded by organizing senior “exit seminars” designed to teach students to write resumes, to fill gaps in their education in regards to technology or skills like GIS or writing, or to help students meet with employers. Students are being actively encouraged to engage in internships, externships, and service learning.

However, the work on responsible research here steps into its own. Beyond our students, universities can provide learning opportunities to our communities. For example, entrepreneurs are provided with information by business professors and by business students. But what can social scientists do? We provide a non-profit management certificate, but beyond our students, how can we connect directly with our communities?

Social Scientists and Academic Research

Academic research in the social sciences is something that academics often have a difficult time defining. In its simplest terms, however, academic studies are those that, in the eyes of at least two unpaid, expert reviewers, make a contribution to our understanding of the world. Academics spend many years learning techniques, both quantitative and qualitative, and can spend a year or more on a particular study. Academic studies have a series of steps but they are not linear: we find ourselves returning to earlier stages to change the question, for example. Nonetheless, a presentation of the
important stages of research enables an explanation of what academics do – and where we can often fall short.

First, academic research begins with a unique an interesting question, continues with an appropriate method, moves to an thought-provoking answer, and then presents the results publically. Academics must ask a question in a new way, or answer a previous question with novel ideas. Academics might find a topic that hasn’t been studied before, or apply literature from another discipline or theory to an old question. Academics must use the scientific method – not necessarily quantitative methods, but certainly must employ the logic of scientific enquiry (King, Keohane, and Verba 1999). Unlike philosophy, political scientists generally ask questions that should be relevant to politicians and other policy stakeholders.

Why, then, do we continually see reference to the disconnect between political science research and theory and the practice of politics? Joseph Lepgold and Miroslav Nincic, writing about the narrower field of international relations theory, contend that the academic environment itself creates this problem. The academic working within what Lepgold and Nincic (2001) call the “academic incentive system” (that is, the university tenure system) is unable to focus on practical application and concerns. This is true for three reasons. First, in the ongoing struggle to find an interesting and novel question to study, researchers “are increasingly inclined to tackle smaller, often trivial, research problems, rather than questions of a more fundamental nature and broader reach (Lepgold and Nincic 2001, 15). We as academics fail to ask the questions to which stakeholders need answers. We do this because we must convince two or three experts that we are making a novel contribution, and we feel that the basic, practical questions are less likely to impress our peers. It is easier to make a novel contribution in a niche no one else has yet occupied.

Secondly, according to Lepgold and Nincic, “technique has triumphed over substance in IR research programs”. This was certainly true when they were writing—but it goes back much further. Weber wrote, “Science… presupposes
that what is yielded by scientific work is important in the sense that it is worth being known” (Weber 1919, “Science as Vocation”, originally speech given to Munich University 1918). As King, Keohane and Verba (1999) put it, “the content is the method”. We become so focused on methods in our graduate research programs that we, brandishing a particular method as one might brandish a hammer, go round searching for a nail to hit. “We ignore other types of problems in our search for that elusive nail”, Lepgold and Nincic continued.

As science came to require highly technical procedures, it ceased to be an amateur activity; to be able to do scientific work, one had to become an accomplished craftsman in those techniques. [This]… has allowed techniques to define the essence of some disciplines and research traditions, aside from any independent assessments of their substantive results. For example, according to a respected game theorist, so many formal models have been developed that political scientists cannot meaningfully compare their empirical performance. Failing such a test, “the discipline of political science bases its evaluation of them on their mathematical elegance, the complexity of their notation, the journals in which they appear, or simply the reputations of those who design them”’ (Lepgold and Nincic 2001, 16; quoting Ordeshook 1995, 178).

Finally, the academic structure within which most of us operate creates an incentive to impress our peers within the ivory tower, rather than those outside of it. That is, our careers, and our advancement in them, depend upon our ability to impress our fellow scholars. A dozen or so people who are top in our particular subfields have the ability to crush our careers if we go too far outside what they think is important – what Lepgold and Nincic call the “fad”. Influencing politicians or policy stakeholders isn’t rewarded by the tenure structure; indeed, colleagues who are asked to present knowledge in a relevant and practical way are often dismissed as a “talking head” or a “pundit” – not a serious researcher at all.
Making Research Responsible

Given the academic strictures outlined above, it is difficult to see how academics can, in service to their local policy stakeholders, communities, and politicians, make their research more practical. That is, how can we, as social scientists, formulate our research responsibility for positive social change and to positively influence the university’s ties to and reputation in the local community, without damaging our own careers? According to Lepgold and Nincic, the answer is that not all scholarship is perfectly practical. There is room for knowledge for knowledge’s own sake. However, they claim, there is no inherent reason that theory and practice must be separate.

My dissertation, a quantitative study of non-compliance with European Union law, was interesting to me for its own sake. However, I made it clear that I was studying the problem as a means to make recommendations to the Council and the Commission as to how to ameliorate failure to comply with community laws. In the end, I was careful then – and I am careful now – to make three adjustments to my research so that I am not only talking to other researchers. First, I leave out any jargon possible, and explain any specialized language that I may use. I am not only talking to my peers, and therefore, if I want my research to matter outside the ivory tower, I must not use language that creates the feeling of the “out-group” in the reader. Second, I have always argued that a researcher must be asked to answer the question, “so what?”. Italy fails to comply with many more EU laws than Britain. So what? This is a problem for the EU because it can create an unfair economic or other advantage when Italy fails to comply with Environmental law, for example. The third conscious activity is to always recommend ways to use the new knowledge from this study to make a positive change for some group or groups. My dissertation made a serious of recommendations in areas where policymakers can effect change (some non-compliance factors are structural and difficult if not impossible to change; others, however, are not).
Although Lepgold and Nincic seem to worry above all that our questions are not the right ones, I believe that we can make our research accessible and practical even when it fills an academic niche – we just need to make the conscious effort to do so.

What Do Policy Stakeholders Want?

“Responsible research” in the social sciences has come to mean connecting our research to the practical concerns of policy makers in a way that contributes to positive social change. We assume that policy makers want our results, our advice, and our insight. While this is generally true (and is reflected in much “spilled ink” complaining of an ivory-tower like academic disconnect from the real world), my research asks local and state policy makers how we can best meet their needs, rather than assuming that, once again, “doctorate knows best” when we think policy stakeholders have already dismissed us as disconnected.

Not only is this study in support of the movement toward responsible research, its necessity and aims, the study is responsible internally: that is, the University of West Georgia is asking the impacted population what it is they need, with a view to actually accomplishing those tasks within the Murphy Center for Public Service. The research is responsible – it takes care to connect its own aims to the needs of policy makers, and it is about responsible research.

The research questions the assumptions that the literature has made. Firstly, the literature assumes that academia and the academy are disconnected from the “real world” – or at least, that policy makers and others believe that we are. Secondly, the literature assumes that we as academics fail to talk to these stakeholders in a way that is useful for them. Part of the problem is that academics publish our research in difficult to access journals that are aimed only at other academics. Finally, the literature makes an assumption that policy stakeholders want our assistance and insight. The following
hypotheses derive from these view in the literature:

H1: Policy stakeholders believe that academia is disconnected from the real world.

H2: Policy stakeholders believe that academia fails to help policy stakeholders deliver high quality services to the public.

H3: Policy stakeholders believe that academia’s primary audience is itself, not policy stakeholders, and that academia doesn’t do enough to make its findings accessible to professionals in the policy process.

H4: Policy stakeholders believe that academia has a responsibility to make real-world recommendations to policy stakeholders, but that academic articles fail to provide recommendations to policy stakeholders.

H5: Policy stakeholders believe that academics should spend more time researching real problems and providing solutions to stakeholders, and that academic journal articles should be focused more on real-world solutions and positive social change.

H6: Policy stakeholders believe that academic journals are difficult to access, aimed only at other academics; and they don’t read academic journals.

H7: Policy stakeholders would read more academic journals if they were freely available, and if they provided more practical advice to stakeholders.

H8: Policy stakeholders believe that academia has a responsibility to provide free or low-cost workshops on research in policy issues to stakeholders, and would attend applicable workshops and public lectures on policy issues.

Research Methodology
The best method for discovering the beliefs and opinions of policy stakeholders is to ask them. Through an expert survey of policy makers and other stakeholders in the policy process, a picture of the best way academics
can do policy research in concert with our policy stakeholders will emerge. This survey is available to the broadest possible set of responders, and does not claim to be representative; indeed it is meant as an expert survey.

Expert surveys are quite widely used in comparative politics, particularly in European studies. They have been used with success in uncovering party issue positions, voter opinions, and policymaker activity (see for example the works of Gary Marks and others, including myself). However, there is some question of whether they are valid instruments. It is therefore very important, according to Steenbergen and Marks (2007) to optimize survey design. The survey was created using Survey Gizmo (see Appendix I). The survey has been accomplished electronically and contains one open-ended question, but is primarily focused on a series of statements to which policy stakeholders have been asked to agree or disagree (along with identifying information about their position, though not their personal details). The survey instrument is therefore very straightforward.

There are further ghosts to tame with this particular design. The responses of the policy stakeholders might not accurately reflect either reality or their true opinions. In the context of this research, however, I am primarily interested in finding out whether the opinions of local policy stakeholders match the assumptions in the literature and in whether academia can improve those opinions so as to improve town-gown relations and, further, to improve the funding opportunities of the university.

The problem of the respondents perhaps hiding their true opinions is one that all survey research faces. However, the researcher has put in place safeguards that protect the identities of the respondents, so that they will face no consequences for giving their true opinions. The research, with its safeguards and survey instrument, was approved by the University of West Georgia Institutional Review Board.

The University of West Georgia is located in Carroll County, Georgia, USA. The closest counties are Coweta, Douglas, Paulding, Haralson, and
Heard. The first stage of the survey is to reach out to all public officials in these counties and all county seats. I have gathered email addresses for county and city employees by using the publically available website of the counties and county seats. Every county or city employee from the county commissioner down to the head of animal control whose email address was published on the website of the county or city for which they work was sent a copy of the survey and an invitation to participate. The survey has therefore been sent to 384 possible participants, and of those, 9% have responded so far.

In the longer term, it would be important to send the survey out further. However, I have chosen to limit the survey in the initial stages, partly due to the time-intensive process of harvesting email addresses, and partly because the University of West Georgia is primarily interested in serving the local community first. Once these results are pulled, we will expand the survey beyond the borders of these counties. In addition, it will be important to send the survey to local non-profit policy-oriented groups. The University is in the process of pulling together a comprehensive contact list for these groups. Once that is in place, I will be sending the survey to those individuals.

Results

The initial survey results from counties near the campus are telling. H1 is confirmed: 79% of policy stakeholders either strongly or somewhat agree that academia is “disconnected from the real world” and 88% believe that academia is “out of touch” with what they need to do their jobs. However, 53% of policy stakeholders strongly or somewhat agree that believe that academia does a good job of assisting them in delivering high quality services to the public – despite being disconnected to the “real world”. While the literature is confirmed – policymakers really do think academics stay in their ivory towers and don’t know anything about the real world – academics are still reaching some policy stakeholders.

Hypothesis three is also roundly confirmed. Seventy-six percent of
respondents say that academia’s primary audience is itself, not policy stakeholders, and 67% agree that that academia doesn’t do enough to make its findings accessible to professionals in the policy process. Our research remains somewhat inaccessible for the average respondent.

Sixty-five percent of respondents believe that academia has a responsibility to make real-world recommendations to policy stakeholders, but only 53% agree that academics fail to provide recommendations to policy stakeholders. I find this somewhat mixed. One of three policy stakeholders doesn’t think that academics should provide real world recommendations. In other words, one of three doesn’t want our advice.

Maybe the reason is that they don’t think we study important problems. Seventy-six percent of respondents say that academics should spend more time researching real problems and providing solutions to stakeholders, although only 59% believe that academic journal articles should be focused more on real-world solutions and positive social change.

The sixth hypothesis turns to specific questions about academic journals – the bread and butter of tenure-seeking and promotion-seeking academics. Policy stakeholders believe that academic journals are difficult to access: 65% percent agree or strongly agree that journals are expensive or housed only in University libraries accessible only to students, faculty, and staff (university libraries are typically closed to non-card holders). Policy stakeholder further believe that the journals are written only for the audience of other academics – 74%, therefore, have no incentive to seek out these difficult-to-access journals; and they, therefore, don’t read academic journals – 59% say they don’t read them. Academics, however, need not despair, because the 7th hypothesis is confirmed as well: 85% of respondents would read more academic journals if they were freely available (that is, in common parlance, they were “open access”) – and 91% would read them if they provided more practical advice to stakeholders!

The final hypothesis relates to lectures and workshops. Interestingly, only
53% of respondents believe that the university has a responsibility to provide lectures to the public, only 56% believe the university has a responsibility to provide lectures to policy stakeholders, and only 53% supported workshops for policymakers. However, almost all respondents would attend low-cost, applicable workshops and lectures if academics and the university were to sponsor these activities – 97% agree that they would attend relevant workshops and lectures.

**Recommendations**

The results of this survey are compelling. Policy stakeholders believe that academics are disconnected from the real world and real world problems. They don’t think we do a great job helping them make touch policy decisions and that academics study problems that aren’t very important. They believe academic journals are expensive, difficult to access, difficult to process, and only aimed at other academics anyway. However, they are open to attending public lectures, attending policy stakeholder workshops, and reading open-access journals that provide more practical advice.

The open-ended responses were also telling. Respondents said that academics need to get better at communication, to initiate contact with them to find out what problems the real world has and what we can do to find a solution, to work more closely and “collaborate” with them. They also asked for help with new technologies and making resources available that local officials may not have or may not know how to use. They said, over and over, that researchers needed to get out into neighborhoods, do internships, and the like to find out what they are really doing as policy stakeholders. They say that academics are unable to understand what they are really up against on a daily basis.

All of this, I think, comes down to communication. Too often, academics assume that they know best. After all, they have been studying something for years and have an arsenal of research tools at their proposal. However,
here is my practical advice to researchers and university officials:

**Open Communication:** Host workshops that bring theorists and practitioners together to discuss their needs and figure out ways we can collaborate on issues. One way to do this would be to designate an office on campus to be a single point of contact when policy stakeholders need to find expert assistance. Another way would be to host periodic open house events, or workshop events, aimed at certain segments of the local stakeholder population. Finally, the university should be initiating contact with these people, and not waiting for them to come to us. We need to show them what we can do and how we can help. Placing students in internships in larger numbers will also provide our students, whether they go on to careers in academia or not, a fresh, practical look at what they can do in the service of the public good. In addition, we should work with local policy stakeholders to provide student service learning activities to help these policy stakeholders with particular goals they themselves have identified.

**Create Open-Access Journals:** The university can, with small financial support, create open-access journals that would provide a forum for peer-reviewed research and academic service. Academics can publish their best work that incorporates practical public policy advice and the university increases the opportunity for its own faculty to provide a serious service to both the policy stakeholders and their various disciplines. The new journals should connect academia and policy stakeholders in a practical fashion. For the University of West Georgia, the journal would best be created under the auspices of the Murphy Center for Public Service, to meet the aims and goals that both academic discourse and our expert policy stakeholders deem desirable.

**Underwrite a Lecture Series and Workshop Series:** The university should work with policy stakeholders to identify topics for both a lecture series and a workshop series, not just in political science, perhaps, but also in conjunction with mass communications, business, economics, and others. These lectures and workshops can be held with our own resources
– we have the space and we have the expertise.

All of these recommendations are attainable. The resources of the university are considerable, and we should use those to improve our image among the policy stakeholders of our neighboring communities. In order to make the extra work for the faculty worthwhile, however, these activities, which bridge the gap between academic work and service (and indeed go beyond both of these) must be valued in the tenure process – else why, as the literature points out, would anyone bother doing them? We must value open-access, peer-reviewed publishing as we would any other publishing activity. We must not discount published work just because the journals are not printed by a company that then sells them for hundreds of pounds to University libraries. In addition, we must value the organization and teaching of workshops and lectures as an activity worthy of, perhaps, course releases, credit toward tenure as grant work might be credited, or the like.

Conclusion

This paper first reviewed the role of the university in its community. Then, it examined the relevancy of academic research completed in a university setting, arguing that the way social scientists have been taught to regard their research is unproductive in this larger debate. Then, it reviewed ways that the university can create better connections to local policy stakeholders. The paper then reviewed survey results that confirmed a number of assumptions in the literature, demonstrating that policy stakeholders feel underserved and ignored by ivory-tower academics. Finally, the paper makes concrete recommendations to academics and to universities in order to change the negative perceptions that politicians hold. If our disciplines are serious in responding to the needs of the policy stakeholders we claim to want to help through responsible research, we must open communication with them and credit academics that do this work. We will improve our public image, improve our contribution to improving the public good, and, one hopes, convert policy stakeholders into the allies of public higher education once again.
Bibliography


Responsible Research Survey

Responsible Research in Public Policy

You have been asked to participate in an expert survey on the attitudes of policy stakeholders toward academia and academic resources. The purpose of this expert survey is to examine the ways that policy stakeholders view academic research. The survey asks questions related to the responsibility of academia to policy makers, policy practitioners, lobbyists, and non-governmental stakeholders.

Your participation in completing this survey is voluntary and you may decide to stop at any time with no penalty, or you may choose not to answer some of the survey questions. All responses will be kept confidential; no identifying information is collected by the survey (names, etc) and the email list requesting participation will be kept totally confidential. This survey should not take more than 15 minutes.

If you have any questions or concerns about the nature of this research or the survey please contact Dr. Heather A. D. Mbaye, Associate Professor, 678-839-4988, hmbaye@westga.edu, or contact the IRB at irb@westga.edu.

By continuing the survey, you acknowledge that I am at least 18 years of age, have read the above information, and provide my consent to participate under the terms above.

1. Which of the following best describes your primary job status?
☐ non-elected public agency head or top administrator
☐ non-elected public mid-level manager
☐ non-elected public employee
☐ non-public agency head or top administrator of a policy-interested agency (Food Bank, Rape Crisis Center, etc)
☐ non-public mid-level manager of a policy-interested agency (Food Bank, Rape Crisis Center, etc)
☐ non-public employee in a policy interested agency (Food Bank, Rape Crisis Center, etc)
☐ Other - Write In (Required)

?. How many years have you held this position?
☐ less than 2 years
☐ 2-5 years
☐ 5-10 years
☐ more than 10 years

!. What is the total number of years you have worked in public service?

!. What is your gender?
☐ male
☐ female
☐ other/prefer not to answer

!. Which of the following categories includes your age?
☐ 20 and under
6. In this survey, "academia" refers to researchers who study politics, public policy, political behavior, and similar topics while employed full time as educators in the University environment. "Policy stakeholders" are the government employees, elected officials, and NGO leaders that have a stake in how policy is made and carried out.

What do you think of academia in relation to academic research?

7. Which of the following categories most accurately describes your highest level of education?
   - Some high school
   - High School Diploma
   - Some college
   - 2 year undergraduate degree
   - 4 year undergraduate degree
   - Masters degree
   - Terminal professional degree (law, medical, dental, etc)
   - Doctorate

8. For each of the following statements, indicate whether you agree or disagree on the following scale: Strongly agree, Somewhat Agree, Somewhat disagree, Strongly Disagree

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<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Somewhat Agree</th>
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**How can academia best assist you in providing the best possible services most efficiently?**
PROVIDING THE TOOLS OF EMPOWERMENT FOR RURAL WOMEN THROUGH EDUCATION AND TRAINING: THE CASE OF LA POINTE, ST. LUCIA

Soares Judith, Women and Development Unit, University of the West Indies.

Batson-Rollock Cecelia, Women and Development Unit, University of the West Indies.

Cuffie Joan, Women and Development Unit, University of the West Indies.

Joseph Andre and the Women of the La Pointe Development Committee.

Abstract

In the context of rural development and the role of women in building their communities, this paper examines the Women and Development Unit’s (WAND) contribution to the strengthening of women’s capacity to improve their quality of life and, by extension, to build the socioeconomic standing of the La Pointe community, St. Lucia, through non-formal and informal education and training. In so doing, it also assesses the impact of such development initiatives introduced in the community by the Women and Development Unit (WAND)/La Pointe Development Committee (LPDC) partnership with a view to guiding further conceptualisation and implementation of community learning programmes agreed on with the women and other community members under the leadership of the LPDC.

The findings from this project has allowed for an analysis of responses which are used to make a theoretical contribution to the discipline of development studies and to serve as a guide to the conceptualisation and implementation of WAND’s community intervention initiatives. It can also serve as a guide to governments, NGOs and community-based organisations with an interest
in people-centred development. The work is also intended to be a critique of market fundamentalism as a paradigm of socio-economic development.

This community-based research project which involved a representative cross-section of the entire La Pointe community is based on qualitative research methods: semi-structured methods of focus group discussions and the administered questionnaire. It is a project in which the women were the subjects, and not the objects, of research.

**Introduction**

The Women and Development Unit was set up in 1978 by the University of the West Indies (UWI) and the Government of Jamaica and placed in the UWI’s Department of Extra-Mural Studies as a regional unit to address, specifically, the social advancement of women in the Caribbean through community intervention initiatives (including income generating projects) non-formal and informal education, skills training, technical assistance, research and documentation.

WAND’s method of community intervention and research is based on the participatory method, defined as “both a research exercise and a development process intended to improve the collective life of the community by bringing together different groups of people...[In ]essence, participatory research is a research process based on a philosophy of “education and social action for change” for the benefit of people in local communities (WAND, 2001, 3).

Before intervening in the La Pointe community in 1994, the Women and Development Unit conducted a workshop on the participatory method to introduce to the La Pointe community the philosophy, principles and concepts of initiating a development process through participatory research. The workshop addressed “the capacity and capability of an intermediary model of community intervention and outline the roles and responsibilities
of WAND, the NFA and the members of the community” (WAND 2001, 16).  

To effect the work in the La Pointe community, the women of the community agreed to constitute themselves into a community-based organisation (CBO) to replace the intermediary which was the channel through which community development initiatives were to be organised and implemented. The formation, then, of the La Pointe Development Committee, headed and led by women, is a community-based organisation which provides leadership in the community.

La Pointe: St. Lucia

La Pointe, Micoud, is a small rural farming community which lies in St. Lucia’s southeast in close proximity to Praslin/Mamiku and the fishing town of Dennery. South of La Pointe is Vieux Fort, the country’s second city. In this community where men outnumber women, the main economic activity was banana farming for export. With the decline of the banana industry, many women and men are out of employment, some satisfying with banana production for the local market and others getting into areas of enterprise. Given this, there is a high level of unemployment, and notably unemployment is highest among the youth.

At present, some 90 percent of the community is employed in the agriculture sector.

With a population of roughly 1000, and households numbering 331, 255 of which are headed by men and 76 by women. La Pointe is a community of

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1 In the early 1990s, WAND had adopted an intermediary intervention model, the St. Lucia National Farmers’ Association (NFA) being that intermediary partner. Both partners had an interest in rural development and working together to effect change in the community, so this was a good match for WAND and the community. However, the partnership with the NFA was short-lived as within a month of the partnership, the NFA was experiencing internal problems and the president who had supported the project was removed from office and as a result the NFA withdrew its support. This did not stop the local committee, which later evolved into the La Pointe Development Committee, from continuing its work. This committee came to be recognised as the representative group of the La Pointe community which worked without support from WAND and the NFA.
Black people of African origin engaged mainly in small farming and fishing. However, on a broader scale, the community comprises a range of career personnel: including tradespersons and artisans, seamstresses, barbers, carpenters, masons joiners, plumbers, mechanics, bakers, construction workers, craftspersons, painters, nurses, teachers, police personnel, professional caregivers, confectioners and business persons, not all of whom practise their skill within the community. As such, the community is a semi-dormitory one where community members have employment outside of the community in places such as the capital Castries, neighbouring Dennery or Vieux Fort.

Community Profile

Community Leaders: The women of the La Pointe Development Committee

Adult Population 919
Number of men 492
Number of women 437
Number of households headed by men 255
Number of households headed by women 76

Main Community-Based Organisations

La Pointe Development Committee
La Pointe Disaster Preparedness Committee
La Pointe Youth Organization
La Pointe 4-H Club and Sports Club
La Pointe Cricket Club
La Pointe Sports Clubs
La Pointe Pray Group
La Pointe Domino Club
Non-governmental Organisations

Pentecostal Church
Apostolic Faith Church
Evangelical Church

Main Economic Activities

Farming
Fishing
Sewing
Auto mechanics
Carpentry
Joinery

Existing Skills: needlework; masonry; artisanship; bread making; candy making; professional child care and care of the elderly; plumbing; building construction and block making; broom making; house painting and police; nurses; teachers.

Number of Business Enterprises: 23

Kinds of Business Enterprises: supermarket; grocery shops; bars; bakery; meat shop; barber shop; salon; rum shops; furniture shop.

Social Services

Water supply fair (poor when it rains)
Sanitation services good (twice weekly collection)
Roads extremely poor (needs continuous repairs, particularly when there is heavy rains)
Electricity services good (regular supply)
Housing moderate /fairly good (most people own their houses)
Health There are no health centres/clinics in the community
Public Government Buildings: There are no government buildings

Schools in Community: The only school in the community is the community-run La Pointe Pre-School set up by the La Pointe Development Committee and the Women and Development Unit. The Women and Development Unit funded the preschool from 1997-2007. Teachers for this project were trained by the Ministry of Education, Government of St. Lucia and funded by the Women and Development Unit.

The school is now closed for two reasons: an unfriendly funding environment and the Government of St. Lucia has taken over all preschools.

Since there is no community centre the building which houses the preschool has been used for the purpose for community activities since it was built in 2000 with financial assistance from the Poverty Alleviation Fund, Government of St. Lucia.

Level of participation in community activities: moderate.

Number of play fields: 2

Main Socioeconomic Problems Identified: adult and youth unemployment; lack of parenting skills; poor physical infrastructure; poor housing; underdeveloped resources, poverty.

Methods of Research

The methods of research included the administered questionnaire, focus group discussions, informal interviews and observation. Note that the project was led by the women of the LPDC under the supervision of the Women and Development Unit.

