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5. Transforming Teacher Education through Interdisciplinary Courses

Dr. Agnes Dcosta

Associate Professor, Pushpanjali College of Education, Vasai.

Knowledge cannot be compartmentalized. To gain knowledge that can be applied in real life situations, it is necessary to foster connections between ideas and concepts that transcend subject boundaries. The traditional approach to education believed in pursuing single disciplines and mastering the same. But this highly structured format may lead to lack of authenticity in learning. Mastery in one discipline and ignorance of other disciplines may not be appropriate in the complex world of today where the focus is on application of knowledge rather than the mere acquisition of knowledge. Interdisciplinary courses widen the learner's perspectives and make the learner ready to face a complex world where issues and problems may draw from various disciplines.

Concept of interdisciplinary courses

Klein and Newell¹ define Interdisciplinary Studies as 'a process of answering a question, solving a problem, or addressing a topic that is too broad or complex to be dealt with adequately by a single discipline or profession. Such studies draw on disciplinary perspectives and integrate their insights through construction of a more comprehensive perspective.'

Interdisciplinary studies promote collaboration between diverse disciplines. They blend perspectives from different disciplines and thus help to integrate knowledge. Interdisciplinary studies promote critical thinking. They encourage learners to use multiple lenses to study an issue. Thus multiple perspectives are got and the issue can be understood in totality. Transferable skills such as analysis and synthesis, problem solving, decision making, critical and reflective thinking are enhanced due to interdisciplinary courses.

Interdisciplinarity in Teacher Education

Teacher Education is largely interdisciplinary as it draws form Psychology, Sociology, Philosophy, Information Technology, Law and Management Studies. Bridging of disciplines fosters connections and helps to enhance the effectiveness of the teaching-learning process.

The present Two Year B.Ed programme of the University of Mumbai includes four interdisciplinary courses with one course included in each of the four semesters. A brief summary of the courses is provided in the table below

	Main Contents of the course			
Name of the Course	Theory	Practical Work		
Semester One:	Gender Perspectives, Gender Laws,	Analysis of textbook wrt gender		
Gender, School and	Factors affecting gender, gender issues	issues, study of depiction of		
Society	in society, Gender and curriculum,	gender in media, visit to NGO		
	role of NGOS, Women action groups,	working on gender issues		
	and international organizations.			
Semester Two:	Concept of Educational Management,	Analysis of school timetable,		
Educational	Organizational Perspective of	interviewing teachers regarding		
Management	Educational Institution, Organizational	absenteeism, crisis management,		
	Management, Human Resource	study of leadership styles ,		
	Management, Educational	action plan for decision making		
	Administration	in problem solving		
Semester Three:	Functions of Language,	Dialogue writing for		
Language across the	Multiculturalism, Language	multicultural classrooms,		
Curriculum	Acquisition Theories, Classroom	glossary development, exploring		
	Discourse, Reading and Writing	challenges in multi linguistic		
	across Content Areas, Language for	classrooms, interviewing		
	Specific Purpose	teachers, lesson planning		
Semester Four:	Understanding Inclusion, Nurturing	Case study of learner with		
Creating an	Inclusion, Policies promoting	special needs, interviewing		
Inclusive School	Inclusion, Curricular Issues with	teachers, visit to resource		
	respect to Inclusion, Inclusion in the	rooms for inclusive education,		
	classroom, Functionaries in Inclusive	exploring ICT for inclusion		
	Settings			

Bearing in mind the need to have meaningful transaction of Interdisciplinary Courses, the researcher undertook a study entitled 'An Analysis of Interdisciplinary Courses in the Two Year B.Ed Programme of University of Mumbai'.

Objectives of the Study

The study has the following objectives

- 1. To study the opinions of B.Ed student-teachers towards Interdisciplinary Courses included in the Two Year B.Ed Programme
- 2. To identify approaches that enhance the effectiveness of interdisciplinary courses

Methodology and Tools

The study is a mixed method study. The quantitative aspect of the study includes analysis of opinions of B.Ed student-teachers towards the four interdisciplinary courses that are part of the Two Year B.Ed curriculum of University of Mumbai. The qualitative aspect includes identification of effective approaches from learners' perspective. The study also includes an analysis of the four courses to identify the components that ensure interdisciplinarity.