For the project, 350 questionnaires were printed to be administered by the women of the La Pointe Development Committee with assistance from other
community members. Four focus group discussions and informal interviews were held with women and men of varying ages ranging from 10 years to 90 years. Specifically, the age cohorts, based on the population spread, were:

- 10-29
- 30-49
- 50-69
- 70-89
- 90 and over

A total of 139 persons responded to the questionnaire: 93 women and 46 men.

**Participants Profile**

The participants in the project were from a broad cross-section of the community including all the occupations mentioned above and also included unemployed community members.

**WAND in the Community**

WAND’s work, as an outreach unit, has been taking place within an ideological framework of self-transformation and social change to create conditions conducive to women’s social advancement which goes beyond the simple concept of “equality” in a development process which rested on the pillars of (neo)colonialism. It was a way of helping women “to understand their location in capitalist societies which are structured, in part, on race, class and gender discrimination; to give them a voice; to develop their advocacy skills so that they can speak for themselves; to help them to understand their rights as human beings and as women; to help them to understand the need to take control of their lives; to help them understand social issues and family relations and to assist them in setting up their own community income generating projects as a means of self-reliance in a socioeconomic system
which militates against their best interests” (Soares and Trotman, 2006, p.3). In so doing, the intention was “to get women to position themselves for ‘take off’ in their communities and countries….Hence, the work of the Unit focussed on skills and professional training, training for personal and social development; development of social consciousness; affective education; and community intervention in the context of participatory research” (Soares and Trotman, 2006, p.3).

WAND’s target audience includes women from various walks of life: employed, unemployed and low income women in urban and rural communities, women with disabilities, parents and children. In implementing its women-centred programmes and projects, WAND is not only fulfilling The UWI’s mission to “unlock the potential” of women, but it is also fulfilling its own mission to be an agent of change in the Caribbean, as it responds to the changing circumstances of the region and the world.

**Laying The Foundation for Providing the Tools of Empowerment Through Education and Training**

**Direct Intervention**

The LPDC was officially launched on November 24, 1995 after a three-day workshop (November 20-22) “Conceptualising a Project, Writing the Proposal and Conducting the Feasibility Study”. In addition to the initial workshop, other major workshops held in the community helped to lay the foundation to a solid community development project. Initial workshops contributed to laying the foundation for what was to become an exemplary community development effort, organised and implemented by women. Such workshops were:

- Understanding and Dealing with Conflict
- Environmental Health and Waste Management
- Group Strengthening and Development
• Gender Relations: Men and Women in the Home and the Community

With the LPDC having been formed, and the ground work done, “WAND began preparing the women, and by extension, the community to work towards creating the conditions for a social and economic environment which would ensure, to a large extent, greater social progress in the community. This was necessary because this rural community in south east St. Lucia had to depend on itself, particularly since the banana industry had declined and most of the women and men were banana farmers” Soares and Trotman, 2005, p. 5). In all of this, efforts were made to ensure a healthy community.

Education and Training towards a Cohesive Community

As Soares and Trotman (2006) records in their work, Making Women Powerful: A Summary of WAND’s Projects 1995-2005, WAND took a further step and sponsored and conducted a series of workshops intended to enhance the women’s skills level and to build their self-esteem, self-confidence, self-pride and self-dignity. These workshops also provided a context for providing an understanding of the social issues in their community and their country which affect their daily lives and daily living as mothers, partners, community members and human beings. In addition, the women were trained to develop their advocacy, artisan and professional skills as self-reliant and independent women and to understand as a system of benefits and rewards which favoured men and one which relegated women to the status as second-class human beings.

Training for community members and those in neighbouring communities focused on critical issues in the areas of social and economic development, health and research, social issues facing the communities with which they had to grapple on a daily basis. Hence, training took place in socially relevant areas.
These areas are presented below:

**Social**

- building self-esteem and self-confidence
- relations between women and men
- domestic violence (physical, sexual and verbal abuse)
- the self and the community
- sexual abuse
- community leadership
- mobilizing the community for action
- social health and the community
- drug misuse and abuse
- effective parenting
- preparing children for the common entrance examination
- conflict resolution
- analysis of social issues
- the importance of proper communications

**Health**

- cervical and breast cancer
- understanding fibroids
- prostate cancer
- adolescent health
- mental health and stress management
- sickle cell disorder
- diabetes and hypertension
- menopause
- HIV/AIDS
- the importance of garbage bins and the collection of garbage
- littering and the proper disposal of garbage/community hygiene
- noise pollution
Economic
- disaster management
- market analysis
- participatory development and the importance of the participation of all community members

Research
- writing a project proposal
- conducting research
- documenting research findings

WAND’s record of work also shows that the Unit also provided skills training in other areas: retrofitting, cake decorating, soft toys production, food sanitation, and professional training for two early childhood teachers. In addition, a workshop under the theme Exploring Gender Dynamics: Men and Women in the Home and the Community which also targeted men emphasised the importance of gender equity and justice and mutual respect as being in the interest of the community as a whole.

Early Childhood Education

At that time the LPDC, based on an assessment of the needs of the community with financial and technical assistance from WAND took on the task of setting up a preschool to serve the community. At the time, there was no suitable space for the operations and a banana shed which was used for all community activities also housed the preschool. However, two years later, utilising the advocacy skills developed in WAND workshops, the women were able to get government assistance, through representation to the Poverty Reduction Fund of the Government of Saint Lucia, to build
a physical structure which became the home of the La Pointe Preschool. Erected through koudmen i.e. community labour, the preschool provides early childhood education for the community’s children whose parents work outside the community and who could to send them to the already established preschools.

The La Pointe project found support from WAND in the following ways as outlined by Soares and Trotman (2006).

- funding for teachers’ salaries in the initial period.
- financial support to ensure that these teachers participated in the six-month training programme Training for Preschool Educators, conducted by the Preschool Services Department, Ministry of Education, Saint Lucia from September 2000.
- conducted a workshop with the LPDC (2001) on Effective Parenting which united the community in discussions on conflict management, effective parenting, healthy foods and nutrition, relations between parents and teachers, drug abuse, family values from a spiritual perspective and the ways in which children learn. The emphasis on improving the quality of early childhood education also led to the improvement of teaching/learning materials and the development of an improved curriculum. This workshop was based on the realisation that the opening of the preschool had led to a broadening of the focus on child rearing, early stimulation and education of young children and their parents.
- Conducted in 2002/2003, three workshops which examined cognitive, social and emotional developments occurring in children during early childhood. The teachers also received information on strategies to enhance social and language skills of the children. The workshops which were also used as a forum for discussions of the experiences and challenges of the school with a view towards providing solutions were conducted by a WAND a child psychologist.
- Continued provision of instructional material and toys for early stimulation.
The preschool which started with 22 children had expanded its numbers to 27 children by 2004 and it must be noted that The La Pointe Preschool was the only preschool in Saint Lucia run by a community-based organisation. The other preschools were run by Government.

**Self-employment**

Another focus of the development project was to promote self-reliance and self-sufficiency among the women. As such the relevant training was implemented through a series of workshops with the assistance of the St. Lucia National Development Foundation, were held in 1998.

Additionally, a number of income generating projects were conceptualised and implemented, but were short-lived because of an inability to find physical space for setting up a processing plant. For example, five members of the LPDC began a pilot project of marketing frozen fruit juices which were sold to schools in the area as an alternative to carbonated beverages. A banana chips project suffered the same fate. The skills are still available in the community waiting to be realised at a later date.

**Social Development**

While WAND had created employment opportunities and provided skills training for the La Pointe community, we think that *The greatest achievement over the years was the way in which the Unit assisted in creating a more socially cohesive community; in building the advocacy skills of women; and in raising their social consciousness, giving them a sense of self. Members have credited WAND with their new found confidence which allowed them to act on their own to develop the projects they want and to engage in social and community activities e.g. fund raising for the sick and food hampers for the elderly. They have also credited WAND with giving them the strength and the confidence and ‘opening their eyes’ to make personal decisions on matters critical to their daily lives and their well-being, e.g. leaving an abusive relationship* (Soares and Trotman, 2006, 7).
For example, a major success can be seen in the attainment of political office by the President of the LPDC who competed for such an office in 2001 local government elections. She won the seat of councillor for the Micoud constituency which also represents the La Pointe community. She has credited her political involvement and success to WAND. She has also indicated that her success at the polls was an outcome of the Unit’s community intervention project which allowed her to develop her self-confidence and her skills in organising, planning, management and analysing community and social and political issues.

It was also this confidence which allowed the women of La Pointe to take on leadership roles in disaster management in their community and in participating in the Assessing Vulnerability at the Community Level: A Pilot Research Project with Low Income Women’s Groups in the Dominican Republic and St. Lucia. This project which was conceptualised by Elaine Enarson, an independent scholar, Metropolitan College, Denver Colorado, U.S.A. saw research being conducted in six rural communities (Aux Lyon, Dennery, Grand Riviere, La Caye, Praslin/Mamiku, La Pointe). This research activity was coordinated and supervised by the president of the LPDC who along with other LPDC were given the necessary training by WAND. LPDC members functioned as researchers.

In an evaluation session with the women of the LPDC, the President of this CBO reported that the work WAND was doing in the community had given them the confidence … “to do whatever we want to do, to take control because before, everything was men, men, but now women are going forward in our community and our country...we have developed the confidence so that we can get up and stand up and go to whoever for what we need like the Poverty Reduction Fund and the Ministry of Education district representatives” (Soares and Trotman, 2006, 7 ). Speaking on her own situation, the president informed that it was because of the workshops on domestic violence, introduced by the Women and Development that gave her the ‘strength’ to leave an abusive domestic situation.
Response to WAND’s Intervention

In response to the question on WAND’s intervention initiatives, the majority, across all ages, agreed that WAND had made a great contribution to the community by facilitating self and social development and, therefore, should continue to work in the community development process. The findings indicate inter alia that the community is satisfied with the work of WAND because the Unit “did a lot of work to educate the children and people in the community, also to help the underprivileged”, and that “they were the first to contribute to community development”.

Some responses:

- Satisfactory, helping those in need to help better the community.
- Did a lot of work to educate the children and people in the community, also to help the underprivileged.
- Without them, I would not have an early childhood education.
- Workshops on women and health were educational and my child attended the preschool.
- I was able to retrofit my house due to a training I took.
- Helped me to manage my finances as an unemployed person.
- I learnt how to do scientific research.

A broader summary of the responses are presented below.

WAND has educated the community through workshops, developed peoples skills which helped them to find employment, provide knowledge to a lot of women in the community on different issues such as battered women, women now possess certain skills they learnt from WAND projects which helped them to care for themselves, helped us to grow as a people and a community, I attended the preschool and La Pointe was better because of the pre-school, children who went to the preschool are now role models, WAND taught us how to study for exams, the preschool was useful and helped a lot because since it has a close proximity to the pupils’ residents (sic)
there is no bus fare which may be placed as a strain on parents, we have a great number of adults in the community who are unable to write their names – with the school every child under three years was taught, WAND built a preschool, gave business training and ensure that every child had an education. Before WAND came, we did not have a community centre, now we have one because we use the preschool.

In response to the question, what would like WAND to do to contribute to the further development of the community?

Simply put: the community wants to see WAND continue the development process and to manage the education and training process as a necessary programme/project for community development and the advancement of women and the community as a whole.

Build a trade centre; workshops for the youth; establish a community centre, reopen the preschool, have a skills training centre, provide scholarships for past students of the La Pointe preschool who are currently at the tertiary level; open a resource centre so that the older and educated ones can help the young in making decisions; educate the young men through men workshops; skills workshop and continue the parenting workshops; set up a research lab where young people can do research; assistance in finding employment.

**The Issue of Development**

Development theories of the 1960s and 1970s, and the thrust towards development in the interest social progress as expounded by theorists such as Andre Gunder Frank, Norman Girvan, George Beckford, C.Y. Thomas, Lloyd Best of addressing issues of poverty and social disadvantage, are said to have failed and are largely discredited. Likewise, neoliberalism, as development theory, is also said to have been discredited. Consequently, development debates have been superseded by many permutations and combinations of what ‘development’ should entail.
Hancock Graham in his Lords of Poverty claims that development is a scam while others shuffle to put meaning to the concept of development being careful to avoid reverting to the theories of the 1970s and, by so doing, free themselves of thinking ‘socialism’ an alternate system to capitalist ideas of development (Lewis).

Alan Thomas (2000) summarises the different concepts and meanings of development found in the relevant literature.

- Development means not only ‘good change’ but also all-encompassing change, which builds on itself, occurs at both societal and individual levels, and may be destructive as well as creative.
- Development as an ‘immanent’ process as with the intrinsic dynamism of capitalism, needs to be distinguished from development as an international activity, often designed to ‘ameliorate the faults’ of capitalist growth.
- ‘Development’ is used in three main senses: a vision or measure of a desirable society; an historical process of social change; deliberate efforts at improvement by development agencies.
- Two very different visions for development are that of modern industrial society, usually combined with liberal democracy, and that of a society where every individual’s potential can be realised.
- Two distinct views of development as an historical process are: capitalism creating the engine of growth with some room for international development to ‘ameliorate the faults’; or a struggle between pro-market and protectionist movements.
- Consideration of development agencies brings in questions of trusteeship, whether agencies have legitimacy and capacity to ‘do development, and what interests they represent.
- There are several competing overall views on development, each of which combines its own vision, version of history and ideas on development agencies. The debate between neoliberalism and structuralism has been superseded as both are largely discredited.
Instead, the main question within ‘mainstream’ development is about the degree and form of interventionism. People-centred development may provide an alternative (p. 48).

Unlike the processes of the 1970s which locate human beings at the centre of analysis and action, those caught up with capitalist development in this period of history are proffering solutions to poverty which, in some instances, exacerbate or create more poverty like some of those mentioned above in Thomas’ summary. Despite this, ‘since the 1990s, there has been a growing consensus on the need to look more closely at the potential of local groups and individuals to be involved as their own development agents, if only because of the manifest failure of the main theoretical perspectives of development to deliver major improvements in living conditions to the world’s poorest individuals and communities’ (Thomas, 2000, 48). In light of this statement and the existence of many marginalised communities caught up in the web of capitalism and capitalist theorising, WAND took this debate to the women, men and young people of the La Pointe community for testing, concurrence and possible critique.

**Theorising Development in the Context of a Marginalised Community: La Pointe**

The women of St. Lucia are not academics. They are not feminists or womanists. They are not genderists. The men know nothing about the variations of masculinity which seem to hold attention in the academy. Neither do the women. These theoretical constructs do not filter down to the common people but get stuck in the filtration process and remains somewhat comfortable within the walls of the academy. Therefore, they are not influenced by the thought and thought processes underlying academic theorising. They are their own thinkers who bring their experiences to bear on their own thought processes to create an awareness of self and their socio-political and economic existence. They are development theorists, in their own way, who are aware of their context, condition and circumstances and what needs to be done to ensure social change in the interest of all
members of the community. They recognise that their community is a marginalised one; they recognise that their community is virtually neglected by government; they realise that if the community is to experience social change and social progress, the community must be at the centre of that change. That is to say, any movement towards meaningful change must consider the community as the unit of change and community members as the agents of that change. Underlying that change, to a large extent, is education and training which will allow them, not only to provide employment, but also to understand the world and their circumstances and what is needed to effect meaningful change.

In this regard, they feel that ‘development’ is realised, not through government, not through capitalist relations of production, distribution and exchange, the social and economic existence which dominates in St. Lucia, but through community/collective effort, already taking place through the practice of koudment, education and skills training for those who need such training. But, government must assist in facilitating that change by providing the necessary amenities such as improved physical and environmental infrastructure, the necessary amenities and opportunities for ‘community growth and human progress’. As one respondent puts it, ‘collective effort, it must be collective effort – government and society, everyone must be involved’. And another, ‘community effort, collective effort, working together, team effort, proper planning, cooperation and honesty’, ‘working together as one’ and ‘working towards a common goal’. It is a process that must be community and people-centred if ‘development is to be meaningful’. This view is already a developed in the existing literature and in practice by some NGOs. But, the experience of La Pointe confirms this. Further to this, it was felt that government should respect the community, despite their social and economic status/marginalisation, they, too, can think for themselves and are in a position to lead a process of social action.

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2 Koudment, mutual community assistance, based on the concept and practice of ‘each one help the other’, is common to St. Lucia. The government of St. Lucia sees this practice as being a response to poverty.
Hence, their general understanding of development rests on:

Trying to improve yourself, your community and country at large; step by step and then it will grow; upgrading a community with necessary infrastructure and commodities; the forming of a community in a better state; improvement in your physical and human resources; the growth of the community; having better things in the community like roads, buildings; develop the community and its people; the betterment of yourself or community whether it be through education of the people or infrastructure; uplifting a community; progress; the upliftment of human welfare; the fixing of the community with the use of machines; community togetherness; work for everybody; helping people if the community need something; elevating the resources of the community; money flowing in the community; providing jobs and social services. Good roads, places to work; do things in community programmes; working together; create employment and also education to improve your standards; help people to improve themselves and by extension their community and country; coming from point 0 to point A,B and up; elevation from poverty, something to make life better; when I see what they do for the community; the rate of positive change in a community; betterment of the community – education, skills, employment, sports, positive things; the usage of machinery to better the infrastructure in a community; the fixing of a community; advancement; how you grow; helping one another; the growth of a people and country; part of reducing poverty, help people to take care of one another.

As they view collective effort as the base of development, on which relevant programmes must be constructed, they view, as critical, the development of ‘human and natural resources’, in the first instance, to achieve or realise the progress they vision which is a socially cohesive and flourishing community in which all, socially and individually, can further their potential through continuing education and training, to undermine levels of poverty which must be understood in a context of colonialism, slavery and neocolonialism. This was the general view across all age groups and genders.
Development of infrastructure and roads, growth of humans with the help of others, proper use of resources, working together, better building and roads, helping others with anything needed, working together as one people, education and further development of resources, prevent wastage of resources, human and natural progress and growing.

They are firm in the belief that development, which should be about reducing poverty and providing for the well-being of the community, cannot be conceptualised on an individualistic basis. Development cannot be achieved by a few persons like politicians, government or rich people. It has to be a collective effort which should start with the people at the bottom. While they feel that government should be part of the development matrix, the disenchantment with the Westminster model of Parliamentary democracy and with it a particular political culture has led community members to distrust politicians and government officials as they feel that any improvement in their lives is dictated by their allegiance to particular political parties. At the same time, there is a general feeling that the political culture is divisive and because of this any kind of social change is not really possible. For example, the claim is that the political system divides them and sets them against each other and cause problems in the community. Governments, they claim, provides support only for their supporters.

These sentiments are captured in these words like these:

- A few people like politicians, they steal the tax payers money, we expect too much from government – we need to help ourselves, through collective efforts, collective effort with help of government, a collective effort – no one organisation can do it alone.
- It has to be a collective effort; Everybody and not just groups of friends or political favour or organisational friends; government and the community.
- A collective effort and with government.
- Everybody working together to help someone or themselves to achieve something.
Recommendations and Conclusion

Included in the debate on ‘development’ was the issue of the economic system which dominates St. Lucia and which has dominated the world since the 1980s, that of capitalism/market fundamentalism. Essentially, market fundamentalism rests on the myth that the pursuit of individual interests (individual happiness) will automatically redound to the benefit of the common good.

For the citizens of La Pointe, capitalism/market fundamentalism means only one thing: poverty, from which they must extricate themselves for a better life.

But, “if we approach it like the way we say, development can take place and then we can reduce poverty among ourselves”.

References


Abstract

The aim of this paper is to take a review of researches undertaken in the field of adult and continuing education and lifelong learning.

It is said that life is all about learning. UNESCO International Committee for the Advancement of Adult Education (1965) endorsed the concept of lifelong education. Lifelong learning is a continuous and enriched process that enables the learners to use updated and upgraded knowledge and skills in their day to day activities to fine tune their professional skills. Now, we have reached a stage where lifelong learning is replacing simple literacy.

Literacy is the foundation of lifelong learning. Indian planners emphasized on consolidating literacy skills and harnessing them for improving the living and working conditions of the neo-literates. The Government of India has been encouraging research innovations; it has tried to replicate successful innovative practices on a wider scale.

In India there has been a weak tradition of research. It has affected the area of Adult Education to a great extent. From 1950 onwards, UNESCO has supported Indian Adult Education. It has instituted a number of awards for many literacy programs. Prof. S.Y Shah, in his book on Adult Education, mentioned that, “During 1950s, the National Fundamental Education Centre, New Delhi and Literacy House, Lucknow undertook research studies in...
the area of teaching illiterate adults and development of literacy primers”. Research studies were undertaken by some Social Science Research Organizations. Evaluation of Adult Education Programs was undertaken by some agencies. Hence, there was an increase in the field of research in adult education. Data shows that during 1980’s as many as 56 evaluation studies were conducted by different institutions in India. At the national level, the Directorate of Adult Education (DAE) was established in 1971. The DAE has been the nodal agency for coordinating and promoting literacy and adult education activities in the nation. The National Adult Education Programme was launched in 1978. This enabled the Government to provide infrastructure at the national and state level to undertake training in literacy which gave way to undertake research in literacy and adult education.

Till 1980-92, more than two hundred evaluation studies on the implementation of Adult Education programmes were undertaken by a number of Social Science Research Organizations. Later in 1980, with the intervention of University Grant Commission many universities established the Department of Continuing and Adult Education and Extension Work now known as the Department of Lifelong Learning. Since then, many started taking interest in literacy, adult education and continuing education. This has facilitated reputed universities, social science research institutes, NGOs and State Resource Centers, who have expertise in the field of evaluation & research.

**Keywords**: Adult Education, Literacy, Lifelong learning, Evaluation, Continuing Education, Training, Extension, Non-Formal Education. Gender, Research.

**Introduction**

Human beings are continuously learning throughout their lives. Knowledge of today’s modern times is cumulative of the various stages of human life. It comes from the fact that to live a purposeful life, one has to keep learning persistently. For living effectively learning has become a necessity.
Lifelong Learning

The population of the world is exponentially growing with each civilization but expansion of education infrastructure is not able to catch up to it. Formal educational systems adapt to the socio-economic changes around them very slowly. It was from this point of departure that planners and economists began to make a distinction between informal, non-formal and formal education. Hence, there is tripartite categorization of learning system: - into informal, formal and non-formal (Combs and Ahmed, 1973). Non-formal education became part of the international discourse on education policy in the late 1960s and early 1970s. In the context of higher education, Lifelong Learning can be related.

It is said that life is all about learning (Satish Kumar, 2002). For Gandhi, Education is the moral development of the person; a process that is by definition lifelong. And Lifelong Learning is a continuous and enriched process that enables the learners to use updated and upgraded knowledge and skills in their day to day activities to fine tune their professional skills. Now, we have reached a stage where Lifelong Learning is replacing simple literacy, adult and continuing education. With a view to meet the demands of emerging knowledge in society and to facilitate the process of developing a learning society, maximum priority to Lifelong Learning is accorded by the University Grants Commission (UGC). As many as 86 departments/centres of Lifelong Learning have been approved by UGC. These departments/centers are expected to promote the philosophy of Lifelong Learning as a part of the total education programmes of their institution, to make concerted efforts towards integration between formal and non-formal education as well as out of school learning processes, to reach out to larger sections of community. They would help to enrich the learning process of the faculty and students mainly through extension activities, to provide professional manpower for implementing the programmes through various innovative courses; and to contribute to generation of knowledge through research and publications (http://mhrd.gov.in/sites/upload_files/mhrd/files/document-reports/AR2009-10.pdf).
Literacy is the foundation of Lifelong Learning. Indian planners emphasized on consolidating literacy skills and harnessing them for improving the living and working conditions of the neo-literates. The Government of India has been encouraging research innovations; it has tried to replicate successful innovative practices on a wider scale.


The World Conference on Education for All held in March 1990 in Jomtien, Thailand, adopted a declaration calling upon all member states and international agencies to take effective steps for achieving Education For All by 2015 (http://www.unesco.org/new/en/education/themes/). The ultimate goal affirmed by the World Declaration on Education for All is to meet the basic learning needs of all children, youth and adults. “Literacy and Non-Formal Education is a measure of their importance for achieving Education for All. Each academic organization that is the school, college, academic institution and university has to reach to the nearby community and society at large along with its available resources.”

Research shows that ‘learning’ helps in reducing economic, gender disparity and improving health and nutrition of the individual, family and society at large. UNESCO’s International Committee for the Advancement of Adult Education (1965) endorsed the concept of lifelong education.

**Research in Lifelong Learning**

Research and documentation play an important role in practicing literacy skills and in improving skills. Research is highly essential in the implementation of any programme related to Lifelong Learning. Data reveals in the initial
years that is immediately after independence in India there was a weak tradition of research and documentation. It is said that people do not take efforts to preserve memories of programs and events happening in the institutes. It has affected the area of Adult Education to a great extent. From 1950 onwards, UNESCO has supported Indian Adult Education. In India, the movement for improving literacy rate is going on for years. In the initial years, there was no government and academic research support for adult education programs. But even today there is a dearth of rigorous research in this field. Prof. S.Y Shah, in his book on Adult Education, mentioned that, “During 1950s, the National Fundamental Education Centre, New Delhi and Literacy House, Lucknow undertook research studies in the area of teaching illiterate adults and development of literacy primers”. Research studies were undertaken by some Social Science Research Organizations. Evaluation of Adult Education Programs was undertaken by some agencies. Hence, slowly there is an increase in the field of research in adult education. Data shows that during 1980’s as many as 56 evaluation studies were conducted by different institutions in India. At the national level, the Directorate of Adult Education (DAE) was established in 1971. The DAE has been the nodal agency for coordinating and promoting literacy and adult education activities in the nation. The National Adult Education Program was launched in 1978, this enabled the Government to provide infrastructure at the national and state level to undertake training in literacy, which gave way to undertake research in literacy and adult education.

Till 1980-92, more than two hundred evaluation studies on the implementation of Adult Education programmes were undertaken by a number of Social Science Research Organizations. Later in 1980, with the intervention of University Grant Commission many universities established the Department of Continuing and Adult Education and Extension Work now known as the Department of Lifelong Learning. Since then, many of them started taking interest in literacy, adult education and continuing education. Establishment of such Departments has facilitated reputed universities, social science research institutes, NGOs and State Resource Centers, who have expertise
in the field of evaluation & research.

In this paper, an attempt is made to review research in Lifelong Learning specifically programs related to adult education.

**Agencies undertaking research in the field of Adult Education / Lifelong Learning**

There are organizations that provide academic and technical support to other organizations for carrying out research work in the field of adult education/Lifelong Learning. Mauni Vidyapeeth, in India, had undertaken lot of experiments in the field of adult education. It trained teachers and extension workers for adult education. J.P. Naik and Chitra Naik, the founder members of Indian Institute of Education tried their best to offer learning opportunities for adults to learn. They conducted lot of experiments in training teachers and volunteer teachers to teach adult learners.

In India, at the Central level, the Directorate of Adult Education plays an important role in supporting researches related to literacy. It also commissions research studies. University Grants Commission provides grant to researchers working in the University system to undertake researches related to literacy, adult education and Lifelong Learning.

The professional agencies, including civil society organizations, such as, Council for Social Development, Centre for Media Studies, Indian Adult Education Association undertake research work related to Lifelong Learning. At the state level State Resource Centres (SRCs), conduct studies related to literacy, adult education & Lifelong Learning. SNDT Women’s University, till 2015 undertook more than 25 evaluative research studies in the field of adult education.

**Programs related to adult education in India included the following:**

A number of significant programmes were taken up since Independence to
eradicate illiteracy among adults through different programmes like:

- Social education (1951-56) (community development project).
- Gam Shiksha Mohim, (In India, Maharashtra had first movement for literacy).
- Farmers Functional Literacy (1967-68).
- Polyvalent Adult Education, 1977 (non-formal education for workers).
- Education Commission, 1964-66 (insisted on active involvement of teachers students and media in literacy work).

Review of related literature reveals that there was no systematic research about the effect of any of the above mentioned programmes.

- National Adult Education Programme, 1978 was the first national attempt to eradicate literacy. The programme emphasized functional literacy, numeracy, functionality and social awareness. For the first time through this programme, government gave poor people an opportunity to take part in the development activities of the nation. Even though in this programme, research was not an integral part but was a part of the process of finding shortcomings of the programme and used for suggesting remedial measures.
- National Policy on Education 1986 showed national commitment to literacy where literacy was addressed in a time bounded manner.
- The campaign approach was used to provide for literacy throughout the country.
- The National Policy for Action (NPA, 1986), clearly emphasized the need for research. It mentioned that national and state level agencies of higher education be involved to carry out research to improve quality of the programme. The Programme of Action (1992) of National Policy of Education (1986) emphasized the need to undertake good quality action research in various aspects of adult education to improve the quality of literacy programmes.
- Ministry of Human Development (1986) mentions the need to undertake evaluative research to achieve the objectives of NLM to transform the society towards literacy.
• In the Xth Five Year (2002-07) Plan of India emphasis was paid on implementing Total Literacy Campaign, Post Literacy Programme of National Literacy Mission through the collaboration of government and Non-Government Organizations (NGOs). NGOs were made to play an important role in implementing Total Literacy Campaign, Post Literacy Programme. It was expected that NGOs will undertake action research connected to literacy.

• The Sakshar Bharat Programme of Government of India with its ambitious plan of making 70 million adults literate by 2017, accorded high priority to promote research in basic, post literacy and continuing education and also gender issues and documentation and dissemination of research findings. It emphasized that competent agencies would be assigned to take up research studies on relevant themes. Universities and social science research institutes of repute and standing would be addressed to encourage the researchers to work in the field of different aspects of adult education for the award of doctoral and post-doctoral degree. National Literacy Mission Authority would consider sponsorship of research, on topics selected by it, in reputed universities.


Types of research undertaken in the field of Lifelong Learning:

• In India, Directorate of Adult Education commissioned some empanelled agencies for undertaking research studies to evaluate Total Literacy Campaign, Post-Literacy Campaign, Continuing Education Programme and Impact Research. Impact of Television and Radio Programmes on Literacy and Adult Education (2003) were commissioned by Directorate of Adult Education, New Delhi.

• At the National level there are guidelines developed by Directorate of Adult Education for evaluating adult education programs like Total Literacy Campaign/Post-Literacy Programmes/Continuing Education, State Resource Centres, Jana Shikshan Sansthas. Other than this, there are no guidelines for undertaking researches in the field of Lifelong Learning.
• The Encyclopedia of Adult Education Research has listed 136 doctoral dissertation studies that were undertaken as part of the Universities’ involvement in the adult education programme (P Majeet, 2009).

• Since adult education was perceived largely as a field of practice, the focus of most research studies was primarily on understanding practical issues in the implementation of adult education programmes. Most of the doctoral dissertation studies as well as the SRC studies fell in this category (Ibid, 2009).

• From 1988 till 2008, external evaluation studies received from Indian Adult Education Association (IAEA), New Delhi were 194. District evaluation reports sponsored by Directorate of Education (DAE) 192 & Research Studies received from various State Resource Centres (SRCs) 497.

• Most of the research studies were evaluative researches. The studies had undertaken quantitative research method and survey research method. Studies having participatory research method or qualitative research method were almost negligible.

• In terms of agencies working for Adult and Lifelong Learning, research has been a marginalized activity.

• There is a dearth of field based research studies.

Issues related to Lifelong Learning and its relevance to quality of research in Lifelong Learning

• Lifelong Learning is a vast area. It includes transmission of traditional knowledge, skills, values and making people aware about new upcoming technologies and techniques, etc. There is a need to promote research in this area.

• In India there is no list of agencies undertaking research in adult education/ Lifelong Learning. Proper mapping of such list of agencies would help in knowing the kind of research they undertake and in developing their research competencies if needed.

• Government of India has a list of empanelled agencies whom it
involves in undertaking research studies of government programs. After the assigned research work agencies have to submit their report to Government. Then, government assesses its credibility. But in such commissioned researches the findings remain with the funding agencies.

- There is a need to question gender roles through research to know why girls and women still find it difficult to pursue their educational aspirations.

- Manpower involved in undertaking research in the field of Lifelong Learning and their areas of interest need to be studied.

- There is a need to research how to sustain the interest of learners in learning.

- Prior learning is prevalent in India and there is a need to undertake research to know how it can be recognized and accredited through formal system of education.

- There are people who are not aware about learning facilities. There is a need to reach out to them as many of them cannot afford to learn on their own. Hence, there is a need to undertake research to find out their needs and based on that training programmes or educational programmes for them need to be organized.

- There is no data available on institutions, organizations & agencies undertaking researches related to Lifelong Learning & agencies seeking funds for undertaking lifelong activities and programs. Such data is needed for research governance.

- Lifelong Learning has special features: like some skill based educational programs involve issues like translation, adaptation, inclusive education and innovative research, which would not have publications but would be important in imparting skills and in creating a learning society.

- The functionaries and practitioners of adult education and Lifelong Learning need to undertake research work. This can be done by organizing series of workshops to orient them to research and build their competencies to enable them to undertake research
studies. They need to be trained for undertaking research work especially qualitative research, participatory research and intervention research methodology.

- In order to increase quality of training volunteers and functionaries’ of adult education/Lifelong Learning, there is a need to encourage research in training.

- Teaching-learning methodology is important in any Lifelong Learning programme. In order to sustain the interest of learners there is a need to continuously evolve new teaching-learning methodologies. This will be useful to change the content of teaching-learning as per the needs of learners.

- Data shows research findings are not disseminated immediately after research work is completed. Further, research is not used in the functioning of Lifelong Learning agencies on regular basis. Hence, there is a need improve its applicability.

- There is a need to undertake research to know infrastructural facilities available with the agencies in undertaking Lifelong Learning programmes.

- Ethical issues in undertaking research related to Lifelong Learning need to be addressed to maintain proper quality of the research.

**Conclusion**

- Research needs to be made a preliminary activity in the agencies working for adult education and Lifelong Learning.

- All those working for literacy & Lifelong Learning need to be trained in using online programmes by improving their competencies in using information & technology.

- There is a need to give wide publicity to research findings undertaken by various agencies by uploading them online. Online access to the findings of research studies need to be available and Digital Deposition of Research Studies is a need of the hour.

- Research findings need to be disseminated through seminars, discussions and publications.
• Earmarked grant at the central, state government and local level be made available for financing research for Lifelong Learning.

• Academic institutes need to be motivated to carry out interdisciplinary and multidisciplinary researches related to Lifelong Learning.

• There is a need to encourage other interested agencies to undertake interdisciplinary research in Lifelong Learning.

• There is a need to have agencies for accrediting research undertaken by academic institutions/centres related to Lifelong Learning for improved research governance.

The above discussion on research indicates that research can bring a positive change in the lives of people. It can lead to innovations. If quality research would become an integral part of the present nation’s lifelong programmes, the objective of lifelong learning to provide purposeful learning activity on an ongoing basis with the aim of improving knowledge, skill and competence to establish a fully literate society through improved quality can be realized.

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SUBJECT SPECIALISTS’ VIEWS ON THE PRAXIS OF MATHEMATICS AND MATHEMATICAL LITERACY IN THE SECONDARY SCHOOL

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Abstract

The purpose of this article was to examine tensions associated with the implementation of Mathematical Literacy alongside Mathematics. This paper emerges from an analysis of four Mathematics (M) and Mathematical Literacy (ML) facilitators’ views on implementation of Mathematics and Mathematical Literacy curricula. Bernstein’s (1996) constructs of Recognition and Realisation rules were used to interpret facilitators’ views on Mathematics and Mathematical Literacy. The agendas foregrounded in the M and ML curricula were used as evaluative criteria to interpret facilitators’ views and perceptions about M and ML. In the facilitator’s interview data, key issues emerged in relation to the respondent’s views about Mathematics and Mathematical Literacy, and the interaction between these two Learning Areas. Key to the pedagogical practices that emerged in the interview analysis relate to mathematical rules that were involved in the teaching practices of Mathematics and Mathematical Literacy. In this paper the data reveals that from the facilitators’ perspective, ways of working in Mathematics were seen as specific and only applicable to Mathematics and not to ML. Similarly, ways of working in Mathematical Literacy were seen as specific and only applicable to Mathematical Literacy. In this study, I argue that Mathematics and Mathematical Literacy are inseparable, though dramatically different, facets of the same thing. Mathematics and Mathematical Literacy features cannot be separated from each other.
Keywords: Mathematics, Mathematical Literacy, National Curriculum Statement, Democratization of Mathematics and Mathematics for Democracy.

Introduction

There has been a debate about the introduction, legitimacy, agendas and the implementation of Mathematical Literacy alongside Mathematics since the inception of Mathematical Literacy in 2006 (Venkatakrishnan & Graven, 2006; Graven & Venkat, 2007; Christiansen 2006; 2007; Venkat, 2006; 2007; Mbonani & Bansilal, 2014; Machaba, 2014). These debates have been centered on teachers’ views, interpretation of the curriculum (Gaven & Venkat 2007; Machaba, 2014), teaching of mathematical literacy (Vithal, 2006; Machaba, 2014) and learners’ perceptions on the learning of Mathematical Literacy alongside Mathematics (Geldenhuys, Kgruger & Moss, 2015; Graven & Venkat, 2006; Venkat & Graven 2008). To some extent the debate skewed towards the teaching of Mathematical Literacy alongside the teaching of Mathematics (Venkat, 2007). However, this debate has not been including the voice of curriculum implementers (Districts subject advisors) who are responsible for implementing the two curricular themselves and also supporting teachers in their daily teaching of the two subjects. Districts subjects voices were not heard in this debate. Hence, the purpose of the research in which this article is based was to examine Districts facilitators’ views on the implementation of Mathematical Literacy alongside Mathematics.

Four facilitators from three Districts in Gauteng, South Africa were interviewed on classroom implementation of Mathematics and Mathematical Literacy. Two facilitators from Mathematics (MF1 and MF2), and two from Mathematical Literacy (MLF1 and MLF2) were interviewed. These subjects specialists were chosen because they are specialists in Mathematics and Mathematical Literacy.
The data analysis suggests that there are ways of behaving, acting and doing which are associated with M, for example, application of rules. Also there are ways of behaving, acting and doing which are associated with ML, for example, understanding what is going on, what the concept means. In some sense the data suggests that there are some differences in the discourses of two subjects, which also confirm the categorisation of the two subjects by the Department of Education, which raises the question of what does it mean to the same teacher who is teaching both M and ML as is the case in some of the schools. This study is arguing, therefore, that it is possible for the same teacher to teach both M and ML, because, although the discourses in M and ML are different they should not be inconsistent (in conflict) with the identities of the teacher. Because if they are inconsistent, it means that the two subjects would require two different identities from the same teacher.

In this article, I suggest that the differences between the two subjects (M and ML) should not be inconsistent (in conflict), if they were in conflict what does it mean for the teacher who is teaching both? He would have split identities, which can make the task of his teaching very difficult. Again, for the teacher who is teaching both subjects, the two subjects should not have discourses which are in conflict, otherwise it would require ways of behaving which are different from the identity of the teacher.

To develop the argument, we drew from Parker’s (2006) and Graven and Venkat’s (2007) analyses on National Curriculum Statement (NCS) for Mathematics and Mathematical Literacy. We identify similarities and differences between Mathematics and Mathematical Literacy using ideas from the work of Bernstein’s (1982) constructs (especially classification and framing). The reason we looked into the two curricular was because teachers’ official pedagogical identity are embedded in them. Bernstein’s constructs of classification and framing, which are related to recognition and realisation rules respectively, were further used to describe and explain subject advisors’ challenges and successes in Mathematics and Mathematical Literacy.
The National Curriculum Statement for Mathematical Literacy

In 2006, Mathematical Literacy and Mathematics were introduced into South African Further Education and Training (FET) curriculum. Their introduction made mathematically-orientated subject – either Mathematics or Mathematical Literacy compulsory for all FET learners. The National Curriculum Statement Grade 10-12 (2001: 9) defines Mathematical Literacy as:

- The subject that provides learners with awareness and the understanding of the role that Mathematics plays in the modern world. Mathematical Literacy is the subject that is driven by life related application of Mathematics. It enables learners to develop the ability and confidence to think numerically and spatially in order to interpret and critically analyze every situation and solve problems.

This definition tells us about the three messages that the mathematical statement wants to bring through. These messages are: (1) Mathematical Literacy is the subject that is driven by application of Mathematics. (2) To learn Mathematics. (3) And then apply it to various contexts and solve problems.

Internationally Mathematical Literacy is referred to as Quantitative literacy which is aimed at developing students with a flexible range of quantitative skills to be applied in a diverse range of contexts (Steen, 1990). For example, Steen (1990) differentiates between quantitative literacy and traditional mathematics as “typical school mathematics problems which involve simplified numbers and straightforward procedures but require sophisticated abstract concepts, while quantitative literacy involves mathematics acting in the world” (p.6).

It is clear from the preceding definition that Mathematics and Quantitative Literacy, which is referred as Mathematical Literacy, differ in kind and purpose. Mathematics aims at developing mathematical knowledge within mathematics itself at an abstract level while quantitative literacy or
Mathematical Literacy is aimed at analysing and interpreting the world using mathematics. In South Africa, Mathematical Literacy was introduced as an alternative to mathematics to address the aims as outlined in the definition of quantitative literacy as defined above. We now describe what caused Mathematical Literacy to be developed as a school subject in South Africa.

Influences of the conceptualization of Mathematical Literacy in South Africa

The introduction of Mathematical Literacy alongside Mathematics was to make a mathematical–oriented course available and compulsory for all learners in South Africa. Brombacher (2006) states that Mathematical Literacy in South Africa in particular and across the world in general was developed out of two pressures: “democratisation of mathematics” and “mathematics for democracy”.

Democratisation of Mathematics

Democratisation of mathematics refers to the provision of greater access to mathematics for more people. One of the reasons Mathematical Literacy was constructed in South Africa was to make sure that many learners do mathematics-oriented courses. Vithal and Bishop (2006) state that “the focus on Mathematical Literacy in South African context needs to be understood both historically in how access to mathematics was denied to the vast majority of black people” (p.3).

In the same vein, Christiansen (2006) supports that one of the main reasons Mathematical Literacy was developed was to reach the 200,000 learners leaving grade 12 every year without mathematics and the 200,000 additional learners who fail mathematics yearly. Christiansen (2006) further argues that the failure of South African learners in international comparison tests, for example TIMMS-R, also added fuel to this.

In 1995, the Curriculum Development Working Group within the Department of Education produced a discussion document aiming to realise the
ANC’s desire to replace the out-dated curriculum with the new curriculum (Venkatakrishnan & Graven, 2006). This document introduced the notion of replacing traditional subjects with integrated learning areas. Mathematics became Numeracy and Mathematics and later became Mathematical Literacy, Mathematics and Mathematical Sciences (MLMMS). The change was driven by the desire to move away from content-oriented mathematics to more contextualised mathematics aimed at producing learners who can participate in civil society and democratic processes. This approach of outcomes-based education became a key feature of Curriculum 2005 (C2005). There was a mismatch between the process–oriented programmes of study with C2005 in the General Education and Training (GET) phase and the much more traditional content orientated programmes in the FET phase (Chisholm et al., 2000). The transition between phases was particularly problematic for subjects relying on hierarchical developments of concepts such as mathematics (Taylor & Vinjevold, 1999).

In addition, the “birth” of Mathematical Literacy was to remedy the divide between Mathematics Higher Grade (HG) and Mathematics Standard Grade (SG). Just over 40% of learners at the end of FET phase senior certificate candidates nationally took no mathematics courses at all in the FET phase. 50% of learners entered for the standard Grade (SG) mathematics examination and fewer than 9% entered for the higher grade examination – the course and examination pass needed for entry to higher educational courses with a significant mathematical component (Venkatakrishnan & Graven, 2006). By entering many more candidates for the SG band in order to secure better pass rates, the Government appeared to be encouraging schools to abuse the HG/SG curriculum differentiation model.

Similarly, the body representing the higher education sector was particularly concerned that this abuse further reduced the pool of learners studying higher level mathematics, and consequently, restricted many learners access to mathematical disciplines at graduate level (SAUVCA/CTP, 2003). So, the structuring of Mathematics and Mathematical Literacy is often interpreted
as a replacement of the previous Higher Grade (HG) and Standard Grade (SG) distinction that used to exist in Mathematics (Venkatakrishnan & Graven, 2008). This misinterpretation is despite the strong statement from those involved in the development of the Mathematical Literacy curriculum that Mathematical Literacy is not equivalent to standard grade mathematics (Brombacher, 2006; Laridon, 2004).

**Mathematics for Democracy**

One of the influences to the introduction of Mathematical Literacy emanated from a push by government to enable more people to use mathematics to facilitate effective participation and contribution to the twenty-first century world (Brombacher, 2006). Many of the intentions in the critical and developmental outcomes highlighted in the new Mathematical Literacy curriculum policy document (Department of Education [DoE], 2003) such as use mathematical process skills to identify, pose and solve problems creatively and critically; work collaboratively in teams or groups to enhance mathematical understanding cannot be separated from those indicated in the mathematics documents. Christiansen (2006: 6) noted that the National Curriculum for Mathematical Literacy’s main agenda is for the improvement of living conditions, social justice and democracy. For example the National Curriculum for Mathematical Literacy states that “to be a participating citizen in a developing democracy, it is essential that the adolescent and adult have acquired a critical stance with regard to the mathematical argument presented in the media and other platforms”. This quote shows the powerful role that can be played by mathematics. It shows that Mathematics, and Mathematical Literacy, can provide powerful modelling tools. It can help learners to develop insight into complex contexts such as ecology which they had never encountered. However, Christiansen (2006) argues that it is assumed the role played by mathematics will be known to both teachers and learners.

Mathematical Literacy [is] defined as part of a progressive agenda for increased democracy and social justice, however the superficial engagement
with complex applications of mathematics implied by the MLNCS is not likely to live up to its claim” (p. 6).

She argues that as in school mathematics, “NCSML is political hybrid product”.

Though it states that the approach that needs to be adopted in developing Mathematical Literacy is to engage with context rather than applying mathematics already learnt in the context (DoE, 2003), it has an obvious focus on the content of mathematics – mathematical skills and concepts throughout (Christiansen, 2003: 10).

In support, Venkatakrishnan and Graven (2006) observed that the National Curriculum for Mathematical Literacy also keeps in place the basic structure of the Mathematics curriculum. While the definition and the opening section of the document describes the purpose of introducing mathematics as developing the “self-managing person”, the “contributing worker” and the “participating citizen” (DoE, 2003, p. 9-10), it also emphasizes the subject as useful in a broad, future–life oriented sense. However, Venkatakrishnan and Graven (2007) argue that operationalisation of these aims into curriculum is done through Learning Outcomes in four content areas: “Number operation in context”; “functional relationships”; “Shape and Space and Measurements” and “data handling”. The Mathematical Literacy assessment standards emphasise the use of context, but the use of context is viewed as a vehicle to access mathematical knowledge – the purpose of school mathematics, and the relationship between content and context in school mathematics.

AMESA (2003) state that the reason for the use of a content-led approach based on these areas was for the sake of “portability and mobility” between the two subjects – Mathematics and Mathematical Literacy. However, AMESA cautioned that “the two subjects are so dissimilar in philosophy and purpose that such portability and mobility should not be a consideration” (p. 4). AMESA’s view seems to be consistent with the argument made by Steen and other local researchers in relation to quantitative literacy. The
claim is that the curricula which is structured in terms of mathematical skills has a tendency of being interpreted by teachers and learners as focusing on acquiring procedures as opposed to developing mathematical attitudes. AMESA appeared to be calling for a behaviour-defined curriculum, more focused on the kinds of actions and attitudes that are helpful when faced with a mathematical problem that can be mathematised (Christiansen, 2006; Skovesmose, 1990; Venkatakrishnan & Graven, 2006; Vithal, 2003).

It appears that developers of Mathematical Literacy in South Africa seem to have missed this important idea – behaviour-defined – as the core of Mathematical Literacy. Laridon (2006) noted that the South African Qualification Authority (SAQA)’s proposition to make 16 credits in Mathematics and Mathematical Literacy compulsory was taken urgently within the adult training sector with hurried attempts made to put together unit standards in Mathematical Literacy in order to ensure that people enrolled on these programmes could gain certification. Venkatakrishnan and Graven (2008) citing Hallendorf (2003) and Brombacher (2006), in relation to the development of the Mathematical Literacy unit standards note that given the time constraints for publication this curriculum used the existing FET mathematics curriculum as a starting point, and attempted to extract the fundamental mathematics while removing the pure mathematics. Hence, AMESA (2001) expressed concerns that at the time this approach would tend to work against the aims that Mathematical Literacy was intended for. AMESA was concerned that mathematical literacy should not be a “watered down” academic mathematics but rather mathematics with different emphasis, the mathematics that develop thinking skills – habits of mind – to be able to apply that learning in various contexts (p. 1).

The concern by AMESA is based on viewing mathematical Literacy using Steen’s (2001), Christiansen’s (2006) and Vithal’s (2003) lenses that consider Mathematics Literacy as not developing new mathematical knowledge but developing mathematics thinking to interpret and analyse the world.

It has been noted that the National Curriculum Statement of Mathematical
Literacy has mixed messages. Graven and Venkat (2007) have observed that during the implementation of this curriculum there is a spectrum of agendas which resulted from the different interpretations of the curriculum. Teachers seem not to be knowing which agenda to be pursued – content oriented or context orientated or the balance between content and context.

Graven and Venkat (2008) found that learners were very much worried about the uncertainties over whether Mathematical Literacy would be accepted in the Higher Education sector for access to degree courses in finance-related disciplines. This is the group of learners who are continuing to achieve highly in Mathematical Literacy and strongly aspire to study degree level courses in Economics/Commerce or related areas. Graven and Venkat (2008) noted that this group of learners exhibits the kinds of flexible, applied problem solving capabilities that have often been seen as lacking in students coming through with appropriate qualifications in school mathematics. The operationalisation of Mathematics and Mathematical Literacy in South Africa could be associated with the metaphor of social filter (Aquilar & Zavaleta, 2012). It functions as a social filter in the sense that Mathematics by virtue of allowing learners into Higher Education sector for access to degree courses in finance related disciplines restricts learners’ opportunities for development and their civic participation. It acts as a social gatekeeper (Aquilar & Zavaleta, 2012).

One of the tensions that emerged in the implementation of Mathematical Literacy was on the criteria used for taking Mathematical Literacy. It appears that learners do not select mathematical literacy by choice. In fact learners are streamed according to marks. Graven and Venkat found that the vast majority of learners taking Mathematical Literacy have been advised by their teachers to do so based on their grade 9 Mathematics performance. Although for some schools there is some level of “free choice” allowed, in most schools students with weak grade 9 marks are strongly advised to take
Mathematical Literacy. Similarly students who are good at Mathematics – performed very well in grade 9 maths are likely to be advised by teachers to take Mathematics. This decision has got a serious implication in the learning of mathematical literacy. It suggests that many mathematical literacy classes have few or no students with strong levels of confidence and competence in mathematics.

The other factor which was observed during the implementation of Mathematical Literacy was how ML is perceived by parents, teachers and learners. Other learners, parents and teachers perceive mathematical literacy classes to be for “mathematics for stupid learners” (Graven & Venkat, 2006; Geldenhuys, Kruger & Moss, 2013). Many students interviewed by Graven and Venkat (2006) responded by saying: “When you choose Maths Literacy, it is like you know you are a stupid kind of person”. This kind of statement affects the morale of Mathematical Literacy learners. Christiansen (2007: 10) notes that the separation between Mathematics and Mathematical Literacy “serves to maintain a class distinction, which of course is related. It is a well known sorting tool of learners into those who master the decotextualised, self-referential discourses, and those who do not”. Therefore the introduction of Mathematical Literacy as a school subject in South Africa was driven by a vision of a non-esoteric mathematics with real use value, which could still provide reasonable access to further education.

The fact that Mathematical literacy could still provide reasonable access to further education raises a very important question related to whether it is possible to combine epistemological access (access to mathematical knowledge) and social empowerment of learners.