The tools used are an opinionnaire and open response questions for student-teachers.

Sample

The respondents to the above mentioned tools are 27 Second Year student-teachers of a selected B.Ed college. They have completed the four interdisciplinary courses selected for the study. The sample is purposive in nature. There is balanced representation from Arts, Science and Commerce streams with respect to the academic qualifications of the respondents.

Main findings of the Research

The data was collected via Google Forms and analyzed in terms of percentage. The main findings of the research are given below.

- 66.7% respondents strongly agreed while 33.3% agreed that the interdisciplinary courses in the Two Year B.Ed curriculum are life related.
- 2. 59.3% respondents strongly agreed and 40.7% agreed that the interdisciplinary courses promote connection across different disciplines.
- 3. 48.1% strongly agree and 44.4% agree that these courses help to solve problems that come in daily life. 7.4% disagreed with the statement.
- 4. 44.4% strongly agree and 48.1% agree that these courses have helped to have better internship experience. Two students (7.4%) felt that these courses did not influence their internship programme.
- 5. 29.6% strongly agree and 66.7% agree that interdisciplinary courses enhance cognitive skills. One respondent (3.7%) disagreed with this statement.
- 6. 29.6% strongly agree and 66.7% agree that interdisciplinary courses influence the affective domain. One respondent (3.7%) disagreed with this statement.
- 7. 11.1% strongly agree, 74.1% agree and 14.85 disagree that interdisciplinary courses enhance the psychomotor domain.

8. 63% strongly agreed and 29. 6% agreed that the interdisciplinary courses are easy to understand while 7.4% respondents disagree that these courses are easy to understand.

The respondents were asked to select which approaches they found suited to transaction of interdisciplinary courses. The responses are tabulated below

Approach for transacting the course	Number of students	percentage
Theory lectures	11	40.7%
Field visits	12	44.4
Implementation of action research	8	29.6
Interaction with experts	14	51.9
Case studies	8	29.6
Small group discussions	13	48.1
Co-operative learning	10	37

The above table shows that the highly preferred approaches are interaction with experts, small group discussions, field visits and theory lectures. This shows that learners have benefited from cross disciplinary experiences. While teacher-educator's inputs are valued, the inputs from experts and field visits are also beneficial.

An open ended question sought students' responses to how the interdisciplinary courses have benefitted them. The most frequent responses are listed below. The analysis is given course-wise

Interdisciplinary course on Gender, School and Society

- Interdisciplinary courses have changed gender perspectives. Students have become more sensitive towards gender issues.
- Students have become aware of issues concerning transgender persons.
- The topic on Gender Laws has helped to gain applicable information.
- Students reported that they are now aware of various schemes for gender equity. The knowledge of NGOs working in this field was also useful.
- Bias and gender stereotypes are now examined more carefully.

Interdisciplinary course on Educational Management

- Students have opined that this course helped to understand different educational boards and this helps during decision regarding their career path.
- The course has helped to understand the interconnectivity between various aspects of the educational system.

- The course has helped to develop life skills that can be applied in school situations.
- The course helps to understand organizational climate and organizational culture and this is useful during internship.

Interdisciplinary course on Language across the Curriculum

- The course has increased the awareness of importance of language in learning.
- Classroom communication becomes more effective.
- Importance of tools like glossary, language register is understood.
- The course has helped to keep student's linguistic background in mind during classroom interaction.

Interdisciplinary course on Creating an Inclusive School

- Awareness of policies for inclusion have enhanced knowledge
- Sensitivity towards differently abled learners has increased
- Strategies for assistive learning are learned.
- The course has helped to formulate individual education plans.

Based on the responses of the student-teachers and a general discussion with them regarding interdisciplinary courses led the researcher to make some suggestion to enhance the effectiveness of these courses.