Theoretical Constructs

According to Bernstein (2000), the fact that Mathematics is content-oriented subject makes it to be strongly classified and framed, which results in its recognition and realisation rules being clearer.
Bernstein (1982, p. 59) refers to Classification as:

*the nature of differentiation between contents. Where classification is strong, contents are well insulated from each other by strong boundaries. Where classification is weak, there is a reduced insulation between contents, for the boundaries between contents are weak and blurred.*

Framing refers to the ‘form of the context in which knowledge is transmitted and received and refers to the specific pedagogical relationship between the teacher and the taught’ (Bernstein, 1982, p. 59). The concepts of classification and framing, according to Bernstein, yield to concepts of recognition and realisation rules. Recognition rules, according to Bernstein (2000), are criteria (special relationships) for making distinctions, for distinguishing the speciality of a thing or a practice or a specialisation or a context, what makes it what it is. Recognition rules are principles for recognising the ‘legitimate text’ (p. 50), the voice to be acquired, and are determined by the classification principle at work (relations between different knowledge discourses and practices). Realisation rules are the ‘means for creating and producing the special relationship internal to what is recognised as the “legitimate text”, i.e. the means for reproducing/creating the speciality in practice’ (Bernstein, p.50).

According to Bernstein (2000), this implies that the mathematics context can easily be recognised due to its strong classification of a knowledge structure, unique identity, unique voice and internal rules. The acquirer (the learner or the teacher) is able to recognise mathematics pedagogical text (e.g. textbooks) in the classroom. This means that teachers or learners can be able to identify themselves in the context of Mathematics. They can ably recognise ‘the speciality of the context they are in’ (Bernstein 1996, p. 31).

**Problem Statement**

The South African Department of Basic Education currently offers two forms of mathematics to learners in schools. This arises from a position that has
enabled the Department to make distinctions about what needs to be offered to learners. These distinctions have framed the world of mathematics and the way District officials (Facilitators), teachers and learners experience it, including the ways in which facilitators, teachers enable learners to experience it. In this paper, I argue that Mathematics and Mathematical Literacy, although appears to be ostensibly incompatible according to the Department of Basic Education, are in fact complementary. The two kinds of knowledge have been observed as separate entities, coexisting as disjoint neighbors by some of the officials in the Department of Basic Education. In this study, I argue that Mathematics and Mathematical Literacy are inseparable, though dramatically different facets of the same thing. Mathematics and Mathematical Literacy features cannot be separated from each other. Thus, we are dealing here with duality rather than dichotomy.

**Research Design and Methodology**

The research design for this study is best characterized as an explorative, multiple case study design (Leedy, 1997). Macmillan and Schumacher (2001); Opie (2004) argue that qualitative research uses a case study design in which the data analysis focuses on one phenomenon, which the researcher selects to understand in-depth, regardless of the number of sites or the participants of the study. The selection of participants in this qualitative case study followed “purposive sampling” (Newman, 1994). The participants were chosen to illuminate the key theoretical constructs concerning their views in the implementation of Mathematics and Mathematical Literacy. According to Macmillan and Schumacher (2001) purposive sampling, in contrast to probabilistic sampling, is “selecting information–rich for study in–depth” when one wants to understand something about cases without desiring to generalize to all such cases. Purposive sampling is done to increase the utility of the information obtained from small samples. Thus, four facilitators from three Districts in Gauteng, South Africa were interviewed on classroom implementation of Mathematics and Mathematical Literacy. Two facilitators from Mathematics (MF1 and MF2), and two from Mathematical Literacy (MLF1 and MLF2) were interviewed. These subjects’ specialists
were chosen because they are specialists in Mathematics and Mathematical Literacy. The reason why only four subjects specialist were chosen in this study was because an in-depth interview of an hour each was conducted with each of them.

All the Mathematics and Mathematical Literacy facilitators’ data was collected through interviews, using a tape recorder. Many qualitative researchers such as Cohen, Manion and Morrison (2007) emphasised that data analysis need to be an ongoing process. In other words data analysis starts with the first data that the researcher collects and continues throughout the data collection period and during the process of writing up the research itself. During my data collection process, I kept my research journal in which I recorded my insights, hunches, speculations and reflections on a range of events during the data collection.

After data collection, I had to transcribe all 4 hours of tape recording of interviews with Mathematics and Mathematical Literacy subjects specialists. Nearly 10 pages of transcripts were analysed. As advised by Cohen et al. (2007), we ensured that we transcribed phrases and sentences as they are to keep the flavour of the original data, not because they are often more illuminative and direct than my own words. It was important to be faithful to the exact words used. Bowe et al. (1992) in Cohen et al. (2007) reported that they used a lot of verbatim data in their research, as it is done in this research, not because those whom they interviewed were powerful people but they felt that justice needed to be done to the exact words used by the respondents.

After ensuring that the data was sorted and typed, I read and reread to familiarize myself with the data. Although my recorded interviews were transcribed, I listened to them several times, writing down any impression I had in my reflective journal as I went through the data. In the process of coding, I read carefully through my transcribed data, line by line, dividing it into meaningful analytical units. When I located meaningful segments I coded them. Maree (2007: 105) noted: “Coding is marking the segments
of the data with symbols, descriptive words or unique identifying names”. I made a three-column typology, with the transcript in the left, the coding in the centre and comments in line with some theoretical orientations on the left.

Grounded theory (Inductive) and deductive approaches were used in this data analysis. Although I was open to see the emerging codes in the process, those codes could be related to existing theoretical orientations. The Recognition and Realisation rules which were used to analyse the National Curriculum Statements for Mathematics and Mathematical Literacy to examine the kinds of knowledge privileged in terms of Graven and Venkat’s (2007) spectrum of agendas, were also used as evaluative criteria to facilitators’ views and perceptions about Mathematics and Mathematical Literacy.

The interview schedule was divided into three parts, namely subject specialist’ general information, general questions about Mathematics and Mathematical Literacy and questions about the mathematics and mathematical literacy task. In the next section, findings in terms of subjects’ specialists’ general background about Mathematics and Mathematical Literacy are discussed followed by their experiences and their views about M and ML tasks.

**Findings**

From the analysis of Mathematics Facilitator 1 (MF1)’s interview data, key issues emerged in relation to her views about Mathematics and Mathematical Literacy, and the interaction between these two Learning Areas. These issues were unique in the sense that were not expected by the researcher, and were not in line with what other facilitators said in the interview. As a result, MF1’s unique findings were discussed separately in this article. Firstly, MF1 feels that Mathematical Literacy (ML) is crippling Mathematics (M) in a range of ways. The first way in which MF1 sees the crippling effect of ML on M is when learners take ML instead of M. The second way is the “lowering” of M by ML. This crippling effect of ML on M is discussed in this section.
The second issue discussed in this section, indicated by other facilitators and MF1, concerns pedagogical practices related to the teaching of Mathematics and Mathematical Literacy. Key to the pedagogical practices that emerged in the interview analysis relate to mathematical rules that are involved in the practices. These are linked with the teaching of fraction, and ML and M reasoning strategies and links to conceptual understanding. In this section, the three mathematical rules are identified and discussed in the light of pedagogical practices in M and ML classrooms and the education of teachers.

The “crippling” effect of ML on M

In the interview with MF1, she expressed that she did not have an interest in Mathematical Literacy. She explained her lack of interest in the following way:

*ML is a fake of M, is not pure M. Other thing which I don’t like about it is that learners are moving from M to ML knowing that they are going to pass, so it is crippling M. ML make[s] me sick, it must be cancelled.*

The above remarks show that MF1 viewed ML in a rather negative way. She feels that “ML is crippling M”, because learners are taking ML instead of M. According to MF1, if learners are moving from M to ML, there would be fewer learners doing M in schools because most learners would be in ML classes. In addition, she argues that ML is not only crippling M. ML is “killing” M. In other words, the fact that learners are drifting from M to ML could lead to a situation where there would be no learners participating in M because all learners would be doing ML. This is also confirmed by MF1 when she said “Yes, I am telling you it is killing M, learners are no longer taking M. So economically, and this will affect us because we are not going to have Engineers, Chartered Accountant MF1 is certain that the movement of learners from M to ML will result in the nation not having expertise in the fields such as engineering and accounting.
ML lowering M

MF1 views ML as “just something which they teach people how to count, and people already know how to count”. Therefore according to her, “ML lowers the standard of M”. The idea of ML lowering M is born out of her perception of ML. MF1 seems to view ML as basic content, i.e. “just something”. ML is “just something which they teach people how to count”. MF1 perceives ML as low mathematics when compared with M. MF1 is concerned that people seem not to see ML as low M. They seem to equate ML with M. MF1 said: “People regard it the same as M”. It is evident from MF1’s perspective that there is a drifting of learners from M to ML. It is important to understand why this drifting happens, and what the consequences of this drifting could be for participation in mathematics education generally.

Pedagogical practices and mathematical knowledge in M and ML

When asked to describe and explain what makes one to be a good M or ML teacher, MF2 said the following:

\[
\text{In M as an educator, give a lot of activities for learners to practice, supervising them, giving them extra work, extra lesson on Saturday and tell learners that M is simple.}
\]

When asked about what he thought makes one to be a good M or ML teacher, MLF1 said the following:

\[
\text{is the teacher who let learners to practice a lot, … M does not need one to talk but a lot of practice; you talk few minutes by providing example and give learners work, to solve. You give them similar problem of same concept but not different problems at a time.}
\]

MLF1 views M as a subject which needs to be practiced a lot but not to be talked about a lot. This means that M, according to MLF1, M is associated with a “lot of practice” and less talk. This remark raises questions about the relationship between M and Language and the interaction of these in a
Mathematics class. When MLF1 was asked if he thought a M teacher can teach ML and a ML teacher can teach M, he said:

\[ M \text{ teachers used to struggle to teach ML because they are not used to contextualised problems which deals with the analysis and the interpretation, they struggle because they are used to solve in terms of } x, \text{ they are used to abstract Maths. ML is so full of language, they can teach it but at first they would struggle. So the problem would be explaining to learners.} \]

As shown above, according to MLF1, M is seen as a content-bound, abstract subject, and has “solve for x” features. On the other hand, ML has contextualised problems and deals with analysis and interpretation. According to MLF1, ML is so full of language”. MLF1 further said:

\[ \text{When I teach ML I facilitate learning more than when I teach M. I give the problem to learners, let them work on their own, go around and check what and how they are doing the problem. When I start teaching M I had these wonderful ideas that I am going to change it, but when I get into the class is a different situation all together. For example, since the schools reopened for the past two weeks, we have been working everyday but still we are one week behind. So in M the syllabus is so huge I cannot facilitate learning, whereas in ML we have a lot of time so I can facilitate learning. And so in M you are basically forced to give learners rules, content and let them work at home so that you cover the syllabus.} \]

MLF1 wants to “facilitate learning” even in a M class. However, she cannot facilitate learning because of time constraints. On the contrary, MLF1 says that “in ML we have a lot of time so I can facilitate learning”. It might be suggested that due to this that while in ML time allows the teachers to facilitate learning, the lack of time in M forces a situation in which in Mathematics learners facilitate their own learning! One might even suggest that time frustration is so irritating that the teacher is forced to facilitate homework instead!
Maths for rules and Mathematical Literacy for reasoning

When asked how a good M teacher could add $\frac{1}{2} + \frac{3}{4}$, MLF2 said the following:

As long as learners learn about the Fraction they know that there is always a Numerator and Denominator, so a good M teacher will actually say let’s look at the LCD, you multiply each fraction by the LCD.

So, according to MLF2, a good ML teacher would use a LCD maths rule strategy to add $\frac{1}{2} + \frac{3}{4}$ When asked what other strategy could be used to add the above fractions, she said: “No, I don’t have, there is no any other strategy”.

MLF2 further emphasized:

In M problem is given, steps followed, application of rules – never get into the problem solving. In ML I try to give the real life problem, I try not to give facts, first I say this is the problem, try to figure it out, if they can’t I refer them to the textbooks, if they can’t still give them some nuggets on how to get the problem and what the problem is all about. So in ML I try to let them try on their own.

The remark confirms that MLF1 views M and ML as subjects which have to be taught differently. He says “in M, problem is given, and steps [are] followed”. M is taught / presented procedurally, step by step, following rules, with the main objective being to arrive at the answer, whereas ML is taught using a problem solving approach. A “nugget” approach seems to characterize ML. To help learners get into the problem, they are “given some nuggets on how to get the problem and what the problem is all about”.

When asked whether a M teacher can teach ML, MLF2 said “No, What I know is that a M teacher cannot teach ML, because the two subjects differ in terms of approaches”. This remark by MLF2 suggests that M and ML are two different subjects and so they need two different teaching approaches.
When asked to say more about the two approaches for two subjects, she said the following:

> They say ML deal[s] with the context, like for example the one we were dealing with now of how many quarters are in \( \frac{3}{4} \) and \( \frac{1}{2} \), I think this is a ML method, because it is the context, this is how the ML people teach.

MLF2 believes that M teachers cannot teach ML because the two subjects differ in terms of approaches. She considers that a way of reasoning which regards \( \frac{1}{2} + \frac{3}{4} \) as asking how many quarters there are in \( \frac{3}{4} \) and \( \frac{1}{2} \) is a approach for ML but not for M. It appears that MLF2 characterizes M approaches as consisting of rules that must be followed. “In M we have rules and those rules I am telling you they must be followed to the letter. M is about rules”.

MLF2 sees a clear demarcation in teaching approaches between M and ML. M is about rules and ML is about reasoning, according to MF1. The idea that M and ML have approaches that are inherently different raises important questions about what actually happens in M and ML classrooms, and in training workshops for M and ML. In addition, there is a need to explore the role of rules in both M and ML, and how these incorporate aspects of reasoning and conceptual understanding of mathematics.

MLF2 associated ML more with reasoning and M with rules. In distinguishing between M and ML, she said “ML deals with reasoning a lot and M with the application of rules”. This seems to suggest that teaching and learning strategies are domain specific. For example, in relation to fractions, MF1 viewed the use of the LCD as a strategy suited for M and the splitting (decompressing) strategy for ML. This raises a number of questions: Which strategies can be said to be exclusively for M and which ones can be said to be for ML, and which ones for both? Also, what does it mean for a strategy to be for M and another for ML respectively? These questions need to be discussed because, according to MF1, there are strategies which appear to
be linked to ways of working that are for M and others for ML. MF2 added:

*A lot of teachers take M, change it to basic and give it to learners when they teach. The exam is also presented in a problematic way, it is step 1, step 2 which a lot of teachers do. So learners are not in a problem solving approach, but they are taught steps, procedures rules, and how to get to the answer.*

MF2 identifies ML with a “problem solving approach”, and M with a “procedural” approach. He considers it problematic to use a procedural approach to ML.

**Emerging issues**

From the analysis of MF1’s interview data, key issues emerged in relation to her views about Mathematics and Mathematical Literacy, and the interaction between these two Learning Areas. Firstly, MF1 feels that Mathematical Literacy (ML) is crippling Mathematics (M) in two ways, i.e. learners taking ML instead of M, and the “lowering” of M by ML.

The second issue discussed in this section concerns pedagogical practices related to the teaching of M and ML. Key to the pedagogy relates to mathematical rules, for example those linked to the teaching of fractions. ML is also associated with reasoning, while M is seen as a discipline that deals primarily with application of rules. This difference suggests an issue needing further discussion, i.e. that strategy for teaching may be domain specific. These issues are discussed below.

**Discussion of Findings**

**ML is crippling, killing and lowers the standard of M**

MF1 feels that “ML is crippling M”, because learners are taking ML instead of M. According to MF1, if learners are moving from M to ML, it implies that there would be fewer learners doing M in schools. In addition, she argues that ML is not only crippling M. ML is killing M. In other words, the fact
that learners are drifting from M to ML means that eventually, all learners would be doing ML. In their work, Graven and Venkat (2006; 2007; 2008) have noted that ML learners are moving from M to ML due to either their poor performance in M or being forced by their teachers to attend ML. The issue of ML lowering, crippling and killing M was not so apparent in their findings. This finding was unexpected and cautions the South African nation that if they are not careful, because of this drifting of learners from M to ML, we might end up running short of mathematician, maths educators and engineers.

SAUVCA/ CTP, the body representing university vice-chancellors and technikons’ principals, cited in Venkat and Graven (2007: 19) criticised the moves to restrict the further learning of pure mathematics within Mathematical Literacy alongside the simultaneous move to withdraw curricular differentiation along the SG/ HG lines which existed previously. Cited in Venkat and Graven (2007: 19), the body argued for the retention of SG Mathematics alongside Mathematics/ Mathematical literacy, stating their concern that:

*We fear that the introduction of the new Mathematics subject coupled with the alternative of Mathematical Literacy will see stampede from Mathematics to Mathematical Literacy. This has two disastrous consequences. First, far too few learners will take Mathematics; secondly, those with Mathematical Literacy will probably be effectively denied access to a crucial range of higher degree opportunities in Science, Engineering, Health Sciences and Commerce.*

**Mathematics for “rules” and Mathematical Literacy for “reasoning”**

The data discussed reveals that learners’ and teachers’ strategies are domain specific. In other words there are teaching strategies that are associated with M and others associated specifically with ML. MLTS4 argued that because of time constraints in M class, she is “forced to give learners rules, content
and let them work at home so that you cover the syllabus”. This suggests that in a M class she gives learners rules and procedures. MTS1 concurred by saying: “that is how I have been taught to teach in this way, of allowing learners to follow the procedures, even if, there is a quicker way of finding the answer”. The Maths facilitator, MF1 supported this by saying “ML deals with reasoning a lot and M with the application of rules”.

The question to ask is what does it mean for a strategy to be for M and a strategy to be for ML strategy? The idea of associating strategies with a certain learning area has an implication to learning and teaching of M and ML.

For learning, it suggests that ML and M learners participate in different discourse practices. ML learners are expected to act, think and belief differently from M learners because they are from different communities of practice and therefore their participation into their community of practices would be different.

For teaching it raises critical questions linked to the issue of M and ML being considered “separate” subjects. Does it mean that they are inherently different discourses, and therefore requiring different identities of teachers? Does it mean that for one teacher to work productively with M and ML, the discourses in M and ML should not be inconsistent (not in conflict) with the identit(y)ies of the teacher? When would it be important for these discourses to be consistent? I suggest it would be in the case where the same teacher is asked to teach both M and ML.

I suggest that the differences between the two subjects (M and ML) should not be inconsistent (in conflict), if they were in conflict what does it mean for the teacher who is teaching both? He would have split identities, which can make the task of his teaching very difficult. Again, for the teacher who is teaching both subjects, the two subjects should not have discourses which are in conflict, otherwise it would require ways of behaving which are different from the identity of the teacher.
Conclusion and Recommendations

The data analysis suggests that there are ways of behaving, acting and doing which are associated with M, for example, application of rules, solving mathematical problems step by step. Also there are ways of behaving, acting and doing which are associated with mathematical literacy, for example, understanding what is going on, what the concept means. These differences as indicated by facilitators, they do not necessarily differentiate mathematics from mathematical literacy. In fact some of the Mathematical literacy features such as facilitation of learning using group work teaching approach, using of scenarios or context to understand mathematics, reasoning as indicated by learners and teachers, are not strange to mathematics. In this paper, I therefore argue that Mathematics and Mathematical Literacy are inseparable because both have mathematics as their originating frame. The two subjects, although appears to be ostensibly incompatible, are in fact complementary. Mathematical content and context in mathematics and mathematical literacy are not mutually exclusive domains of knowledge; consequently, they should not be dichotomized.

In some sense the data suggests that there are some differences in the discourses of two subjects, which also confirm the categorisation of the two subjects by the Department of Education, which raises the question of what does it mean to the same teacher who is teaching both M and ML as is the case in some of the schools. The study reveals that although learners’ and teachers’ understanding about mathematics and mathematical literacy is that the two discourses are different in terms of nature, teaching strategies, and language embedded in them, the two discourses are not incompatible to each other which may result in teachers and learners developing different mathematical identities. The study therefore recommends that, taking note of the fact that mathematics and mathematical literacy are compatible to each other, the two subjects can be combined to be one subject.
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EFFECT OF TRADITIONAL AND COMPUTER ASSISTED INSTRUCTION ON ACHIEVEMENT IN SCIENCE AT SECONDARY LEVEL

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Abstract

Computer technology has influenced each and every aspect of life. The system of education is not an exception. The situation of knowledge explosion has been generated. The objectives of education have also become multidimensional. It is not possible for the teacher to give all knowledge through traditional methods of teaching. These days individualized instructional method like Computer Assisted Instruction (CAI) has influenced the teachers to use it for achieving those multidimensional objectives of teaching. CAI in India is in its infancy stage especially in villages and very few researchers use it. Keeping in view the dearth of CAI researches for teaching science the present experimental work was selected. In this experimental work, an attempt has been made to study the effect of traditional and computer assisted instruction on achievement in science at secondary level. Pre-post experimental design was used for present investigation. The students exposed to computer assisted instruction performed better on achievement in science than the students exposed to traditional teaching. In this experimental work it was found that CAI was more effective in comparison to traditional teaching for science. This experimental work will prove more useful for teachers and administrators for implementing CAI in future class room situations in India and the effective use of CAI will assist in increasing the potential for improving students’ attention and academic performance.
**Keywords:** Computer - assisted instruction, students’ achievement, science, secondary school.

**Introduction**

One of the most important challenges before education is to make learning interesting and exciting. Teaching is an activity which is designed and performed for multiple objectives in terms of changes in pupil behaviour. The learning objectives and task analyses are the foundation for effective presentation of teach. Experts in the fields of education all over the world are seriously thinking of a variety of approaches to teach learning to achieve different instructional objectives. The main focus of teaching is to bring about a desirable change in the behaviors of learners. It is brought about by the teacher using teaching strategies. The traditional educational methods in India cannot keep pace to the changes in the people’s individual needs and aspirations and the developmental needs of the people in India. Most of these changes are affected directly or indirectly by contribution of science and technology.

Technology has helped to improve the quality and pace of activity as well as production in most aspects of human endeavour.

21st century is the century of information technology. The information and technology revolution has profound impacts on nearly all walks of life, the core one and the most promising tool of this effective instruction and information is the computer.

Computer assisted instruction (CAI) is the method of instruction where the computer is used to assist the teaching process. CAI is automated instructional technique in which the computer is used to present an instructional programme to the learner through an interactive process on the computer. It is an instructional program technique in which the computer contains a stored instructional programme designed to inform, guide, control and test the student until the prescribed level of proficiency is reached.
Computer-assisted instruction is an interactive technique whereby a computer is used to present the instructional material and monitor the learning that takes place. It uses a combination of text, graphics, sound and video in the learning process. It is especially useful in distance learning situations. The computer has many purposes in the classroom, and it can be utilized to help a student in all areas of the curriculum. CAI involves the use of a computer as a tool to facilitate and improve instruction. CAI programs use tutorials, drill and practice, simulation, and problem solving approaches to present topics and they test the students understanding. These programs enable students to progress at their own place, assisting them in learning the material. The subject matter taught through CAI can range from basic mathematical facts to more complex concepts in mathematics, history, science, social studies and Language Arts (Sharp, 1996).

Traditional teaching is also known as conventional teaching. Traditional teaching can be considered as a sub part of the lecture method of teaching in which there is no use of teaching aids, except chalk board, rolling chalk board and chalks. So traditional learning in science is teacher centric teaching method. In traditional classroom settings, students and faculty often do not interact, rather they sit, and write downwards describing a linear presentation of materials. In the computer assisted teaching model, students could access CAI material during their course preparatory time and class time could be reserved for conceptual discussions, peer interactions and mentoring. Rather than spending time making linear presentations of lecture material, instructors could implement creative teaching strategies in the classroom (Porter, 1977).

**Need of the Study**

Computer learning is based on individual needs. Each student can individually achieve his/her own unique optimum level of achievement. No students need to wait to have other learners progress at a similar level of achievement. Learners may individually progress as rapidly as personal
capabilities permit, using a computer terminal. In this experimental method students do not remain as passive observers but as active workers who are enthusiastic experimenters and discoverers.

If we focus on the education sector, computer education plays an important role in increasing the level of understanding as compared to traditional method of teaching students. Students face problems in understanding concepts taught by traditional methods. Some even lack the development of a scientific attitude and therefore computer education is important at the school level as it prepares a child for future challenges. In this context, it was felt that there was a need for an investigation to determine if CAI had any impact on achievement by secondary school students in the study of science.

**Significance**

This research has significance for learning outcomes and the educational process as:

**LEARNING OUTCOME**: The computer plays a vital role in every field and is used to enhance learning. Therefore it is important to ensure that students get full advantage during an important phase in almost all aspects of human life in education. The CAI tool may help students to achieve not only learning efficiency, but also better learning outcomes.

**EDUCATIONAL PROCESS**: Computers have changed the way we work and this applies to nearly all professions. Computers are used for effective teaching and learning. Instructing the students using power point slides, WebPages, hyperlinks, etc., results in improved clarity. It helps students to express their imagination, gather relevant detailed information, and simulated learning gives them a view of the real situation.
Objective
To compare the effect of computer assisted instruction with traditional teaching on achievement in science.

Assumptions
Students face problems in understanding science subjects taught by traditional method.

CAI programme can work better than traditional method of teaching in education.

The level of understanding is increased by using CAI programs rather than traditional method of teaching.

Hypothesis of Research
The students exposed to CAI will perform significantly better on achievement in science than the students exposed to traditional teaching.

Design of the Study
Pre-test and post-test experimental design was employed in the present research. The same achievement test was used as pre test as well as post test. The purpose of the present test was to examine and compare the effect of computer assisted instruction with traditional teaching on achievement in science. During the experiment period, the experimental group received the treatment of independent variable, i.e. computer-assisted instruction whereby the experimental group was exposed to certain web-cites consisting of drill and practice, tutorials, simulations and animation.

Scheme of the Experiment
Two groups, that is, one experiment group to be taught by CAI and the second control group taught by the lecture method were formed out of population
of school students studying C.B.S.E. Board syllabus. An Achievement test was conducted before teaching as pre test and the same achievement test was given after teaching as post test. The control group was taught science through the lecture method and the experimental group was taught science by the Computer Assisted Instruction method.

**Sample Selection**
For this research, grade VIII students formed the population of total students i.e. 180 students. The researchers selected 60 students representing 33.33% of the total population and divided them into two strata consisting of 30 students (sample of 60 students randomly divided into two groups consisting of 30 students in each).

**Tools Used**
1. Achievement test of science developed by investigator was used.
2. Computer assisted instructional package was used by the investigator.

**Procedure for Data Collection**
In the first phase a pre-test was administered to the VIII class students to assess their achievement in science.

In the second phase the students were divided into two groups. Experimental groups (30) taught CAI method and control group (30) taught through lecture method.

In third phase after treatment, post test was administered to assess their achievement in science.

**Statistical Techniques Used**
Statistical techniques like mean and standard deviation were calculated to compute the mean of two groups of students and nature of sample.
The t-ratio was calculated to test the hypothesis, distribution in relation to dependent variable viz pretest, post test scores.

**Analysis of Data**

Difference between mean of two groups

\[ D = M_2 - M_1 \]

\[ = 40.73 - 23.86 \]

\[ = 16.87 \]

Difference between the mean of two groups was 16.87. In this research, the hypothesis calculations were tested to verify the standard error of mean for two groups (SEM). From this, the mean difference was calculated to find out the effectiveness of CAI. The researcher used t-test value of statistical technique for verifying significance.

**Results**

Table 1. t-ratio between two groups taught by traditional and computer assisted instruction.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>S.D</th>
<th>SEd</th>
<th>t-ratio</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Method</td>
<td>30</td>
<td>23.86</td>
<td>4.24</td>
<td>0.87</td>
<td>19.27</td>
<td>Significant at 0.01 level</td>
</tr>
<tr>
<td>Computer Assisted Instruction</td>
<td>30</td>
<td>40.73</td>
<td>0.70</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results show that there was a significant improvement in achievement when students were taught by the CAI method than by the traditional method.

The ideal ‘t’ value at 0.05 level of significance was 2.04 and at 0.01 level of significance was 2.076. The calculated ‘t’ value was 19.27 which was greater
than table value hence it was highly significant at 0.01 level. This shows that there was significant difference in the mean of both groups taught by traditional method and CAI method. Thus our hypothesis that the students exposed to CAI will perform significantly better on achievement in science than the students exposed to traditional teaching was accepted. This shows that CAI was superior strategy than the traditional method in learning the concept of science.

The results are consistent with the findings of Reed (1986), Sikand (1995), Cheema (1998) and Kausar, et.al (2008) reported significant difference in favour of the group taught by CAI method in achievement scores.

**Main Finding**

No doubt students definitely gained by both of the teaching methods as shown by comparison of pre-test and post test. The total gain by CAI was significantly superior to the students having traditional method treatment.

**Conclusion**

This study concluded that CAI proved to be significantly superior to the traditional method. The students exposed to computer assisted instruction performed significantly better on achievement in science than the students exposed to traditional teaching.

It was also observed that students of the experimental group were looking well motivated and ready to learn each day of the experimental duration of CAI treatment than students of traditional method.

On the basis of above results we can conclude that the CAI method was relatively more effective than the lecture method on achievement in science.
Recommendation

1. CAI is an effective method of instruction and may be applied to improve teaching quality.

2. CAI may be use as a supplementary tool to teaching low IQ level students.

3. By using CAI it will be possible to eliminate lingual, regional and ethical biases between teachers and students.

4. This study can be conducted involving the entire course of science at secondary and senior secondary stage.

References


EFFECTIVENESS OF THE STORY TELLING APPROACH IN INCULCATING VALUES IDENTIFIED BY NCERT AMONG THE 6TH GRADE LEARNERS OF ORISSA STATE

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Abstract

The advances in Science and Technology no doubt have made our lives comfortable but we are far from achieving peace and happiness. The stresses and strains, crime and social problems, poverty, population explosion, negative situations and restlessness are increasing day by day. It is clear that values are deteriorating from the human minds and that value education is needed to maintain a peaceful life. Value education should be imparted through life long process. School periods are the best time for value inculcation. Most students apparently acquired their values system prior to high school (Thompson & Carr 1966). Story telling is an important approach in inculcating human values. The Purpose of this study was to find out the (i). the effect of the storytelling approach on the development of values among 6th grade learners, (ii). the effect of the story telling approach on the development of values among 6th grade learners with reference to location, (iii). the effect of the story telling approach on the development of values among 6th grade learners with reference to management, and (iv). the effect of the story telling approach on the development of values among 6th grade learners with reference to gender. The researchers began their experiment by comparing the values of a pre- experimental group (360) and a post experimental group (360) of 6th grade students comprising boys and
girls. The sample total was 720 students from the rural, urban, and tribal areas of Odisha state. For the study, two types of tools, (i). instructional tools i.e. value based stories, and (ii). measuring tools like situational test were used. The hypotheses were tested statistically by using t test and f test to arrive at conclusions. The researchers found that (i). there were significant differences among the achievement of rural, urban & tribal students before intervention, (ii). there were significant differences in the achievement of rural, urban & tribal students both at pre test & post test phases of the control group, (iii). there was no significant difference between private & government schools in the pre-test phase but significant differences were found in the same group at the post-test phase, (iv). the story telling approach had a significant effect among 6th grade boys & girls. Lastly, it was concluded that the story telling approach was a strong means of inculcating values in students.

Introduction

The advances in science and technology have made man’s life comfortable but peace and happiness have become distant. Tension, conflict and restlessness are growing and survival of the fittest on the basis of strength has increased. Thus, there is general value deterioration being evinced in society. There is a need to use the human brain in such a manner that human beings develop love and compassion, which is possible only when we shift our emphasis from information to knowledge to wisdom. In fact, value orientation of the entire social, economic and political milieu throughout the world will have to get the highest priority. For this to be possible, value orientation will have to be an integral component of the emerging educational model. Promotion of eternal values and creation of a proper environment in educational institutions to inculcate these among the students has to be given top priority (Saraf, 1995).

Value oriented education refers to the planned educational action and the development of proper attitudes, values, emotions and character among the
learners. It covers all aspects of personality development - intellectual, social, moral, aesthetic and spiritual (Seshadri, 1992). Chinara (1992) opines that value education is a learner-centered process rather than teacher-centered. It is a process of helping the learners to think freely and critically and act responsibly with courage and conviction. The aim is not to promote passive conformity and blind obedience to whatever rules that were passed on but to encourage introspection, reflection and responsible behavior. Value oriented education is primarily concerned with the independent appraisal of a situation after rational deliberation and the application of principled judgment. The values among children are not static and tend to change with age as their social horizons broaden and they associate with more people and with people whose values differ from what they have learnt. As age advances, there is increased ability and willingness in children in judging the acts of others according to circumstances, motives and the underlying intentions rather than judging them according to inflexible standards (Piaget, 1932, Grinder, 1964). There are recommendations from various Indian committees and commissions, the constitution of India focusing specially on the chapter of fundamental duties, and the views of India thinkers especially Mahatma Gandhi, and Swami Vivekananda, on the sources of values for Indian schools (Rajput, J.S. 2002). According to Bhardwaj (2002) the formulae for planning the complete education and development of truly educated persons are:

Academic education of value calculation = Complete Education.
Knowledge + information technology + emotional growth + economic self-reliance = truly educated person.

In order to achieve the objectives of all round development of personality through education the Sri Prakash Committee (1961) strongly felt that moral values should be inculcated among elementary students by (i). simple and interesting stories about the lives and teachings of prophets, saints and religious leaders in the syllabus for language teaching; (ii). setting aside two periods in a week for moral instruction; and (iii). developing the teacher-training based attitude of service and the realisation that ‘work is worship’.
The recommendations of the Sri Prakash Committee (1961) were approved by the education commission 1964-66, which states “one or two hours a week should be set aside in the school time table for instruction in moral and spiritual values. At primary stage such instruction will generally be imparted through interesting stories, including stories drawn from the great religions of the world. “Towards the end of the lower primary and at the upper primary stage, children are ready to inculcate values supported by developmental psychologists such as Piaget (1965), Kohlberg (1968) etc.

Moral values can be inculcated in students with the help of the story telling method, drama, photo exhibition, films etc. (Giri, A.D. 1989). If morals are told directly, the children cannot appreciate and absorb them. But when skillfully woven into a story, the message gets deep into the consciousness of the children and youth (Reddy. J.B. 2003). The story telling approach is one of the potent ways of imparting values and communicating positive messages in an integrated and implicit manner. The key questions during dialogue in stories, comics, etc., stimulate “visual imagery” and promote innovative ideas in the child, which can easily be translated into meaningful action (Mohajer, S. 2002). NCF (2005) emphasized the story telling approach through inculcation of values to derive “peace”.

**Rationale of the Study**

National policy of Education (1986) observed that India’s political & social life is passing through a phase which poses a danger of erosion of long accepted values. Materialistic culture has led to the decline in moral, spiritual & ethical values & given rise to violence in various forms Majumdar (1983 in Sahoo, R., 2003) expresses grief over the fact that in spite of material prosperity, there is a sense of frustration, insecurity, exploitation & inequality. There is no harmony in the inner life of emotions & outer life of action. “The atmosphere is so vitiated”, says Taneja (1982 in Sahoo, R., 2003). “That the education of the mind & the heart is conscious by its absence. We are in the grip of narrow sectarianism, regionalism & fanaticism and emotion claims
precedence over reason”. Contemplating the issue, it soon became evident that one of the most potent instruments for importing values was story telling. The compulsions of living in nuclear families & economic pressure have, however, deprived the children of this age of the great benefits of interesting & value-laden stories (Mohajer, S. 2002).

The Eighty four values given by NCERT publication, styled as “Documents on social, moral, & spiritual values”. Shri B. R. Goyel (in Gupta, N.C., 2000), the compiler, claims that the list has been compiled on the basis of documents included on the publication as well as a study of Gandhian Literature. The researchers have come across some of the findings like: Reddy, V.D. (2004) conducted a study on attitude towards value oriented education & found ‘The Value based education system cultivates the basic values of humanism, democracy socialism & secularism and the moral & value oriented education highlights the nation’s unity’. Formal and informal teaching strategies that futuristic teachers want to use in the classroom are democratic and flexible strategies like Assembly, Discussion, Story telling, Group work, Productive work/ Behaviour (Kumar and Bhatia, 2004). The senior secondary school students of the three cultural regions of Punjab, that is, Doaba, Majha and Malwa did not differ significantly with respect to Religious, Social, Hedonistic and Power values, but they differed significantly with respect to Democratic, Aesthetic, Economic, Family Prestige and Health value and the senior secondary school students studying in Government and Private Schools of Malwa region did not differ significantly with respect to Religious, Social, Democratic, Economic, Knowledge, Hedonistic, Power, Family Prestige and Health values but they differed significantly with respect to Aesthetic value (Narad, A. 2007). The students of UP Board Schools have been found to have higher social and knowledge values than the students of CBSE Board Schools. The students of schools of CBSE have been found to have higher aesthetic, economic, hedonistic and power values than the students of UP Board schools. Malti (2007) conducted a co relational study on Value Patterns of School Teachers in Relation to Life Satisfaction and Personality Dimensions (Punjab University, 2007) and found that: The hypothesis that
no significant difference exists in value patterns between elementary and secondary level school teachers is not fully accepted. Toong, R.(2007) found in his study that the hypothesis that no significance exists between elementary and secondary level school teachers in respect of life satisfaction is held tenable. Mohanty, R .K (2008) in his study found that: significant differences exist in the socio-economic status(SES) of boys and girls at the elementary school level. There is also significant difference in intelligence of the boys and girls at the elementary school level. Highly sophisticated home environment influences better in the development of the moral judgment of the children at the elementary school level, as compared to low level of the home environment. No significant difference was found in the moral judgment of the boys and girls due to high or low level of SES. There exists a positive relationship between the intelligence and development of moral judgment of elementary school children. Anilkumar. K.P. (2013) conducted a comparative study on Value integrated education and student behaviour: a constructive and experimental study. Findings of the study revealed that: Value Integrated Education modifies Value based Behavior of Upper Primary School Students. Students in the control group do not differ significantly in the pre-test Value Based Student behaviour score from that of the experimental group. Students in the experimental group do score significantly high in their Value Based Behavior than that of the control group. The gain scores of Value Based Behavior of the experimental group are significantly higher than that of the control group. Value Integrated Education is effective for improving Value Based Student Behavior in the School, Family and Other Social Context. Upper Primary School Students in the control group do not differ significantly in the pre test Value Attainment score from that of the experimental group. Students in the experimental group do score significantly high in their Value Attainment than that of the control group. This shows the superiority of the experimental group in Value Attainment after the experiment. The gain scores of Value Attainment of the experimental group is significantly higher than that of the control group. The students of the experimental group are better in attainment of the value Love than the control group, the students of the experimental group are better in attainment of the value Peace than the control group and the students of the experimental group are better in the
attainment of the value Non violence than the control group. The interaction effect of the levels of intelligence and the levels of Socio Economic Status do not significantly effect the Value Based Behavior. The levels of Intelligence and Socio Economic Status effect significantly on Value Attainment. The interaction effect of the levels of Intelligence and Socio Economic Status is not significantly affecting the Value Attainment of Upper Primary School Students.

Considering the findings & facts the investigator comes to the inevitable conclusion that the studies conducted so far on value education are not adequate and comprehensive. This encouraged the investigator to undertake an experimental study which will provide a clear picture about the effectiveness of story telling approach in inculcating values.

**Statement of the Problem**

Keeping in view the importance of the storytelling approach in inculcating values the investigators decided to carry out this study entitled “Effectiveness of the Story Telling Approach in Inculcating Values Identified by NCERT among the 6th Grade Learners of Orissa State.”

**Operational Definitions of the Key Words**

**Effectiveness**: Effective teaching is that teaching which facilitates the regular as well as systematic development of learners. In this study, the effectiveness of the story telling approach was taken to inculcate 84 values which were identified by NCERT.

**Storytelling Approach**: Storytelling is one of the important & comprehensive approaches to inculcate the values in the minds of students. It is one of the potent ways of imparting values & communicating positive messages in an integrated & implicit manner. The keywords: message, humor, dialogue in stories, presentation style and theme of the story help students to inculcate values within them. In this study, each story possesses a value which is to be inculcated.
Traditional Method: The teachers teaching in the class in their own way or convenience.

Value Inculcation: The explosion of knowledge and its application has changed the life style and values of society. Value inculcation is the need of the present day to develop values according to changing conditions. It covers all aspects of personality development i.e. intellectual, social, moral, aesthetic & spiritual etc. In the present study the researchers inculcated values among the students through stories.

Objectives of the Study

The study is directed towards the following objectives:

1. To study the effect of the story telling approach on the development of values among 6th grade learners.
2. To study the effect of the story telling approach on the development of values among 6th grade learners with reference to location.
3. To study the effect of the story telling approach on the development of values among 6th grade learners with reference to management.
4. To study the effect of the story telling approach on the development of values among 6th grade learners with reference to gender.

Hypotheses of the Study

The researchers considered the following Null hypotheses for the present study:

Ho1 There was no significant difference between the students exposed to the story telling approach and the students who were not exposed.

Ho 2 The story telling approach has no significant effect on the development of values among 6th grade learners than the traditional methods with reference to location.
Ho3  The story telling approach has no significant effect on the development of values among 6th grade learners than traditional methods with reference to management.

Ho4  The story telling approach has no significant effect on the development of values among 6th grade learners than traditional methods with reference to gender.

Limitations of the Study

1. The investigators limited this study to the selected schools of Orissa state.

2. This study is confined to value education of primary school students at 6th grade only.

3. The study encompasses 84 values (identified by NCERT) which are to be developed among 6th grade learners.

Design of the Study

Design of the study was Quasi-experimental design. Intact class rooms were taken into consideration for framing experimental and control group. Once the two groups were obtained, a random procedure was applied to determine which group is to be assigned as experimental group and which one is to be control group.

Design of the Study (Non-Randomized Control Group Pre-test Post-test Design).

<table>
<thead>
<tr>
<th>Groups</th>
<th>Pre-test</th>
<th>Independent variable</th>
<th>Post test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental group</td>
<td>T1</td>
<td>Story telling approach</td>
<td>T2</td>
</tr>
<tr>
<td>Control group</td>
<td>T1</td>
<td>Traditional approach</td>
<td>T2</td>
</tr>
</tbody>
</table>
Sample
Distribution of Sample

<table>
<thead>
<tr>
<th>Groups</th>
<th>School</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Experimental</strong></td>
<td>03 Government</td>
<td></td>
</tr>
<tr>
<td>group</td>
<td>01 Urban (60)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Boys (30)</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>Girls (30)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>01 Rural (60)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Boys (30)</td>
<td></td>
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<td></td>
<td>Girls (30)</td>
<td></td>
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<tr>
<td></td>
<td>01 Tribal (60)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Boys (30)</td>
<td></td>
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<tr>
<td></td>
<td>Girls (30)</td>
<td></td>
</tr>
<tr>
<td>03 Private</td>
<td>01 Urban (60)</td>
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</tr>
<tr>
<td></td>
<td>Boys (30)</td>
<td>180</td>
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<td>Girls (30)</td>
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<td>01 Rural (60)</td>
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<td></td>
<td>Girls (30)</td>
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<tr>
<td></td>
<td>01 Tribal (60)</td>
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<td></td>
<td>Boys (30)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Girls (30)</td>
<td></td>
</tr>
<tr>
<td><strong>Control</strong></td>
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</tr>
<tr>
<td>group</td>
<td>01 Urban (60)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Boys (30)</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>Girls (30)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>01 Rural (60)</td>
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<tr>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>Girls (30)</td>
<td></td>
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<tr>
<td></td>
<td>01 Tribal (60)</td>
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<td></td>
<td>Boys (30)</td>
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<td></td>
<td>Girls (30)</td>
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<tr>
<td>03 Private</td>
<td>01 Urban (60)</td>
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<tr>
<td></td>
<td>Boys (30)</td>
<td>180</td>
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<tr>
<td></td>
<td>Girls (30)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>01 Rural (60)</td>
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<td></td>
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<tr>
<td></td>
<td>Girls (30)</td>
<td></td>
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<tr>
<td></td>
<td>01 Tribal (60)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Boys (30)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Girls (30)</td>
<td></td>
</tr>
</tbody>
</table>

Tools used

For the present study the researchers have used two types of tools

- Instructional tool (Lesson plan)
- Measuring tool (Situational test)
Instructional Tool
This involved the preparation of unit wise lesson plans based on the story telling approach. Learning materials/teaching aids like pictures, charts, maps, and videos related to particular concepts were used.

Conduct of the study

Pre - experimental phase
The schools selected for this experiment were: Saraswati Shishu Mandir Kaliapani Khandurai; NUPS, Haripur; Saraswati Shishu Mandir, Bhuban; Aurobindo Purnanga Sikshya Kendra, N.C. high school, J.K. Road; V.N. high school, J.K. Road; Chrome Nagar Vidyapitha, Saraswati Shishu Mandir, Bhaskar NUPS, Bambilo; Bandhagan UP school, Stewart school, TISCO; Kananeswar NUPS, Bahabalpur. Two units of grade 6 history textbooks were selected to prepare the questions for the achievement test. Achievement test of 84 marks containing multiple choice questions, based on critical thinking, understanding, application and skill were administered before intervention was given in section A and B of class VI. The researchers prepared lesson plans using two methods (traditional method and story telling method) and low achievers were identified in the two groups with the help of quartile deviation.

Experimental phase
The duration of data collection was spread over a period of 12 days. Lesson plan was prepared separately on traditional method and story telling method. After the pre-test the two groups were instructed by two different methods of teaching separately. Experimental group were taught by story telling method and control group were taught by traditional method.

The experimenters used instructional aides for the teaching learning process. A situation was created by the researchers in which students were stimulated towards learning. The whole process was monitored by the researchers who had worked as facilitators to ascertain students’ progress. Similarly
control group students were taught by traditional method of teaching. After teaching, a post achievement test was administered to both the groups. A comparison was made to find out the effect of the story telling approach.

**Post – experimental phase**

After the completion of the instructions, the same achievement test was again administered as post-test by using the same questions given in the pre-achievement test. A comparison was made on the post achievement test of the experimental and control groups to find out the effect on achievement. Similarly a comparison was made on the post achievement test and pre-achievement low achievers (in both groups) to find out the effect. Besides this a comparison was made between performance of boys and girls of the experimental groups in post test.

**Statistical technique used**

Inferential statistics like “t” test and ANOVA was applied to find out the results and inferences.

**Analysis & Interpretation of the data used**

The result and interpretation of data represent the application of deductive and inductive logic to the research process. Analysis of data includes comparison of the outcomes of the various treatments upon the several groups. After administering research tools, data were collected scored and organized. The collected data are known as raw data. Analysis of data means to make the raw data meaningful or to draw some result / inference from the data after the proper treatment.

**Analysis and Interpretation**

The purpose of this study was to find out the effectiveness of the story telling approach in Inculcating values identified by NCERT among the 6th grade learners of Odisha. Each hypothesis was tested statistically by using “t” test and F-test to arrive at the conclusion.
Testing of Hypotheses

Hypothesis - 1

Students exposed to the story telling approach will have higher value development compared to the students not exposed.

To test the above hypothesis a comparison of mean scores of experimental and control groups was done through t-test. The results obtained are summarized in the following tables.

Table 1. t-test of two groups in relation to their achievement before intervention.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of students</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>t-test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>360</td>
<td>56.51</td>
<td>11.187</td>
<td>1.194</td>
<td>N.S (Not Significant)</td>
</tr>
<tr>
<td>Control group</td>
<td>360</td>
<td>58.05</td>
<td>11.230</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above table indicates that the mean scores of experimental groups (m=56.51) is more or less same as mean score of control group (m=58.05). The computed “t” value (1.194) is not significant both at 0.05 (1.96) and 0.01(2.58) level with df=718. Therefore there is no significant difference between the mean achievement of the experimental group and the control group before intervention.

Again after the treatment post test score of experimental and control group were analyzed through t-test. Finding is summarized in the following tables.

Table 2. t-test of two groups in relation to their achievement after intervention.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of students</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>t-test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>360</td>
<td>69.15</td>
<td>12.830</td>
<td>8.934</td>
<td>Significant</td>
</tr>
<tr>
<td>Control group</td>
<td>360</td>
<td>63.03</td>
<td>13.812</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above table indicates that the mean score of experimental group (m=69.15) is higher than the mean score of control group (m=63.03). The
mean difference is significant in t-test (8.934) with df=718 at 0.01 level. Hence the directional hypothesis is accepted at 0.01 levels and there is significant difference between the achievements of the experimental and control groups.

Figure 1. Mean difference between achievement of experimental and control group.

Table 3. t-test of experimental groups in relation to their achievement.

<table>
<thead>
<tr>
<th>group of student</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>t test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental group</td>
<td>180</td>
<td>54.71</td>
<td>10.787</td>
<td>.804</td>
<td>1.835</td>
<td>No significant</td>
</tr>
<tr>
<td>control group</td>
<td>180</td>
<td>56.88</td>
<td>11.642</td>
<td>.865</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental group</td>
<td>180</td>
<td>59.82</td>
<td>13.327</td>
<td>.993</td>
<td>6.449</td>
<td>Significant</td>
</tr>
<tr>
<td>control group</td>
<td>180</td>
<td>69.27</td>
<td>14.487</td>
<td>1.077</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the analysis of Table 3 it is found that the computed “t” value is .1.835 in pre-test & 6.449 in post-test of experimental group with df=358. The table value for “t” is 1.97 at 0.05 level and 2.59 at 0.01 levels. The computed value was little less than the required table value in pre-test at both levels but much more higher in post-test of the experimental group. The result of the study clearly indicates that there is no significant difference between the
achievement score of the experimental group in the pre-test phase. Hence both the groups are equally competent in pre-test. But in post-test it is found that differences exist among the groups. Thus it is very clear that the story telling approach has significant effect on development of values among 6th grade learners.

Table 4. t-test of control groups in relation to their achievement.

<table>
<thead>
<tr>
<th></th>
<th>Group of students</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>t test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>experimental group</td>
<td>180</td>
<td>58.31</td>
<td>11.321</td>
<td>.844</td>
<td>.794</td>
<td>Not significant</td>
</tr>
<tr>
<td></td>
<td>control group</td>
<td>180</td>
<td>59.23</td>
<td>10.700</td>
<td>.800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td>experimental group</td>
<td>180</td>
<td>66.24</td>
<td>11.480</td>
<td>.856</td>
<td>2.142</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>control group</td>
<td>180</td>
<td>69.03</td>
<td>13.134</td>
<td>.982</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the above table it is found that the computed “t” value is .794 in pre-test & 2.142 in post-test of control group with df=358. The table value for “t” is 1.97 at 0.05 level and 2.59 at 0.01 levels. The computed value was much less than the required table in pre-test at both levels but in the post-test phase it was a little higher at 0.05 level & a little less at 0.01 level. Hence it can be concluded that there is no significant difference between achievement scores of the control group in the pre-test phase. Hence both the groups are equally competent in pre-test. In the post-test, it is found that there was little difference among the groups.

**Hypothesis - 2**

The story telling approach has significant effect on the development of values among 6th grade learners than those taught by the traditional method with reference to location.
Statistical technique ANOVA was used to test the above hypothesis. The results obtained are summarized in the following tables.

Table 5. ANOVA of Rural, Urban & Tribal students in relation to their achievement before intervention.

<table>
<thead>
<tr>
<th>Source of variance</th>
<th>Sum of square variance</th>
<th>Degree of freedom(df)</th>
<th>Mean of square variance</th>
<th>“F” value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>BETWEEN</td>
<td>44143.119</td>
<td>2</td>
<td>22071.560</td>
<td>340.407</td>
<td>Significant</td>
</tr>
<tr>
<td>WITHIN</td>
<td>46489.325</td>
<td>717</td>
<td>64.839</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The computed “F” value is 340.407. The table value of “F” for df = 2:117 is 3.07 at 0.05 level & 4.78 at 0.01 level. Hence the obtained F value is much greater than the table value at both levels. Thus there were significant differences among the achievements of rural, urban & tribal students before intervention.

Furthermore, to determine in which group the differences existed, the investigator applied the “scheffe” test.