Suggestions to enhance interdisciplinarity in Teacher Education

- Experiential Learning: Activities should transcend the walls of the classroom and be fluid enough to reach the community. Interactions must be conversational where prospective teachers use open communication channels that foster exchange of ideas. Visits to NGOs working for gender inclusion and visits to schools following healthy inclusive practices can bring about experiential learning. Some of the internship activities could include conducting remedial classes for learners with learning difficulty. Interviewing Principals or Supervisors of schools will help to make Educational Management more practical.
- Action Research: Research forms an important dimension of interdisciplinary courses.
 Students should explore different perspectives through action research programs. For example, a study of how gender stereotypes affect learning, analysis of curricula and textbooks with respect to gender issues, a study of learner's linguistic background and its relationship to learning can be carried out so as to make interdisciplinary courses

more relevant. Student -teachers can try different actions and see their impact on the learning situation. A group of students did carry out an action research where they carried out remedial teaching on a one-to-one basis. The action helped the student-teachers to gain practical insights to inclusive education.

- Capitalizing on the Internship Experience: Work based Learning (Internship in case of Teacher Education Programmes) should be explored as a platform to make interdisciplinary courses more meaningful. For example, exploration of gender based issues in the classrooms can be done by interviewing school students. The course on Inclusive education is closely connected to classroom situation and hence during internship prospective teachers must engage in remedial programmes and interact closely with the special educators and counsellors on the school premises. The course Educational Management is better explored during the internship as students can study the patterns of educational management within the internship school. A diverse classroom with students from varied linguistic groups is a suitable place to explore the interdisciplinary course Language across the Curriculum.
- Ubiquitous Learning: Ubiquitous learning is an everyday learning environment that is supported by mobile and embedded computers and wireless networks in everyday life. (Ogata et al)². Real life experiences are augmented with virtual experiences. Learning can be customized according to learner's goals, interests and needs. In case of interdisciplinary courses, this type of learning can include social media, specially designed websites wherein learners learn from one another, from experts, from research studies, websites of organizations and other such sources. Each learner has a different learning path and this cannot always be included while designing classroom experiences. In order to give the learner enriched learning experiences suited to their own needs, ubiquitous learning becomes very useful. For example, exploration of websites of various schools gives an idea regarding their management styles. Exploration of websites of Woman and Child Welfare Ministry augmented the content of the course Gender, School and Society.
- Challenge Based Learning: Challenge Based Learning is a collaborative learning experience where experts, teachers and students work together to learn about compelling issues, propose solutions to real problems and take action³. This approach is

interdisciplinary, collaborative and application based. In Challenge Based Learning a topic is explored through lenses of multiple disciplines. Thus natural connections between disciplines (which may not be otherwise evident) are appreciated by students. This approach is more useful when teachers of different disciplines come together. Experts from the field can also be included to give enriched experiences to students. For example, a special educator or a counsellor can be involved in the course of Creating an Inclusive School. The expertise of a social worker or lawyer can be sought for the course on Gender, school and Society.

Interdisciplinary learning is the key to success in today's complex and networked world. It lays the foundation for lifelong learning and helps learners to look at the potential of different disciplines to solve problems and address issues.

References

- Klein J.T and Newell William (1998), Advancing Interdisciplinary studies, New York
- Robert Seal (Ed), Encyclopedia of the Sciences of Learning, 2012 Edition. Retrieved from https://link.springer.com/referenceworkentry/10.1007%2F978-1-4419-1428-6_224
- 3. Challenge Based Learning: A Classroom Guide, Retrieved from https://images.apple.com/education/docs/CBL_Classroom_Guide_Jan_2011.pdf

Documents

Curriculum of Two Year B.Ed Programme, University of Mumbai, Revised in 2017

8. Study of Understanding, Reasoning and Regulation of Emotions among Adolescents

Dr. Mabel Pimenta

Principal, Pushpanjali College of Education, Papdy, Vasai.

Meaning of Feelings and Emotions

Feelings may be simple body sensations in general sense or what one feels in any part of the body. Sometimes feelings are associated with emotions. It refers to an inner body experience that a person gets due to energy associated with emotion. Feelings are rapid as compared to emotions and thought since they are like sensations. In short feelings can be identified whereas thoughts may not be identified always, i.e. unconscious thought.

From the perspective of common man emotions and feelings have same meaning. But according experts' emotion is a broader term which includes the situation, the understanding or perception of situation and the feeling related to the understanding of the situation. Emotions are originated from the brain the level at origin is unconscious whereas feelings provide a conscious experience to human beings. Emotion is an anticipatory action of feelings which is the result of internal expression. Emotions are universal since they are responses to environmental stimuli. Feelings are long term learned response to the culture in which human grows.