Table 6. Post hoc Analysis of Rural, Urban & Tribal students in relation to their achievement before intervention.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>Mean</th>
<th>Sum of square within</th>
<th>“t” value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Rural vs. Urban</td>
<td>48.93, 67.75</td>
<td>64.839</td>
<td>341.55</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>Rural vs. Tribal</td>
<td>48.93, 55.15</td>
<td>37.308</td>
<td>37.308</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>Urban vs. Tribal</td>
<td>67.75, 55.15</td>
<td>153.095</td>
<td>153.095</td>
<td>Significant</td>
</tr>
</tbody>
</table>

From the analysis of the above table it was found that the computed “t” value is 341.55, 37.308 & 153.095, (df = 717) is much higher than both the critical value of “t” at 0.05 and 0.01 levels of significance. Hence there are significant differences among urban, rural & tribal students in values before intervention.
Table 7. ANOVA of Rural, Urban & Tribal students in relation to their achievement after treatment.

<table>
<thead>
<tr>
<th>Source of variance</th>
<th>Sum of square variance</th>
<th>Degree of freedom(df)</th>
<th>Mean of square variance</th>
<th>“F” value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>BETWEEN</td>
<td>23278.675</td>
<td>2</td>
<td>11639.338</td>
<td>75.153</td>
<td>Significant</td>
</tr>
<tr>
<td>WITHIN</td>
<td>111044.813</td>
<td>717</td>
<td>154.874</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The computed “F” value is 75.153. The table value of “F” for df=2, 717 is 3.07 at 0.05 level & 4.78 at 0.01 level. Hence the obtained “F” value is greater than the table value at both levels. Thus the results clearly revealed that the story telling approach had a significant effect on the development of values among 6th grade learners than the traditional method among rural, urban & tribal students.

Table 8. Post hoc Analysis of Rural, Urban & Tribal students in relation to their achievement after treatment.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>Mean</th>
<th>Sum of square within</th>
<th>“t” value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Rural vs. Urban</td>
<td>60.82, 73.98</td>
<td>154.874</td>
<td>69.917</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>Rural vs. Tribal</td>
<td>60.82, 63.46</td>
<td></td>
<td>2.813</td>
<td>Not Significant</td>
</tr>
<tr>
<td></td>
<td>Urban vs. Tribal</td>
<td>73.98, 63.46</td>
<td></td>
<td>44.679</td>
<td>Significant</td>
</tr>
</tbody>
</table>

From the analysis of the above table it was found that the computed “F” value is 69.917 and 44.679, (df = 717) is much higher than both the critical values of “F” at 0.05 and 0.01 levels of significance. Hence there are significant differences among Rural vs. Urban students and Urban vs. Tribal students in values after treatment. For the Rural vs. Tribal students, the computed “F” value is 2.813, and this is less than at 0.05 level and 0.01 level. Hence there was no significant difference among Rural vs. Tribal students in the
development of values after treatment.

Table 9. Comparison of Rural, Urban & Tribal students in relation to their achievement in experimental group.

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>pretest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>19249.105</td>
<td>2</td>
<td>9624.553</td>
<td>133.784</td>
<td>Significant</td>
</tr>
<tr>
<td>Within Groups</td>
<td>25682.870</td>
<td>357</td>
<td>71.941</td>
<td></td>
<td></td>
</tr>
<tr>
<td>posttest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>16783.956</td>
<td>2</td>
<td>8391.978</td>
<td>70.806</td>
<td>Significant</td>
</tr>
<tr>
<td>Within Groups</td>
<td>42311.766</td>
<td>357</td>
<td>118.520</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The computed “F” value is 133.784 in pre-test & 70.806 in post-test phases of the experimental group. The table value of “F” for df=2,357 is 3.02 at 0.05 level and 4.66 at 0.01 level. Hence the obtained “F” value is greater than the table value at both levels in pre & post test phases of the experimental groups. Thus the results clearly revealed that there were significant differences in the achievement of Rural, Urban & Tribal students at pre test & post test phases of the experimental groups.

Table 10. Comparison of Rural, Urban & Tribal students in relation to their achievement in control group.

<table>
<thead>
<tr>
<th>Control group</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>pretest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>26606.012</td>
<td>2</td>
<td>13303.006</td>
<td>254.399</td>
<td>Significant</td>
</tr>
<tr>
<td>Within Groups</td>
<td>18668.185</td>
<td>357</td>
<td>52.292</td>
<td></td>
<td></td>
</tr>
<tr>
<td>posttest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>20806.228</td>
<td>2</td>
<td>10403.114</td>
<td>77.891</td>
<td>Significant</td>
</tr>
<tr>
<td>Within Groups</td>
<td>47680.969</td>
<td>357</td>
<td>133.560</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The computed “F” value is 254.399 in pre-test and 77.891 in post-test phases of the control group. The table value of “F” for df=2,357 is 3.02 at 0.05 level and 4.66 at 0.01 level. Hence the obtained “F” value is greater
than the table value at both levels in the pre & post test phases of the control group. Thus it can be concluded that there were significant differences in the achievement of Rural, Urban & Tribal students both at the pre test & post test phases of the control group.

**Hypothesis - 3**

The story telling approach has significant effect on the development of values among 6th grade learners than traditional method with reference to management.

To test the above hypothesis, the statistical technique t-test was used. The results obtained are summarized in the following tables.


<table>
<thead>
<tr>
<th>types of school</th>
<th>pretest</th>
<th>posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Mean</td>
<td>Std. Deviation</td>
</tr>
<tr>
<td>Government</td>
<td>360</td>
<td>57.42</td>
</tr>
<tr>
<td>Private</td>
<td>360</td>
<td>57.13</td>
</tr>
<tr>
<td>Government</td>
<td>360</td>
<td>64.96</td>
</tr>
<tr>
<td>Private</td>
<td>360</td>
<td>67.21</td>
</tr>
</tbody>
</table>

From the analysis of Table 11 it is found that the computed “t” value is .489 before intervention and 3.125 after intervention between Government & Private school students with df=718. The “t” value is 1.96 at 0.05 level and is 2.58 at 0.01 level. The computed value was higher than the table value in post test but less in pre-test. The results of the study clearly indicated that there was no significant difference between Government & Private school students before intervention. Hence both groups were equally competent in pre-test. But in the post test it was found that there were differences among the group members. Thus it is very clear that the story telling approach
had a significant effect on the development of values among 6th grade Government & Private Students.

Figure 2. Mean Difference Between Government and Private Schools.

![Mean Difference Between Government and Private Schools](image)

Table 12. Comparison of Government & Private school students in experimental group.

<table>
<thead>
<tr>
<th>types of school</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>t test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>pretest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>government</td>
<td>180</td>
<td>56.52</td>
<td>11.153</td>
<td>.834</td>
<td>.019</td>
<td>Not significant</td>
</tr>
<tr>
<td>private</td>
<td>180</td>
<td>56.50</td>
<td>11.252</td>
<td>.836</td>
<td></td>
<td></td>
</tr>
<tr>
<td>posttest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>government</td>
<td>180</td>
<td>60.25</td>
<td>11.112</td>
<td>.831</td>
<td>4.189</td>
<td>Significant</td>
</tr>
<tr>
<td>private</td>
<td>180</td>
<td>65.78</td>
<td>13.817</td>
<td>1.027</td>
<td></td>
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</tr>
</tbody>
</table>

Table 12 clearly indicated that the computed ‘t’ value was .019 in the pre-test and 4.189 in the post-test of the experimental groups with df=358. The table value at 0.05 level was 1.97 and at 0.01 level was 2.59. The calculated value was less than the table value at both levels in the pre-test phase of the
experimental group and higher than the table value at both levels in the post test phase of the experimental group. Hence it was concluded that there was no significant difference between Private & Government schools in the pre-test phase of the experimental groups but significant difference existed in the groups at the post-test phase.

Table 13. Comparison of Government & Private school students in control group.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>t</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>pretest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>government</td>
<td>180</td>
<td>58.31</td>
<td>11.251</td>
<td>.836</td>
<td>.454</td>
<td>Not significant</td>
</tr>
<tr>
<td>private</td>
<td>180</td>
<td>57.78</td>
<td>11.233</td>
<td>.840</td>
<td></td>
<td></td>
</tr>
<tr>
<td>posttest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>government</td>
<td>180</td>
<td>69.62</td>
<td>15.051</td>
<td>1.119</td>
<td>.659</td>
<td>Not significant</td>
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<td>private</td>
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<td>68.66</td>
<td>12.458</td>
<td>.931</td>
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<td></td>
</tr>
</tbody>
</table>

Table 13 revealed that the computed ‘t’ value was .454 in the pre-test of the control group & .659 in the post-test of the control group with df= 358. The table value at 0.05 level was 1.97 and at 0.01 level was 2.59. The calculated value is much less than the table value at both levels in the pre-test phase of the experimental group & the post-test phase of the experimental group. Hence it was concluded that there was no significant difference between Private & Government schools in pre-test & post-test phases of the control group.

**Hypothesis - 4**

The story telling approach has a significant effect in the development of value systems of boy and girl students than the traditional method in both Government and Privately managed schools.

To test the above hypothesis, a comparison of mean gain scores of boys and girls was done through t-test. The results obtained are summarized in the following tables.
Table 14. t-test of boys and girls with respect to their performance before and after intervention.

Group Statistics

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>t-test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>55.80</td>
<td>11.261</td>
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</tr>
<tr>
<td></td>
<td>girls</td>
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<td>58.77</td>
<td>11.010</td>
<td>.581</td>
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</tr>
<tr>
<td></td>
<td>boys</td>
<td>360</td>
<td>64.55</td>
<td>14.684</td>
<td>.773</td>
<td>4.301</td>
</tr>
<tr>
<td></td>
<td>girls</td>
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<td>67.63</td>
<td>12.394</td>
<td>.654</td>
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</tr>
</tbody>
</table>

The analysis of data revealed that the computed ‘t’ value is 5.068 before intervention and 4.301 after intervention between boys & girls with df=718. The table value at 0.05 level is 1.96 and at 0.01 level is 2.58. The calculated value was much more than the table value and as a result the investigator accepted the directional hypothesis. Hence the story telling approach had significant effect among 6th grade boys and girls.

Figure 3. Mean Difference Between Government And Private Schools.

(Tests of Between-Subjects' Effects)
Table 15. t-test of boys and girls with respect to their performance in experimental group.

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>t-test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>pretest</td>
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<td>54.71</td>
<td>10.787</td>
<td>.804</td>
<td>3.084</td>
</tr>
<tr>
<td></td>
<td>girls</td>
<td>180</td>
<td>58.31</td>
<td>11.321</td>
<td>.844</td>
<td></td>
</tr>
<tr>
<td>posttest</td>
<td>boys</td>
<td>180</td>
<td>59.82</td>
<td>13.327</td>
<td>.993</td>
<td>4.898</td>
</tr>
<tr>
<td></td>
<td>girls</td>
<td>180</td>
<td>66.24</td>
<td>11.480</td>
<td>.856</td>
<td></td>
</tr>
</tbody>
</table>

The analysis of data clearly revealed that the computed ‘t’ value was 3.084 in the pre-test of the experimental group and 4.898 in the post-test of the experimental group with df= 358. The table value at 0.05 level was 1.97 and at 0.01 level was 2.59. The calculated value was much more than the table value. Thus the investigators accepted the directional hypothesis. Hence there was significant difference in pre-test & post-test scores of the experimental group. By observing the data produced in table 8, the investigators concluded that the story telling approach had a significant effect among 6th grade boys & girls in the pre-test and post-test phases of the experimental group.

Table 16. t-test of boys and girls with respect to their performance in control group.

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>t-test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>pretest</td>
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</tr>
<tr>
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<td>10.700</td>
<td>.800</td>
<td></td>
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<tr>
<td>posttest</td>
<td>boys</td>
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<td>69.27</td>
<td>14.487</td>
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</tr>
<tr>
<td></td>
<td>girls</td>
<td>180</td>
<td>69.03</td>
<td>13.134</td>
<td>.982</td>
<td></td>
</tr>
</tbody>
</table>

Table no.16 clearly indicated that the computed ‘t’ value was 1.94 in the pre-test of the control group and .163 in the post-test group with df = 358. Hence it was concluded that there was no significant differences between
6th Grade boys & girls in the pre-test phase of the control group as well as in post test group.

**Major Findings**

1. The story telling approach had a significant effect on the development of values among 6th grade learners than the traditional method.

2. The story telling approach had a significant effect on the development of values among 6th grade learners than the traditional method among rural, urban & tribal students.

3. There was a significant difference among 6th grade learners comprising boys & girls in the development of values.

4. The story telling approach had a significant effect on the development of values among 6th grade Government and Private Students.

**Conclusion**

“Value refers to the possession of qualities which helps a person to be a rational human being in society”. It can be concluded that the story telling approach has significant importance in inculcating values among 6th grade learners. The story telling approach is more effective for the development of values than the traditional approach. It also shows that the story telling approach for boys and girls, rural, tribal and urban areas, government and private schools has differential impacts. Story telling is one of the potent ways or approaches of imparting values and communicating positive messages in an integrated and implicit manner. So special attention should be given for including stories in the school curriculum.

The story telling approach is highly essential to students for inculcation of values. Though scientific and technological development, rapid industrialisation and increasing urbanization have resulted in profound changes in people’s outlook, without values the human being cannot be a complete person within society. In order for all round development of the
personality, headmasters of schools, teachers, students and guardians must be conscious about value education.

**Educational Implications**

The study provides knowledge about the development of the minds of students to become balanced citizens in life. The findings of the present study suggest that value inculcation through the story telling approach form a very significant dimension of students’ development. The story telling approach is the best approach in inculcating values among the students. The teacher should teach by adopting the story telling approach to the subject’s history and the lives of the great personalities, particularly those which will provide significant impact in the minds of pupils. The content matter of different subjects may be organised in this manner. The learning material should be developed in various subjects to inculcate values.

**References**


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HEALTHCARE MANAGEMENT: MANAGERIAL CHALLENGES FACED BY HEALTHCARE PROFESSIONALS IN A MULTI-SPECIALITY HOSPITAL (FMRI)

Yashika, Operations, Fortis Memorial Research Institute (FMRI), Gurgaon (India).

Abstract

Healthcare systems are the organisations which are established to meet the health needs of the community. According to World Health Organisation, a well-functioning healthcare system requires a robust financing mechanism, well trained adequately paid workforce, reliable information on which to base decisions and make policies, and well maintained health facilities and logistics to deliver quality medicine and technology. In the modern era, healthcare has faced a variety of changes caused by not only technology but also by the overall change in the health care system. Today’s healthcare administrators are facing new and unprecedented challenges. These challenges are more complicated than the challenges faced in the context of globalization and social, political and economic changes. The typical challenges of managing costs, access and quality of care are still at the forefront of today’s healthcare leaders’ priorities.

This research article focuses on the challenges which may obstruct healthcare managers and how they execute their functions and objectives in practice. The managerial issues included are as follows: organisational rules, initiatives, employee’s emotions, immediate actions and integrity. The target for performance of employees and their professional satisfaction by healthcare managers has brought about great resistance by employees to
change and the lack of commitment to the work environment.

The data was collected with the help of focus group discussions involving healthcare employees and administrators in a healthcare hospital in an Indian province.

The finding of our data suggests that current challenges faced by professional practitioners include state and federal laws, Hi-Tech IT, patient demographics, lack of skilled workforce and the growing awareness of the public. Today, the healthcare manager needs to be competent not only in developing traditional practices of management but also in having competence, knowledge and strategic skills in adapting their organisation to change management. Our research discusses the significance of understanding the management obstacles faced by today’s healthcare managers when exercising their managerial roles so as to have effective delivery, performance and professional satisfaction. Using descriptive Analysis, our research studied the obstacles faced by the management that prevent healthcare managers from implementing the objectives to achieve their defined goals.

Introduction

The managers in the healthcare system that can help to improve performance, constantly face the pressure for change, and this consequently leads to poor management [1]. It is important to know that healthcare managers are at the leading edge of thinking and research. Hence, it is important to understand how managers access ideas that can improve healthcare delivery and translate these effectively into a healthcare setting.

Key to an understanding of being a manager is an understanding not only of the day-to-day performance of management work, but also of the relation of individual managers to the organisations and institutions they work in and from which they draw meaning in an attempt to construct particular
work identity narratives [2]. These narratives are of particular importance of this study, with its focus on individual career, occupational socialization and professional identity.

The maintenance of a coherent and stable work identity narrative for managers is challenged by the ‘ambiguity, obscurity and linguistic muddle surrounding the meaning of management itself’, which creates a highly diverse and often contradictory set of meanings through which narratives are constructed. This challenge has been represented as antagonisms requiring, for example, managers to be emotionally detached and emotionally engaged at the same time, and caring for business while caring for people. These antagonisms are clearly relevant in the contemporary healthcare management context and are likely to have important implications for management responsibilities. [3]

Narratives are also shaped by organisational and institutional conditions. The social conditions in health care are composed of networks of public and private organisations, bound by contracts, within competitive, market-style relations. In this context, managerial work may be less a technical exercise in the application of rules and procedures and more about managing relationships. Whether or not this promotes more of an emphasis on hard business skills or soft social skills (or some combination), it does suggest a greater intrusion of identity regulation into hitherto uncharted internal depths. In other words, are managers more liberated by marketization or do they find their identities more tightly regulated and constrained. [4]

**Aim of the Article**

The aim of this paper is to identify the issues faced by healthcare managers and make recommendations to enable them to deliver their objectives to a high professional standard. The study took account of how management knowledge was accessed and used as follows:

First, how managers in the healthcare system performed their roles and
accessed management knowledge;

Second, how they interpreted it and how they adapted and applied it in their own healthcare settings;

Third, to understand how the use of management knowledge relates to managers’ individual learning and development, how this ties in with their own development as ‘professional’ managers among different communities across the healthcare system;

Fourth, how the organisational setting itself influences the ways in which managers access, make sense of, select, adapt and apply relevant management knowledge;

Fifth, this research sets out to fill these gaps by exploring how managers in the healthcare system access knowledge and learning from various sources to apply, develop and improve management practice.

The research identifies the importance of understanding flows of management knowledge and learning which is heavily influenced by the social and organisational context within which managers and their work are embedded.[8], [9]

**Health Professional Managers**

In the healthcare setup the managers are more clinically involved and their workloads are more towards the clinical rather than their managerial responsibilities. They are concerned more about the care of patients and this was their priority, though they were equally responsible for staff and the daily operational activities. Their staff responsibilities entailed to dealing with sickness absence, the organising of cover, and advising, and mentoring the junior staff members. All worked in interdisciplinary teams, which included nurses, paramedical staff, other health care professionals and medical consultants, and hence they often attended the multidisciplinary team meetings.
Health care managers described their work as unpredictable: Every day was different because sometimes they don’t have enough staff. Sometimes they have enough staff but are under pressure from clinicians – there is more that needs to be done, but their resources just can’t cope.

They like a bit of a buzz in the office as it gets the adrenaline going. But it can get too much quite easily and it does so quite frequently. At the end of the working day they realise that they have not written up their notes and of course legally that was unacceptable. Sometimes it may roll over to the next day which they know is not ideal, but they stay late to finish their notes. They all had heavy workloads and were under pressure to see more patients and reduce waiting lists. Work satisfaction was primarily derived from their clinical work, but also from fostering a happy team and from teaching.

What is the purpose of this Article?

The purpose of this study:

- To improve our understanding of how healthcare managers handle the demands and challenges as well as the motivations and rewards of a changing service.
- To explore the impact managers have on the quality and outcomes of patient care, and also to determine how changes to working practices are managed after serious or ‘extreme’ incidents. The problem with this is that the recommendations of inquiries, in health and elsewhere, often sit on the shelf.

How do they manage?

This has led to new management approaches, and there are also new practices, tools, diagnostic features which will help in implementing change, improving patient safety, and influencing the quality of care, the clinical outcomes, and the organizational performance.
Research Design and Methodology

A survey was carried out with a self-administered questionnaire. The first phase of the study involved face-to-face or telephone interviews with a variety of key informants, selected to provide overviews of the key challenges and problems facing managers at local, regional and national levels in locating, interpreting and applying knowledge and learning. The questionnaire comprised structured and semi-structured questions regarding the following information:

- The manager (including job title, age, sex, education and years of experience);
- The issues faced by health care managers (ranked in order of importance);
- The impact of environmental factors on those managerial issues;
- The effects of managerial challenges on managers’ positions.

The questionnaires were mailed to the total population of managers (identified as the person responsible for day-to-day management) in the Fortis Memorial Research Institute, Gurgaon, India.

Findings of the study

1. To maintain Patient safety and quality;
2. Financial challenges;
3. Patient satisfaction;
4. Care for the uninsured/under-insured;
5. Technology;
6. Healthcare reform implementation;
7. Physician-hospital relations;
8. Personnel shortages;
To maintain patient safety and quality in the hospital

Managers in healthcare have a legal and moral obligation to ensure a high quality of patient care and to strive to improve care. These managers are in a prime position to mandate policy, systems, procedures and organisational climates. Healthcare managers possess an important and obvious role in quality of care and patient safety and that it is one of the highest priorities of healthcare.

Concepts and definitions

Quality of care and patient safety were defined on the basis of widely accepted definitions from the Institute of Medicine (IOM) and the Agency for Healthcare Research and Quality Patient Safety Network (AHRQ PSN). IOM define quality in healthcare as possessing the following dimensions: safe, effective, patient centered care, timely, and efficient and equitable. [11] They define patient safety simply as “the prevention of harm to patients” and AHRQ define it as “freedom from accidental or preventable injuries produced by medical care.”

Quality care

Many view quality health care as the overarching umbrella under which patient safety resides. Quality is an optimal balance between possibilities realised and a framework of norms and values. This conceptual definition reflects the fact that quality is an abstraction and does not exist as a discrete entity. Rather it is constructed based on an interaction among relevant actors who agree about standards (the norms and values) and components (the possibilities). Health care managers defined quality as “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge”. This led to a definition of quality that appeared to be listings of quality indicators, which are expressions of the standards. These standards are not necessarily in terms of the possibilities or conceptual clusters for these indicators. Further, most clusters of quality indicators were and often
continue to be comprised of the 5Ds—death, disease, disability, discomfort, and dissatisfaction rather than more positive components of quality.[9], [11], [13]

**Patient safety**

A definition for patient safety has emerged from the health care quality movement that is equally abstract, with various approaches to the more concrete essential components. Patient safety was defined as “the prevention of harm to patients”. Emphasis is placed on the system of care delivery that

1. Prevents errors;

2. Learns from the errors that do occur;

3. Is built on a culture of safety that involves health care professionals, organizations, and patients. Patient safety practices have been defined as “those that reduce the risk of adverse events related to exposure to medical care across a range of diagnoses or conditions”.

**Managerial quality and safety activities**

A broad range of quality-related activities were identified to be undertaken by managers. These are presented by the following three groupings: strategy-centred; data-centred and culture-centred.

**Strategy-centred**

Board priority setting and planning strategies aligned with quality and safety goals were identified as Board managerial actions carried out in healthcare.

Established strategic goals for quality with specific targets and aimed to create a quality plan integral to their broader strategic agenda [14], [15]. Contrary findings however suggest that the Board rarely set the agenda for the discussions on quality, did not provide the ideas for their strategies and were largely uninvolved in strategic planning for quality indicators. This is important considering evidence that connects the activity of setting the
hospital quality agenda with better performance in process of care and mortality.

**Culture-centred**

Activities aimed at enhancing patient safety/QI culture emerged from several studies across organisational tiers. Board and senior management’s activities included encouraging an organisational culture of QI on norms regarding interdepartmental/multidisciplinary collaboration and advocating QI efforts to clinicians and fellow senior managers, providing powerful messages of safety commitment and influencing the organisation’s patient safety mission.

**Data-centred**

Information on quality and safety is continually supplied to the Board at all levels of management activities around quality and safety data. Activities included collecting and collating information reviewing quality information, using measures such as incident reports and infection rates to forge changes, using patient satisfaction surveys, taking corrective action based on adverse incidents or trends emphasized at Board meetings and providing feedback. The studies do not specify the changes made based on the data-related activities by senior managers; one study identified that frontline managers predominantly used data from an incident reporting tool to change policy/practice and training/education and communication between care providers. However, overseeing data generally was found to be beneficial, as hospitals that carried out performance monitoring activities had significantly higher scores in process of care and lower mortality rates than hospitals that did not.\[14\], \[17\], & \[18\]

**Managerial impact on quality and safety outcomes**

We have considered the associations found between specific managerial involvement and its affect on quality and safety. We summarize the impact and importance of their general role. Of the articles that looked at
either outcomes of management involvement in quality or at its perceived importance, some suggested that their role was beneficial to quality and safety performance. Senior management support and engagement was identified as one of the primary factors associated with good hospital-wide quality outcomes and QI programmed success.[18],[20]

**Five elements deemed essential to middle manager engagement:**

- Senior management commitment and leadership (e.g. senior management provides strategic direction for QI plan);
- Provision of resources and opportunities for QI education and information dissemination (e.g. basic QI skills provided to all staff);
- Senior and middle manager role accountability (e.g. senior managers and middle managers agree QI roles and expectations);
- Middle manager involvement in QI planning (e.g. senior and middle managers plan together);
- Middle managers own and operate QI programmed (e.g. ongoing review and evaluation of the progress of the QI programmed by the middle and senior managers).

**Common roles and activities that captured the variation in management involvement in quality improvement efforts**

- Personal engagement of senior managers;
- Managements relationship with clinical staff;
- Promotion of an organisational culture of quality improvement;
- Support of quality improvement with organisational structures;
- Procurement of organisational resources for quality improvement efforts;
- Providing resources for needed staffing or staff training;
- Promoting the program among the governing Board, physicians who were initially less involved, and other administrators;
Senior management support reported as the primary enabling factor in the implementation of such programmes, along with a lack of support as the primary reason for not implementing the program.[5],[6]

Practices that must be considered part of quality and safety initiatives include:

- Data governance, which is the foundation of information management rules. Data governance involves a group of dedicated individuals that make information management decisions and develop a structure to enforce rules involving technology training and education, auditing, and compliance.[16] It includes an inventory of the organization’s resources and how they are managed, organized, and controlled, as well as the process for the application of the rules to the applicable information resources in the information inventory.[21]

- Data standardization, which is an important element in data stewardship that affects the use of data for quality and patient safety programs. Creating, utilizing, and maintaining a data dictionary not only standardizes definitions and ensures consistent use, but also facilitates a common understanding of an organization’s data quality when developing reports and analyzing information. This will assure the end user that the information used for decision making is consistent and comparable.[22]

- Data capture, validation and maintenance, are the roles where hospital information management professionals are at the forefront. However, there has never been a greater need for sharing this knowledge than right now. Collaborating on these efforts will help create an environment where the integrity and quality of data are preserved.[10]

- Data capture, analysis, and output, require critical thinking about healthcare performance expectations to draw informed conclusions from measurement data. The ability to measure the quality of patient care accurately and efficiently is central to enabling clinicians provide excellent care, including improving patient outcomes, reducing infection rates, preventing serious
adverse events, controlling near misses, and standardizing treatments using evidence-based medicine. With the adoption of EHRs (Electronic Health Records), HIM (Health Information Management) professionals are in a unique position to evaluate the data in the EHR and other source systems that feed into the enterprise-wide data warehouse.\cite{8,9}

**Financial challenges**

There are several financial issues faced by healthcare managers which include:

- Medicaid reimbursement (including adequacy and timeliness of payment);
- Bad debt (including uncollectable emergency department and other charges);
- Decreasing inpatient volume;
- Medicare reimbursement (including adequacy and timeliness of payment);
- Competition from other providers (of any type—inpatient, outpatient, ambulatory care, diagnostic, retail, etc.);
- Government funding cuts (other than reduced reimbursement for Medicaid or Medicare);
- Increasing costs for staff, supplies, etc.;
- Revenue cycle management (converting charges to cash);
- Managed care payments;
- Other commercial insurance reimbursement;
- Inadequate funding for capital improvements;
- Emergency department overuse.

Strategies that may help minimize overhead costs include:

- Increased use of standardized electronic health records;
- Increased use of government plans and possibly not-for-profit plans, which have lower overhead than for-profit plans;
• Limit the type and number of visits that are reimbursed (eg, mental health care, physical therapy);
• Increase deductibles and co-payments;
• Decrease allowable amounts for covered procedures;
• Establish or decrease lifetime maximum expenditures;
• Eliminating unnecessary care;
• Educating providers about cost-effective drug use;
• Restricting drug marketing;
• Establishing formularies and using pharmacy benefit managers;
• Allowing the government to negotiate drug prices for patients covered by government insurance;
• Allowing importation of drugs purchased from other countries.

Patient satisfaction

Patient satisfaction is the most important challenge which is faced by healthcare managers as patient satisfaction is an important and commonly used indicator for measuring the quality in health care. Patient satisfaction affects clinical outcomes, patient retention, and medical malpractice claims. It affects the timely, efficient, and patient-centered delivery of quality health care.

Higher patient satisfaction leads to benefits for the health industry in a number of ways, which can be done by the following ways:

• Patient satisfaction leads to customer (patient) loyalty;
• Improved patient retention;
• They are less vulnerable to price wars;
• Consistent profitability;
• Increased staff morale with reduced staff turnover also leads to increased productivity;
• Reduced risk of malpractice suits – an inverse correlation has been reported for patient satisfaction rates and medical malpractice suits;
• Accreditation issues;
• Increased personal and professional satisfaction;

Patient satisfaction is mainly dependent on services which are provided by the healthcare provider to the patient. So service excellence should be maintained.[24], [25]

Service Excellence

Service excellence revolves around three factors: doctor, patient, and organisation.

Doctor

Undoubtedly, the physician has the twin responsibilities of giving the best health care to the patient, and leading the team or the organization in attaining the goal of satisfying the patient.

Patient

The liking of patient for the doctor has a lot to do with the patient getting better. The patient’s expectations of a good service depends on age, gender, nature of illness, hour of the day, his/her attitude toward the problem and the circumstances[21]. He wants his doctors to keep up the timings, behave cordially, and communicate in their language. Doctors are expected to care, show concern and courtesy in addition to carrying out a good professional job.

Organisation (Hospital)

Sometimes it may happen that with a competent doctor and a compliant patient, the problems persist only because of the policies, work culture, and attitude shown by the hospital. In the past, hospitals have had discrete functional services such as house-keeping, dietary services, pharmacy, laboratory, etc. Unfortunately, this specialization has led to more fragmentation, increased the cost of care, and lessened ideal customer
services. Building and sustaining a service-oriented organizational culture is also important for the organization to achieve success and goals\(^\text{[27], [28]}\). Several changes are being seen in the strategies of management with the goal to serve better and improve the service quality. There are certain areas where there are minimum requirements and standards that have to be maintained.

- **Telephone service**

  Ensure that a smart, competent, and intelligent person be placed to attend the telephone for he or she will be the voice of the practice. Establish standards to ensure that the telephone is picked within a certain time, the mode and tone of speech are cordial, and a triage protocol is followed which helps to get off the unnecessary calls when the doctor is busy.

- **Office appearance**

  The aesthetics are very important and include a good office design, which is well-furnished, properly spaced with good interiors, well equipped with lighting, water, and furniture. The staff must be well-dressed, ever-smiling, and pleasant. This goes a long way in bringing the patient to the doctor’s office. Patients may forget what is said to them; patients may forget what was done to them; but they always remember how they were made to feel.

- **Waiting time**

  The amount of time the patient spends in the waiting corridor area plays a very important role in determining the outcome of patient satisfaction\(^\text{[28]}\). As there are so many choices available, few patients will stick to a doctor who has no respect for their time. The waiting time depends on many factors, like the doctor’s style of working, the kind of patients he or she sees, the locality where he or she practices, and the efficacy of the supportive staff.
• Doctor-patient interaction

This is perhaps the most important indicator to determine the patient satisfaction outcome. Improving the physician’s interpersonal skills can increase patient satisfaction, which is likely to have a positive effect on treatment and health outcomes.

• Patient education

Today’s patients are more educated, computer savvy, and much richer. It is essential to clear all their rightly or wrongly earned doubts with much patience and compassion\textsuperscript{[29], [30]}. Patients have said that the willingness to explain things are the most important criterion in selecting a physician. Many factors noted during the study included reasonable fees, telephone access, friendly office, convenient appointments, convenient location, and the willingness to explain.

• Feedback

Feedback given by patients help improve the overall work of the physician, clinic, and also the system. Patient feedback can be obtained by patient questionnaires, follow-up phone calls, suggestion box, referral physician’s survey, etc. It also helps them improve the quality of patient perceptions of quality of care\textsuperscript{[31]}. The data can be used to design effective strategies to improve efficiency of care given to the patients.

**Care for the uninsured/underinsured**

Having a large uninsured and underinsured population in India has been a great issue which is faced by the healthcare system in India. The uninsured has consequences for both the individual and for healthcare providers\textsuperscript{[33], [34], [35]}. The uninsured have higher rates of the unmet medical needs and they are more likely to postpone their medical treatment. For the healthcare community, a large uninsured and underinsured population presents various challenges. The uninsured are more likely than those with insurance to use
the emergency room as a regular source of care either because they lack access to primary care or because a health problem has escalated.

**The factors contributing to uninsured and underinsured status**

Some of these indicating factors include:

- Unemployment,
- Ethnicity,
- Health status,
- Low income.

**Hospital/physician relationship issues**

Hospital and physician relationships are being transformed in response to improve the management of care. On the supply side, hospitals and physician groups are forming a variety of network arrangements to present a unified front for contracting purposes. These networks include hospital/physician organizations, management service organizations, foundations, and integrated health organizations.

There are a variety of advantages for hospitals and physicians that are offered by integrated provider networks\[^{34}, [35], [36]\]. For the hospitals, such networks bolster the primary care of the institution and also improve the competitive position in both ambulatory and inpatient care, and it helps to seek the alignment on the interests of physicians with the hospital. For physicians, these networks provide the assistance to hospitals in managing care and also experience in providing the management of care. It also gives relief from administrative hassles and provides access to capital for expansion.

Traditionally, Physicians have been independent of hospitals and used to treat hospitals as “workshops” in which they can carry out their professional services. In the modern medical staff model, physicians and hospitals did
not have a typical market relationship: They neither buy services from or compete with each other\cite{30,31}. Rather, physicians and hospitals informally exchanged services as the physicians use the hospital’s facilities for carrying out their responsibilities.

There are some stress factors that can put physician-hospital relationships at risk:

<table>
<thead>
<tr>
<th>Hospitals</th>
<th>Physician</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintaining reasonable compensation</td>
<td>Weak financial reimbursement</td>
</tr>
<tr>
<td>Shortages of staff</td>
<td>Maintaining clinical autonomy</td>
</tr>
<tr>
<td>Technology update</td>
<td>Managing their business</td>
</tr>
<tr>
<td>Upcoming consumer expectations</td>
<td>Increasing consumer expectations</td>
</tr>
<tr>
<td>Constraints on capacity</td>
<td>Malpractice premiums/business</td>
</tr>
<tr>
<td>Competition from niche</td>
<td>Balance between professional and personal time for clinical providers</td>
</tr>
</tbody>
</table>

These factors keep physicians and hospitals at arm’s length rather then leverage greater coordination and integration. The study highlights emerging best practices, particularly those initiated by hospitals themselves, to foster improved physician-hospital relationships:

- **Communicate, Communicate, Communicate**

  All best practices in improving physician-hospital relationships – all enduring relationships of any kind in fact depend on developing trust and mutual reciprocity over time through open and regular communication.

- **Clinical Quality**

  While ongoing and open communication underpins all effective physician-hospital relations, clinical expertise keeps physicians and hospitals together for the long term.
• Physician Orientation/Support
  Contributions with transition with liaison, income guarantees, payment of tail malpractice insurance, relocation allowance, assigning preceptor for socialization into the hospital “family” and culture.

• Loan Forgiveness
  Repay medical school loans for high demand specialties.

• Recruiting Campaign
  Provide human resources and marketing support for groups attempting to recruit specialists.

• ED Call Compensation
  Provide productivity-based or stipend-based pay for specialists on call.

• Management Stipends
  Pay high-demand specialists for collaborating on improvement and development efforts.

• Remote Access
  Facilitate remote reading of radiology exams for selected specialists.

• Continuing Medical Education (CME)
  Host and/or provide support for CME.

Healthcare Technology Challenges
The technological advances can yield great improvement in patient care quality and economics in the next coming decade. But these technologies are often complex and require a great level of integration. As they impact the patient care, the setting up of any new healthcare technology can easily have an effect on clinical support, and business operations in hospitals.
To realize the benefits of technology, one must ensure adoption of technology is done strategically and is properly aligned with the mission and goals of the organization\[29\]. The implementation of strategic technology, the selection process and the evaluation of technology that supports infrastructure is also necessary to achieve the substantial benefits to patient care and economic sustainability.

The access to the latest technology in healthcare is less important to physicians in comparison with establishing strong relationships with hospitals and the perception of administrative responsiveness, clinical excellence and shared decision making \[39\],[40\]. On the other hand, infrastructure and equipment which help to support high-quality patient care, such as electronic medical records (EMRs), virtual imaging and electronic order entry, are consistently cited by physicians as holding the potential to “have a significant impact on their success”.\[30\]

Only a few hospitals have funded IT investments and operations “due to fraud/abuse prohibitions”. This is liable to change as the government promotes the development of new regional health information organizations to create the efficient exchange of health care information about physicians, hospitals, other providers, health plans and consumers.

**Personnel shortages**

The recruitment and retention of employees, always a challenge to the healthcare industry, is especially difficult when healthcare is facing reforms, with focus on new payment models such as accountable and value-based care.

**Shortage of medical staff**

Hospital leaders have struggled to fill in these staffing gaps:
Physician shortages

And shortages of skilled healthcare worker – have been noted for a long time. This shortage impacts the ability of hospitals to recruit physicians and provide necessary healthcare services. This is particularly evident in selected specialties such as inpatient hospital and emergency care, such as surgery and orthopedics. It is also seen in locations which are less attractive to some physicians which includes rural area and low income areas.

Nursing staff shortage

Healthcare managers certainly face challenges to retain medical and paramedical staff. There are different strategies to retain nursing staff, which include the following:

- **Allowing flexible scheduling.** There must be a strong work-life balance that can often be a strong motivation for employees to remain, and this applies to nurses as well. Providing flexible scheduling options of the nursing staff can help them to deal with stress and create a positive work environment.

- **Promoting a career development.** It’s increasingly important that nurses are given chances to further enhance their skills. The facilities that can help them gain these skills will not only see their operations improve as a result of the more educated nurses but also gain their loyalty to facilitating their development.

Population Health Management Challenges

Over the past few years the term Population Health Management (PHM) has become a buzz-word but the concept has often been unclearly defined and even less well understood. PHM involves managing in a manner which makes it safer, clinically effective and more cost effective. It means applying strategies and interventions proactively to improve the overall health of the individuals with lowest necessary cost of the defined groups of individuals across the continuum of care.\[^{[41]}\]
Many things make tackling PHM a difficult task. The central issue is proper collection of data and its use. The emerging era of “paying for value” reforms has left healthcare organizations to struggle to compile and structure the large quantities of data which is required for success. Whereas electronic medical records (EMRs) help to get the raw clinical data onto many big hospitals and physician practices, making that data accessible and usable – and reporting on the same– remains a puzzle for most.

### Conclusion and Recommendations

In exploring how managers in healthcare encounter and apply management knowledge, our study has focused on three main aspects: management and leadership in the health-care context, knowledge, knowledge mobilisation and learning processes. We summarise our main conclusions of each of these areas, preceding this with a consideration of the effects of organisational and managerial diversity, before turning to assess the limitations and implications for future research and, finally, drawing out the recommendations of our study.

Managerial diversity was equally important, particularly in the light of the
contested nature of management (and leadership) in the healthcare system. A key objective was to ensure that the study fully captured the distributed nature of management and leadership in the modern health system and avoided a too simplistic and misleading dichotomy between management and clinicians.

There are seven general recommendations that emerge from the research, each of which has a number of implications for practice at the national, regional or trust level. These are particularly in the realm of management training and development, but also encompass steps that trusts and other agencies might take to improve the structural context within which managers work and are embedded.

1. **Value management as well as leadership.** The research points to a widespread tendency to denigrate management in favour of heroic conceptions of leadership. There are benefits to be gained from a clearer recognition of the contribution to effective management and the necessity of explicitly presenting management and leadership as equal partners in managing complex and changing organisations.
   - Leadership training and development programmes need to ensure that the development of leadership takes account of the complex relationship between leadership skills and management practice on the ground.
   - Such programmes also need to balance an emphasis on leadership with continued attention to the importance of management skills (especially leadership-related skills, such as interpersonal communication).
   - Local trusts training and development programmes can help maximise the transferability of context-specific leadership training to management practice by ensuring that analysis of leadership challenges and solutions continue to be firmly situated in management problem-solving and decision-making scenarios.

2. **Balance experiential learning.** The research indicates that the
challenge to codifying and translating management knowledge leads to an over-reliance on experience and localised, situated knowledge and/or a tendency to privilege other forms of knowledge, such as clinical or financial. The evidence underlines the value of networks and other social modes of engagement to overcome these epistemic boundaries and assist the circulation of knowledge.

- Training and development programmes provided at trust level need to ensure a balance of emphasis on learning from experience with the use of more codified systems of knowledge that can effectively challenge received wisdom and accepted practices.
- Trusts need to be aware of the need to capture and share knowledge and learning that may be localised in specific parts of the organisation (e.g. tender bidding skills), such knowledge may be particularly important to generalise across trusts in the light of recent changes to the organisation of primary, secondary and tertiary health-care provision.

3. Facilitate clinical–managerial relations. The challenge to managing the relationship between clinical and managerial communities is pervasive across healthcare organisations. Each of our trusts adopted distinct structural, relational or personally embodied means to manage this relationship, each reflecting their organisational context. The research suggests that there is no universal solution and that trusts need to tailor their approaches to manage this divide.

- Trusts need to carefully consider how they attempt to bridge the clinical–managerial divide and tailor their approaches to achieving this to match the specific context of interaction (e.g. by combining structural adjustments with the relational skills of key individuals for whom status differentials are high, or by relying on embodied experience when there is more of a blending of clinical and managerial orientations).
- National leadership programmes should be considered as an opportunity for cultivating networked interaction between distinct
types of managerial groups (especially clinical and general). This approach would encourage development of shared perspectives in the CoPs (community oriented policing services).

• (on the use and application of specific types of managerial knowledge.

• There may also be opportunities for trusts to develop mechanisms for such networked interaction focused on management issues and solutions at a more local level, provided that they occur away from immediate operational pressures. Such initiatives may be particularly important to the context of significant recent changes in the relationship between secondary and primary care.

4. **Enable reflective learning.** In the light for the evidence on translation gaps between health-care organisations, our research suggests that receptivity to management knowledge, and the innovative or creative use of this knowledge, is enhanced by training and development that allows space and time for reflection and knowledge translation. This applies across all managerial groups, but especially to general managers.

• Middle managers, especially those in general management positions, need more access to leadership development and training opportunities that are better synchronised with the demands of their role and the stage of their career. There is currently a gap in the more strategic (as opposed to operational) training opportunities that tie in with middle managers’ needs.

• Wider (national) leadership training programmes can help bridge that gap, provided that the knowledge based they impart (e.g. lean thinking, strategic analysis) is not abstracted from health-care practice but used instead in a more heuristic way to inform analysis of healthcare management problems.

• Trusts also need to find ways of giving middle managers time out from busy schedules to take up any opportunities afforded by more advanced training and development programmes that are based on such reflective learning processes.
5. **Encourage strong network ties.** The research indicates that networking for knowledge acquisition/sharing, support, career development and influence are closely inter-related. Therefore, recognition of the embeddedness of knowledge processes of social networks points of the importance of supporting the formation of strong network ties to enhance knowledge sharing and learning.

- Opportunities provided for networking through national leadership development programmes are recognised as valuable but can also be sporadic or limited in their availability. More could be done to encourage continued interaction through these networks of a regional or local level following core programme activities.

- Recognition needs to be given (in national and more local training programmes) to the importance and benefits of both formal and informal networks of interaction as sources of knowledge and support for managers and how specific mechanisms for middle managers may help significantly (e.g. mentoring).

6. **Extend general management networks.** Given the evidence pertaining to isolation and inward-looking tendencies among general management groups in healthcare, trusts may consider the advantages of providing greater opportunities for internal and external networking to assist knowledge sharing and learning.

- Initiatives at national, regional or individual trust level need to recognise that networked interaction among managers, when it occurs, does so largely within the distinct CoPs associated with general, clinical and functional managerial groups (as opposed to there being one distinct and coherent CoP).

- External (regional, area) networks of managers could be actively cultivated (either by individual trusts or through intertrust collaboration). These external networks should be focused on particular knowledge and learning themes (e.g. aspects of management best practice), as opposed to being driven primarily by operational requirements.

- Trusts that are highly differentiated (geographically,
organisationally, professionally) may benefit particularly from taking their own internal networking initiatives that have the dual advantage of helping managers share best practice as well as improving organisational integration.

- Trusts faced with recent challenges associated with changes in secondary/primary care may find managerial networking of increased relevance and importance to the achievement of their goals.

7. **Strengthen professional communities of practice through leadership development.** The research underlines the challenges posed by the extreme diversity of managers’ responsibilities and skills owing to task and organisational differentiation and the fragmentation this creates within managerial CoPs. This supports the value of a widely available management and leadership development programme that meets the needs of the whole spread of middle managers more effectively.

- National leadership development programmes should continue to build on the networking opportunities they offer and networking skill development they aspire to provide.

- In addition, such programmes should also build on the potential they offer for greater collective development and further institutionalisation of a distinct body of healthcare management knowledge and practice.

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STATUS STUDY OF MUMBAI CITY HIGHER EDUCATION INSTITUTIONS IN VIEW OF INTERNATIONALISATION: URGENT NEED TO FORMULATE EFFECTIVE DOMESTIC AND INTERNAL POLICIES IN INDIA

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Abstract

Certain facts about Higher Education are that, it is a powerful tool for achieving economic sustainable development. Foreign Education Providers’ interest is growing rapidly to explore the potential in the Indian education market. Higher education provided by public/private and not-for profit/for profit providers and various forms of imparting education ranging from face to face education to e-learning in the international scenario, have raised demands for urgent strategic reforms with specific policy guidelines for the Indian Higher Education System.

Some of the recent changes, such as replacing the Planning Commission with NITI (National Institution for Transforming India) Ayog (Jan, 2015), and the Human Resource Development (HRD) Ministry’s direction to get clearance from the Ministry of External Affairs (MEA) in future for global partnership, are initiatives by the newly formed National Democratic Alliance (NDA) government in India. With the HRD Ministry’s announcement to release new policies to revamp higher education and the State government of Maharashtra having invited suggestions for the new Maharashtra Public Universities Act 2011, the researcher felt the need to study and contribute recommendations for some polices in view of the internationalisation of higher education. This paper discusses various aspects of contemporary developments in higher education and recommends guidelines for the
formulation of appropriate policies.

The fact that the number of Indian students flying to US colleges rose by 6% to 102,673 and contributed $27 billion to the American economy, and in the UK it increased to 40,000, and also in many other eastern countries’ universities, the number of international students including Indian students have been increasing. However the enrolment status of foreign students in Indian Universities has been abysmal. There are estimates that by 2020 there will be 165 billion people seeking higher education, including 7.2 billion international students. These figures raise the need for the provision of new business requirements for the Indian education system.

This descriptive research survey study was designed to explore the preparedness of universities and institutions in Mumbai city in the context of the internationalisation of higher education.

The study revealed that though India is a signatory to the World Trade Organisation (WTO) and the General Agreement on Trade in Services (GATS), to date there was least attention towards formulation of domestic or internal international policies. A perception study of foreign students enrolled in Mumbai city institutions also unfolded poor status of overall facilities, services and lack of internal policy guidelines for foreign students. Furthermore, at a workshop conducted to review the proposed new Maharashtra Public Universities Act, 2015, the participants (principals, directors, former Vice Chancellors of regular and open Universities, office bearers of Teachers Union, College Managements, Non-teaching Union Leaders, Senate members and Student representatives) observed several lacunas in the draft along with missing international policy guidelines in the Act and suggested that the government incorporated polices in alignment with international polices so as to raise the quality and standard of education and to overall improve the global ranking of Indian universities. The study also suggested that effective measures were required in academic and administrative reforms in order to become responsive to the needs and challenges of internationalisation in higher education. Recommendations
were given to focus on the marketing and publicity of university programmes abroad, foreign student registration and visa norms, high quality of education and training at all levels; and make education system more flexible and inclusive for sustainable growth.

Keywords: Higher education institutions, Mumbai city, internationalisation, policy formulation.

Introduction

Higher education has new responsibilities and new challenges in the present globalised world. The fact that the number of Indian students flying to US colleges rose by 6% to 102,673 and contributed $27 billion to the American economy, and in the UK it increased to 40,000, and also in many other eastern countries’ universities the number of international students including Indian students are increasing. However the enrolment status of foreign students in Indian Universities has been abysmal. The estimates are that by 2020 there will be 165 billion people seeking higher education, including 7.2 billion international students. The number of international students is a key parameter in the global ranking system and Indian institutes have traditionally fared poorly in this. Also recent policy sanctions by the Indian Government has been allowing international universities of high repute to freely enter India. As Indian students get exposed to world-class global education and do not have to leave the country for that, it raises competition to local universities and offers greater choice to students. International cooperation and collaboration is taking place among countries in educational, social, economic, and services sectors through national and international organisations and agreements. These figures raise the need for the provision of new business requirements for the Indian education system.

Another fact is that though India is a signatory of WTO and GATS, there is meager attention towards formulation of domestic or internal international
policies. However there have been some recent developments, such as replacement of the Planning Commission with NITI (National Institution for Transforming India) Ayog (Jan, 2015), and the Human Resource Development (HRD) Ministry’s directives to get clearance of the Ministry of External Affairs (MEA) for future global partnerships. With the HRD Ministry’s announcement to release new policies to revamp higher education and the State government of Maharashtra having invited suggestions for the new Maharashtra Public Universities Act, 2015, the researcher felt the need to study the existing policies and provide some input for internationalisation of higher education. This paper thus discusses various aspects of contemporary developments in higher education and recommends guidelines for the formulation of appropriate policies.

Every Institution and its educators have to plan for the kind of educational interventions appropriate within their specific cultural contexts considering the time, space, facility and the environment. In the present situation of international transition phase, radical changes in State Government policies and University/Institutions’ internal policies is required to frame guidelines in alignment with the policies of the HRD Ministry so as to make Indian education attractive for foreign students. At the same time care needs to be taken to allow any foreign university to function as a branch campus of the parent, rather than as an independent campus. Policy mechanism needs to be formulated to ensure that these universities will offer the degrees which would be globally recognized and accepted.

To get a view about the preparedness of Indian institutions, an exploratory study was carried out in Mumbai metropolitan city institutions and opinions of authorities and educators were generated about services, facilities and policies implemented with regards to internationalisation in higher education. The perception study of foreign origin students was also conducted with the intention to bridge the gap, as they continued to grapple with various issues. Such a perception study was imperative specifically to understand Indian higher education policies and periodic pronouncements by the
HRD Ministry that facilitated foreign providers to enter India. This study included views of stakeholders towards the Maharashtra Public Universities Act, 2015 draft prepared by the State Government Expert Committee, to provide suggestions for formulation of effective policies to upgrade the higher education system and impart high quality education to match with international standards.

It is recognised that once we have gained a knowledge-base from which to devise a plan for systemic change and have established a general direction or vision for the types of changes needed, the next step is to begin implementing the changes. Making the types of systemic changes associated with educational reform and technology implementation requires the effort of administrators, teachers, and stakeholders, all working together towards common goals. Ultimately proper planning holds the key to implementing and sustaining change within the organisation or a country. Educators and administrators provide the bridge between plans and the benefits learners’ gain from those plans. These types of research studies help in keeping updates regarding the changing scenario in higher education and provide guidelines for international policy reforms.