Rationale for the study

The detailed review of the studies conducted related to emotional coaching, pertaining to students at various levels has led to the rationale for the present study as follows:

- In present system of education, students are trained in academic skills, but not trained
 to handle emotional situations. In these situations, teachers can play important role by
 nurturing emotional competencies which ensures academic achievement.
- While passing through the phase of mental stress during adolescence, students need
 emotional stability to overcome conflicts and frustration. Acquisition of greater
 emotional control and social skills help adolescents resolve conflicts peacefully. Thus
 incidents of violence destroying self or others can be avoided.
- To deal successfully with current issues of adolescence like increasing permissiveness, inset of puberty at an early age, access to internet, addiction etc. one has to utilize his

- emotional abilities like regulation and management of emotions, which is the need of the hour. Therefore emotional coaching has to become part of the curriculum.
- If students acquire emotional competencies in school and colleges, it leads the way to be successful in career. A professionally competent person having adequate level of emotional intelligence can deal with his owns self and others in work situations.

This range of models proposes mutually conflicting ways of locating emotion within the general frame of the mind. For the present study the following two aspects of emotions are considered-

Understanding and reasoning about emotions.

According to Mayer, Caruso (2000)¹, This aspect of Emotion involves perceiving the fairness underlying specific emotions. It means to understand that anger arises when justice is denied or an injustice is performed against one's own self or close ones. Recognizing and analyzing the sequence of emotions that emerge from perceptions are important tools in overcoming negative responses to emotions.

The regulation of emotion in the self and others

According to Mayer, Caruso (2000)¹, the highest level in the hierarchy of Emotional skills is the management and regulation of emotions. The factor refers to the ability to connect with or to disconnect from an emotion; depending on its usefulness in any given situation. This facet facilitates social adaptation and problem solving.

Need for the Study

Adolescence creates difficulties for many families, because no one knows the enormous changes that teenagers are going through. Parents need empathy to remain understanding when hormonal upheaval turns adorable kids into unpredictable rebels. Development of emotional intelligence improves their self-esteem and promotes a more positive attitude toward their education.

Education plays a crucial and formative role in the development of children. An important aspect often overlooked is that, in the process, school can induce mental health problems. It is believed that through education all round development of an individual takes place. However, at the same time undue importance is given to cognitive development and the emotional development is totally neglected. Educationists forget that academic intelligence offers virtually no preparation for the turmoil or problems. Therefore, it is observed that IQ

offers little to explain the different destinies of people with roughly equal promises, schooling and opportunity.

The thinking is also reflected in the 'National Curriculum Framework for School Education' (2000). This document points to the deficiency of emotional literacy. It suggests that education for promoting emotions needs to be recognized as an essential element of the educational process in the classroom and therefore nurturance of emotional intelligence becomes a prime concern for schools. In this investigation efforts are made to impart emotional education to adolescents so that there is development in their Emotional Intelligence. It was the felt need for the development of a sound Emotional Education Programme that led to the study.

The need of the study is strongly felt to develop the EI of adolescents so that they are able to successfully perceive their own emotions and those of others. A sound EI education programme will also be useful to bring about optimal utilization of emotions. It will enhance understanding of the emotions of self and those of others in order to bring about better interpersonal communications and relationships. Regulation of emotions will go a long way in bringing about peace in self, resolving conflicts within immediate environment and thus helping in the building up of a peaceful society. The development of the EI Programme for development of emotional intelligence would help in complementing the ongoing academic programmes, thus assisting in solving problems that students normally face at school.

Management of anger and tides of emotions will be beneficial in regulation of self-killing thoughts as well as killing of others. Teacher trainees will be benefited by the study in terms of class management as they will learn different activities of utilization and understanding emotions of teenagers.

Statement of the Problem

The present study is entitled as "Study of the Effect of Education for Emotional Development on understanding and reasoning of emotions and regulation of emotions in self and others of Secondary school Students"

Objectives of the Study

This study is undertaken with the aim to develop a programme for development of Emotional Intelligence of students of secondary school and to find the effect of this programme on the emotional intelligence of them.