**Objectives**

The main aim of this study was to investigate the perceptions of educators towards the policies outlined by GATS. These were categorised under the four modes of transfer viz. Cross border supply, Consumption abroad, Commercial presence and Individual presence, with regards to Curriculum, Extension programme and Research work.

Furthermore, this study explored views of Foreign students (within the jurisdiction of Mumbai City) with regards to internationalisation of higher education in terms of the facilities and services available in their colleges/
universities. During the study, a workshop was organized for various stakeholders of higher education to generate opinions towards the proposed Maharashtra Public Universities Act, 2015 draft copy in order to forward recommendations to the State Government for policy formulation.

Methodology

The study was an Exploratory research. The dependent variable in the study was perception while the independent variables were students, educators and stakeholders. The target groups for the study consisted of students and educators from Institutions in Mumbai city in India. A sample of 250 educators and students were randomly selected through proportionate stratified random sampling technique from five Universities. Self made Questionnaire under expert guidance which had face and construct validity and with a reliability of 0.71 was used to obtain information about perceptions of respondents. While mean analysis of responses was used to analyse the research questions, the z-test was used to analyse the hypotheses. An informal interview schedule was designed to generate views of respondents towards the Maharashtra Public Universities Act, 2015 draft.

Results and Discussion

Table no 1 shows the overall low perception of foreign students of University of Mumbai and other universities/institutions towards the various services and facilities provided by universities keeping in view internationalisation. Table no 2 shows the difference in perception of academicians and administrator with regards to the four modes of transactions and International Policies related to curriculum, extension programmes as well as research and administrative policies existing in Mumbai University. The low perception of respondents revealed an abysmal situation in terms of overall preparedness of institutions in Mumbai city and policy implementations with regards to internationalisation.
Table 1. Average rating by Foreign students of various Universities for facilities.

<table>
<thead>
<tr>
<th>Q.</th>
<th>Description</th>
<th>UOM</th>
<th>Other</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q. 34</td>
<td>Rate the foreign student cell (if existing) service/assistance in scale of 1 to 5</td>
<td>UOM</td>
<td>31</td>
<td>2.3871</td>
<td>1.43009</td>
<td>.25685</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
<td>77</td>
<td>2.1688</td>
<td>.87588</td>
<td>.09982</td>
<td></td>
</tr>
<tr>
<td>Q. 35</td>
<td>Rate the access and approach of support staff in scale 1 to 5</td>
<td>UOM</td>
<td>31</td>
<td>2.5806</td>
<td>1.40888</td>
<td>.25304</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
<td>77</td>
<td>2.7338</td>
<td>.97867</td>
<td>.11153</td>
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</tr>
<tr>
<td>Q. 36</td>
<td>Rate the access and approach of teaching staff in scale of 1 to 5</td>
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<td>31</td>
<td>3.1290</td>
<td>1.33521</td>
<td>.23981</td>
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<td></td>
<td></td>
<td>Other</td>
<td>77</td>
<td>3.4610</td>
<td>.91682</td>
<td>.10448</td>
<td></td>
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<tr>
<td>Q. 37</td>
<td>Rate the access and approach of Admin staff in scale of 1 to 5</td>
<td>UOM</td>
<td>31</td>
<td>3.0323</td>
<td>1.33360</td>
<td>.23952</td>
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<tr>
<td></td>
<td></td>
<td>Other</td>
<td>77</td>
<td>2.7727</td>
<td>.99021</td>
<td>.11285</td>
<td></td>
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<tr>
<td>Q. 38</td>
<td>Rate Library facility of university in scale of 1 to 5</td>
<td>UOM</td>
<td>31</td>
<td>2.3871</td>
<td>1.33360</td>
<td>.23952</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Other</td>
<td>77</td>
<td>2.6883</td>
<td>.99021</td>
<td>.11285</td>
<td></td>
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<tr>
<td>Q. 39</td>
<td>Rate Hostel facility of university in scale of 1 to 5</td>
<td>UOM</td>
<td>31</td>
<td>2.0968</td>
<td>1.27423</td>
<td>.22886</td>
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<td></td>
<td></td>
<td>Other</td>
<td>77</td>
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<td>Rate Financial Aid of university in scale of 1 to 5</td>
<td>UOM</td>
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<td>1.20684</td>
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<td>.508</td>
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### Independent Samples Test

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<th>t-test for Equality of Means</th>
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<th>8.512</th>
<th>0.004</th>
<th>-2.265</th>
<th>106</th>
<th>0.026</th>
<th>-51341</th>
<th>.22670</th>
<th>-96286</th>
<th>-0.06395</th>
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<td>-1.05885</td>
<td>.03203</td>
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Q. 42 Rate transportation facility of University in scale of 1 to 5

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<th>106</th>
<th>0.033</th>
<th>.46753</th>
<th>.21586</th>
<th>.03956</th>
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<td>-0.03499</td>
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Q. 43 Rate the overall facility of University in scale of 1 to 5

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<th>106</th>
<th>0.144</th>
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<th>.19901</th>
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Q. 44 Are you satisfied with the system of education

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<th>0.003</th>
<th>2.613</th>
<th>106</th>
<th>0.01</th>
<th>0.256</th>
<th>0.098</th>
<th>0.062</th>
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Comments: The ratings by other university foreign students are low on almost all the facilities except access and approach of teaching staff. Universities need to really overhaul on all aspects of their facilities if they want to compete at the global level.

Table 2. Difference in perception of academicians and administrator with regards to four modes of transactions and International Policies related to Curriculum, extension programmes and Research and administrative policies existing in Mumbai University.

T-Test

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<thead>
<tr>
<th>Type of Respondent</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
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<td>12.9000</td>
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<td>12.3000</td>
<td>1.63639</td>
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<td>13.5000</td>
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<td>16.8000</td>
<td>1.47573</td>
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Levene’s Test for Equality of Variances

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<th>t</th>
<th>df</th>
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<td>0.302</td>
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## Comment

Overall view of respondents regarding GATS recommendations for academic policies was very positive. There was a general feeling among respondents of Mumbai and other universities that the academic and administrative policies needed to be outlined for attracting foreign providers and international students.

A workshop cum meeting was organized to get feedback from the stakeholders who were in direct contact with higher education affairs (including Former Vice Chancellors of open and distant learning and regular Universities, college principals/In-charge principals; HOD of University departments, social workers; University Union members; Members of Academic Council, Management Council and Senate; representatives of relevant government departments, Public relations officers of various foreign universities, statutory agencies and Education Consultants). The aims of the meeting was to provide a forum for discussing the main issues regarding barriers to education in Universities across Maharashtra and mainly to review the proposed draft Maharashtra Public Universities Act 2015, prepared by the Chaindhade Committee formed by the Maharashtra State government. Selected key stakeholders’ opinions were noted to inform the topic guide of the subsequent debate to the authorities in government. Recommendations have been outlined below on the basis of the outcome of this research study and the feedback generated during the workshop.

## Conclusion

Thus rather than limiting the universities to those that rate highly in international rankings, the government should look at the needs on the ground. It is necessary to assess our needs and find if we need more institutions teaching vocational, offering degrees, doing research or a

<table>
<thead>
<tr>
<th>Policies of Staff recruitment</th>
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<th>0.433</th>
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<th>18</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>0.236</td>
<td>17.84</td>
<td>0.816</td>
<td></td>
<td></td>
<td>Accept</td>
</tr>
</tbody>
</table>
combination of all of these, and accordingly the government should enable institutions to set up base. In Mumbai and overall Maharashtra State, there is a huge market for foreign universities and programmes. With a youthful population, lower recruitment and research costs, and the opportunity to offer executive education programmes and consulting services to companies, it could mean significant foreign direct investment. Quality control must be the key parameter and efforts need to be focused to build a safeguard mechanism for each of the universities.

**Recommendations**

The following recommendations were made from the findings of the study to formulate effective domestic and internal policies, to revamp Universities and Higher education Institutions in Mumbai City and across India keeping in view internationalisation:

- Foreign Student Cell needs to be established compulsorily in each of the Universities.
- Urgent need to frame proper policy guidelines for entrance test/criteria, admissions, enrolment and services.
- Arrange orientation and training for Teaching and Non-teaching staff regarding policy matters and handling of foreign students for transformation in context to internationalisation in higher education.
- Create international standard facilities in every institution for student registration and police verification, transportation, accommodation/hostel, canteen, library, currency exchange, flexible visa and immigration norms.
- Take measures to upgrade standards/common curriculum.
- Implement universal norms of credit transfer.
- Formulate strict norms to restrict lower standard foreign education providers to enter India.
- Government must formulate norms to support foreign and local students with financial aid.
• Central and State Government need to formulate Education model which will make Indian Education system self sustaining and encourage quality education.
• Government and Universities must fund foreign exchange programmes for students and faculties and encourage research collaborations.
• Periodically monitor and evaluate policies for effective implementation and carry out timely reforms.
• Increase government funding for higher education institutions.
• Produce separate strategies for the revamp of city and rural colleges to reach international standards.
• Before approval of Maharashtra Public Universities Act, 2015, specific guidelines be outlined for Industry linkages for upgrading curriculum and enhancing job opportunities.
• Central and State Government must formulate regulations for recruitment and in-service training of faculties to upgrade the quality of teaching and research in the international scenario.
• Every University/Institution must formulate internal policies to systematise facilities and services provided.

References


PERCEPTION OF SECONDARY SCHOOL TEACHERS TOWARDS TEACHING PRACTICE OF PROSPECTIVE TEACHERS

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Abstract

Aim: The purpose of this study was to examine the perception of secondary school teachers towards teaching practice of prospective teachers regarding time-table management, discipline management, pupil teacher relationship, management of co-curricular activities, performance of school students, methods adopted by pupil teachers and application of skills learnt during teaching practice. Relevance: Teaching practice provides an opportunity for student teachers to put into practice the skills before they begin to work as professionals (Alsaid, 2001; Bhargara & Pathy, 2011). As trainees are gaining pre training in their profession, the perception of school teachers where the pupil teachers are practicing contribute very much to improving the teaching and learning of the subject as it provides valuable suggestions and directions for the pupil teachers’ future improvement. The researchers undertook the present study because in-service teachers have gone through this procedure and are now fulfilling all their objectives while performing their duty. Methodology: For the present study, the survey method was used and the sample of the study involved 120 secondary school teachers of Sirsa District, who were randomly selected. A self-developed questionnaire was used to collect the data and after collecting the data, the percentage technique was used to
analyze it. **Findings:** The study revealed that perceptions of teachers regarding the time tables managed by pupil teachers needed improvement; with respect to discipline managed by pupil teachers, their opinions were positive and they recommended that physical punishment be avoided; with respect to pupil teacher relationships, they recommended that pupil involvement during teaching be improve, in regard to co-curricular activities, they observed that there should be co-ordination between theoretical and practical experiences; in regard to performance of school students, they agreed that greater efforts by pupil teachers would uplift the performance of students. **Conclusions:** Perception of in-service teachers assisted prospective teachers to progress in their teaching and management skills. In this paper perception of secondary school teachers recommended prospective teachers to follow the same time tables as set by the school, all subjects should be taught, and learning by doing must be encouraged.

**Keywords:** Perception, Prospective Teachers, Teaching Practice, Secondary School Teachers.

**Introduction**

Teaching can be defined as giving lessons to students in an institution of learning. It can also be defined as showing students how to do something so that he/she will be able to do it themselves in addition to making them to feel or think in a different way (Hornby, 2006). Therefore teachers are expected to tailor their teaching to meet the learner’s level and use their daily routine experiences and activities to help them learn (Hamdan & Jahooh, 2006). Ernest (1989) explained that, “teaching reforms cannot take place unless teachers deeply hold good beliefs about teaching and learning changes” Handal and Herrington (2003). Academically and professionally competent teachers are expected to dedicate a lot of their time and effort to develop and reinforce their students’ creative thinking. This creates in their learners positive attitudes towards what is being taught, demonstrated and illustrated regardless of its challenges. It is asserted that competent
and experienced teachers have important roles to play in determining their country’s development and success. These assertions have been supported by Bisher (2005) who argues that teachers are indispensable despite new developments in education such as modern teaching aids to facilitate the teaching and learning process. They play important tasks of interacting and corresponding with their learners. These tasks are essential since they aid in assuring the achievement of appropriate outcomes. This is further illustrated by Al-Magableh (2010) who argues that a well trained teacher can promote and simplify knowledge for students taking into account their varied social and cultural backgrounds and individual differences. It is therefore expected for teacher educators to focus on student teachers’ pre-service training. Teaching practice is a key module of the student teacher training programme. This training assists the learners to attain and develop purposeful, scientific experiences in advance. Such experiences may help student teachers develop their own potentials which will equip them to perform their future roles as teachers with a lot of precision. These potentials include skills in lesson planning, visualizing, class control, critical thinking, decision making and problem solving. Teaching practice provides an opportunity for student teachers to put into practice these skills before they begin to work as professionals (Alsaid, 2001; Bhargara & Pathy, 2011). It is during this period that the student teacher gets to translate the skills and theory learnt into reality through actual classroom practice. Teaching Practice provides an opportunity to early career teachers to become socialized into the teaching profession. It provides the would be teachers at all levels some type of pre-service training that serves to provide experiences to the realities of teaching and performing professional activities. It is also assumed that after being trained, B.Ed. students gain confidence as they teach in the classes. This leads the pupil teacher towards qualitative enhancement in their personality. As trainees are gaining pre training in their profession, the perception of established school teachers where pupil teacher’s are practicing contribute very much in improving the teaching and learning of the subjects as they provide valuable suggestions and directions for the pupil teacher’s future improvement.
Justification of Study: The objectives of Teaching practice is to provide the prospective teachers with an opportunity of establishing an appropriate teacher pupil relationship, evaluating the student potential as a teacher and suitability for the teaching profession, developing personal relationship with others: administrators, teachers, parents and students, providing practical experience in school to overcome the problems of discipline and enable him/her to develop methods of control, put theories into practice and to develop a deeper understanding of educational principles and their implication for learning. It enables the student teachers to effectively plan and prepare lessons, develop desirable professional interests, attitudes and ideas related to the teaching profession, develop skills in future teachers in areas like teaching fluent speech, meaningful reading, using the blackboard and other teaching aids. The researchers undertook the present study because the in-service teachers have gone through this procedure and are now fulfilling their teaching objectives. So the perception regarding teaching practice will be helpful for pupil teachers to improve their professional attitude and to adopt the objectives of teaching practice carefully and will help them to apply these objectives in their professional life.

Objectives of Study

1. To study the perception of secondary school teachers in regard to timetable management during the teaching practice of prospective teachers.

2. To study the perception of secondary school teachers in regard to discipline management during the teaching practice of prospective teachers.

3. To study the perception of secondary school teachers regarding pupil teacher relationship during the teaching practice of prospective teachers.

4. To study the perception of secondary school teachers regarding the management of co-curricular activities in school during the teaching practice of prospective teachers.
5. To study the perception of secondary school teachers regarding the performance of school students during the teaching practice of prospective teachers.

6. To study the perception of secondary school teachers regarding the methods adopted by pupil teachers during the teaching practice of prospective teachers.

7. To study the perception of secondary school teachers regarding the application of skills learnt during the teaching practice of prospective teachers.

Research Method: The method and procedure of a research study is bound to the purpose, as they provide a frame work within which the goals of research are to be achieved. Hence for the present study, the researchers used the descriptive survey method.

Population: All the teachers of secondary schools where pupil teachers were practicing teaching constituted the population of the present study.

Sample: As it was not feasible for the researchers to constitute all the teachers of secondary schools in the present study, a representative group of the whole population was selected as a sample. In the present study, 120 secondary teachers were selected randomly from all the schools where teaching practice was going on.

Tool Used: In the present study investigators used a self- prepared questionnaire which included 30 questions regarding the perception of secondary school teachers towards the teaching practice of prospective teachers. The questionnaire was discussed and finalized after a review by experts.

Statistical Technique: For the present study, percentage was calculated on the basis of respondent’s response regarding perception of secondary school teachers towards teaching practice of prospective teachers.
Analysis and Interpretation

Table-1: Perception of secondary school teachers regarding time-table management during teaching practice.

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Statements</th>
<th>% of Yes Response</th>
<th>% of No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Do you think teaching practice disturbs the regular schedule of school?</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>2</td>
<td>Do the pupil teachers follow the same time table as set by school in regular routine?</td>
<td>64</td>
<td>36</td>
</tr>
<tr>
<td>3</td>
<td>Do the duration of periods remain same during teaching practice as it was in regular school?</td>
<td>68</td>
<td>32</td>
</tr>
<tr>
<td>4</td>
<td>Do you think pupil teachers teach all the school subjects during teaching practice?</td>
<td>52</td>
<td>48</td>
</tr>
<tr>
<td>5</td>
<td>Do you think teaching practice delays the completion of your syllabus on time?</td>
<td>64</td>
<td>36</td>
</tr>
</tbody>
</table>

It can be predicted from Table-1 that 60% of secondary teachers agree that school time is disturbed while 40% of teachers did not agree with the statement. 64% of school teachers agree that pupil teachers follow the same time-table while 36% perceive that same time table is not followed. 68% of teachers agree that the duration of periods remain the same during teaching practice while 32% say the duration of periods differ. 52% of teachers agree that pupil teachers teach all the school subjects during teaching practice while 48% say all subjects are not taught. 64% of teachers agree that teaching practice delays the completion of the syllabus on time while 36% say that it is a hurdle in completing the syllabus on time. So from the above data it can be predicted that although above 50% of teachers perceived that time table management skills were good in teaching practice, the data indicated that there was a need to follow the same time table, same duration of periods and that trainee teachers should teach all the school subjects.
during teaching practice so that school students do not suffer any detriment in their studies.

Table-2: Perception of secondary school teachers regarding discipline management during teaching practice.

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Statements</th>
<th>% of Yes Response</th>
<th>% of No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Do the pupil teachers maintain regularity and punctuality in school while undergoing teaching practice?</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>Do you agree that school students maintain discipline while undergoing teaching practice?</td>
<td>76</td>
<td>24</td>
</tr>
<tr>
<td>8</td>
<td>Do the pupil teachers give physical punishment to control the classes?</td>
<td>24</td>
<td>76</td>
</tr>
<tr>
<td>9</td>
<td>Do you think school teachers face difficulty in taking attendance of students during teaching practice?</td>
<td>56</td>
<td>44</td>
</tr>
<tr>
<td>10</td>
<td>Do you think you need to put lot’s of efforts to bring the students back to normal routine after teaching practice?</td>
<td>24</td>
<td>76</td>
</tr>
</tbody>
</table>

Table -2 reveals that 80% of secondary school teachers perceive that pupil teachers maintain regularity and punctuality, 76% says that school students remain in discipline in this duration while 24% perceive that to maintain discipline, pupil teachers use physical punishment. 56% teachers agree that maintaining attendance of students become big headache in teaching practice but at the same time is revealed from statistical data that only 24% teachers faced difficulty in maintaining discipline after teaching practice. So on visualizing above data it can be said that perception of secondary school teachers regarding discipline management by pupil teachers during teaching practice was positive.
Table-3: Perception of secondary school teachers regarding pupil teacher relationship during teaching practice of prospective teachers.

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Statements</th>
<th>% of Yes Response</th>
<th>% of No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Do you think pupil teacher cater the need of individual attention while teaching?</td>
<td>78</td>
<td>22</td>
</tr>
<tr>
<td>12</td>
<td>Do the pupil teachers involve students in their teaching through demonstration or activities?</td>
<td>46</td>
<td>54</td>
</tr>
<tr>
<td>13</td>
<td>Do the pupil teachers encourages ideas of students while teaching?</td>
<td>80</td>
<td>20</td>
</tr>
</tbody>
</table>

Table-3 shows that 78% of secondary school teachers identified that pupil teachers (P.T.) pay individual attention while teaching, 46% agree that students were involved through activities and 80% go with the statement that P.T. accept the ideas of students and use them while teaching. So from above it can be concluded that secondary school teachers perceived that P.T maintain healthy relationships with students and 54% suggest P.T encourage maximum participation of all students while teaching.

Table-4: Perception of secondary school teachers regarding management of co-curricular activities in school during teaching practice prospective teachers.

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Statements</th>
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</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Do you think P.T. help in making morning assembly more informative for students?</td>
<td>64</td>
<td>36</td>
</tr>
<tr>
<td>15</td>
<td>Do you think pupil teachers organize any educational games like quiz to motivate students in their practice session?</td>
<td>56</td>
<td>44</td>
</tr>
<tr>
<td>16</td>
<td>Do you think co – curricular activities of school are hampered due to teaching practice?</td>
<td>48</td>
<td>52</td>
</tr>
</tbody>
</table>
From Table 4 it can be illustrated that 64% teachers agree that morning assembly was made more informative by pupil teachers but opinion of 44% teachers was that no motivational activities were organized and 52% says that co-curricular activities are disturbed during this period. So their perception suggests prospective teachers to maintain co-ordination between curricular and co-curricular activities to ensure all around development of child.

Table-5: Perception of secondary school teachers regarding performance of school students during teaching practice of prospective teachers.

<table>
<thead>
<tr>
<th>Sr. No</th>
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<tbody>
<tr>
<td>17</td>
<td>Do you think pupil teacher checks home work imparted to students and encourage their performance?</td>
<td>84</td>
<td>16</td>
</tr>
<tr>
<td>18</td>
<td>Do you agree with the statement that performance of school students enhanced after teaching practice?</td>
<td>76</td>
<td>24</td>
</tr>
<tr>
<td>19</td>
<td>Do you think students forgot all those lessons which you taught before teaching practice?</td>
<td>36</td>
<td>64</td>
</tr>
</tbody>
</table>

Table 5 reveals the opinion of 84% teachers that pupil teachers check home work imparted to students and encourage their performance, 76% agree with the statement that performance of school students enhanced after teaching practice and 64% disagree that students forgot all those lessons which were taught before teaching practice. So this shows that on average above 70% secondary school teachers perceive that performance of school students improves after teaching practice.
Table 6: Perception of secondary school teachers regarding methods adopted by pupil teachers during teaching practice prospective teachers.

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Statements</th>
<th>% of Yes Response</th>
<th>% of No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Do you think pupil teacher checks previous knowledge of students before teaching new concept?</td>
<td>88</td>
<td>12</td>
</tr>
<tr>
<td>21</td>
<td>Do you think pupil teacher teaches the students with confidence?</td>
<td>68</td>
<td>32</td>
</tr>
<tr>
<td>22</td>
<td>Do you think pupil teachers have appropriate communication skill?</td>
<td>88</td>
<td>12</td>
</tr>
<tr>
<td>23</td>
<td>Do you think pupil teachers have command over the subject matter?</td>
<td>84</td>
<td>16</td>
</tr>
<tr>
<td>24</td>
<td>Do you think pupil teacher uses appropriate teaching methods to clear concepts of students?</td>
<td>84</td>
<td>16</td>
</tr>
<tr>
<td>25</td>
<td>Do you think pupil teacher make appropriate use blackboards while teaching?</td>
<td>88</td>
<td>12</td>
</tr>
<tr>
<td>26</td>
<td>Do you think teaching aids prepared by pupil teachers are appropriate i.e. visibility and clarity of teaching aids?</td>
<td>88</td>
<td>12</td>
</tr>
<tr>
<td>27</td>
<td>Do you think pupil teachers of language use any teaching aids to improve Communication skills?</td>
<td>20</td>
<td>80</td>
</tr>
<tr>
<td>28</td>
<td>Do the pupil teachers use power point presentation to teach the concepts during their practic sessions?</td>
<td>16</td>
<td>84</td>
</tr>
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</table>

Table 6 demonstrates that 88% teachers agree that pupil teachers check the basic knowledge regarding topic before teaching and communication skill, use of blackboard and teaching aids were accurate while 84% said that pupil teachers have command over the subject matter and uses appropriate teaching methods to clear concepts of students but 80% teachers suggested language teachers to use teaching aids which can improve reading, writing and speaking skills of students and 84% suggested to use power point
presentation to increase visual effect on learning.

Table-7: Perception of secondary school teachers regarding application of skills learnt during teaching practice prospective teachers.

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Statements</th>
<th>% of Yes Response</th>
<th>% of No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>Do you think skills learnt by P.T. in teaching practice will enhance their teaching competencies?</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>30</td>
<td>Do you think teachers apply skills learnt in teaching practice after they are in the job?</td>
<td>84</td>
<td>16</td>
</tr>
</tbody>
</table>

It can be confirmed from Table 7 that 80% teachers agree that skills learnt by P.T. in teaching practice will enhance their teaching competencies and 84% perceive that these skills are utilitarian while any person is in service.

**Conclusion**

Perception of in-service teachers helps prospective teachers to progress in their teaching and management skills. As the pupil teachers are in the training process, to learn how to work in real classroom situations, guidance of in-service teachers will help them to become dedicated, skillful and efficient teachers. In this paper perception of secondary school teachers suggest prospective teachers to follow same time table as made by school, all subjects should be taught, learning by doing must be encouraged, as visual effect increases learning so lessons must be delivered through power point. Co-curricular activities should be continued along with curricular activities.
References


## Appendix 1 - Authors’ Contact Details

<table>
<thead>
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<th>Name</th>
<th>Designation, Institution and Address</th>
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<td>Name</td>
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</tr>
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<td>Director, Consortium for Social Development and Research, Women And Development, The Univ. of West Indies, Open Campus, St. Michael, Barbados, West Indies.</td>
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<td>K. Souza</td>
<td>Secretaria do Estado do Ceara, Brazil.</td>
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This book comprises the Papers that were presented at the International Conference on Responsible Research in Education and Management and its Impact. The Conference was held from the 13th to 15th of January 2016 at the Grange City Hotel located at 8-14 Cooper’s Row, London EC3N 2BQ, UK.

All the Papers were peer-reviewed and have been published with the purpose of significantly strengthening research capacities, educational capacities, knowledge management and sharing capacities. It also serves to bridge the gap between purely academic journals and more practical research articles or opinions.

This publication aims to serve as a forum for experienced as well as early career educational and management practitioners in a wide range of disciplines to share their teaching and learning outcomes in a scholarly way.

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