The following specific objectives are:

To study the level of emotional intelligence of students of secondary school

- 1. To develop a programme for development of understanding and reasoning of emotions and regulation of emotions in self and others of students of secondary school.
- To study the effect of the developed program on understanding and reasoning of emotions and regulation of emotions in self and others of the students of secondary school

Independent Variable

The program for development for EI was considered as independent variable. This variable consists of activities pertaining to four competencies of EI

- 1. Activities organized to develop understanding and reasoning about emotion.
- 2. Activities organized to develop regulation of emotion in the self and others.

Dependent variable

Emotional Intelligence was treated as dependent variable. This variable consists of four competencies:

- 1. Understanding and reasoning about emotion.
- 2. Regulation of emotion in the self and others.

Methodology of the study

Development Research

Greeno, Collins and Resnick² (1996) underline a significant shift in the relationship between theoretical and practical work in educational psychology. They highlight the "Kind of research that includes developmental work in designing learning environments, formulating curricula, and assessing achievements of cognition and learning and, simultaneously, on efforts to contribute to fundamental scientific understanding" (p. 41).

In view of the above types of educational researches, the present study is a developmental research as well as an experimental research. Developmental Research because in this study the focus is to develop a programme titled 'Emotion Smart Programme' as Education for Emotional Development and Experimental Research because the study focuses on establishing the cause-effect relationship between the independent variable and the dependent variable. The cause, independent variable is 'Emotion Smart Programme', and the effect, dependent variable is Emotional Intelligence measured as Emotional Quotient.

Statistical Methods Used

Some basic statistical measures are appropriate in understanding the distribution of the variables involved, describing and analyzing data in a meaningful way. The basic statistical measures calculated for the study were Mean (M), Median (Med), and standard deviation (σ). These measures were calculated for understanding and reasoning of emotions and regulation of emotions in self and others of pretest and posttest.

The data was tabulated further and the following statistical tools were used for further analysis.

- 1. 't' test was used to find significance of difference of means between pre and post test scores of understanding and reasoning of emotions of students of secondary school.
- 2. t' test was used to find significance of difference of means between pre and post test scores of regulation of emotions in self and others of students of secondary school.

The analysis is done in two parts – Descriptive and Inferential analysis.

Descriptive Analysis: Descriptive statistics³ is the body of methods used to represent and summarize sets of data. They are used to describe the basic features of the data gathered from an experimental study in various ways. Various techniques that are commonly used are classified as:

- Graphical displays of the data in which graphs summarize the data or facilitate comparisons.
- Tabular description in which tables of numbers summarize the data.
- Summary statistics (single numbers) which summarize the data.

The following basic statistical measures were calculated for the study-

- 1. Measures of Central Tendency: Mean and Median
- 2. Measures of dispersion: Standard Deviation

Table 4.3

Basic Statistics of understanding and reasoning of emotions and regulation of emotions in self and others

	N	Mean	Median	SD
Understanding and				
Reasoning of Emotions				
Pre	226	43.88	45	11.24
Post	226	49.12	50	9.99

Regulation of Emotions				
In self and others				
Pre	226	40.5	41	10.84
Post	226	45.5	46	10.09
Total				
Pre	226	42.19	42	11.02
Post	226	47.31	51	10.04

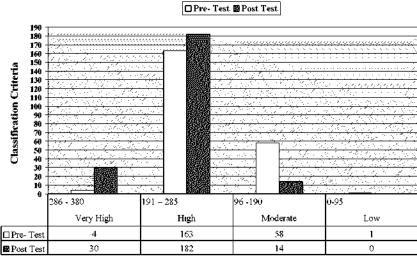
It can be seen from the above table that the mean of post test scores is higher than the mean of pre test scores for total EI and for understanding and reasoning of emotions and regulation of emotions in self and others.

Similarly, the median has shown increasing trend in post test scores as compared to pretest. Thus the average score of total EI and branches of EI is increased in EQ posttest.

Classification of scores of EI on the basis of Equal Distribution

Level of EQ	Classification Criteria	Number of students Pre- Test Post Test	
Very High	114 – 152	4	30
High	77 – 114	163	182
Moderate	39-76	58	14
Low	0-38	1	0

Classification of scores of EI on the basis of Equal Distribution



Level of EQ

EQ tested after Emotion Smart Programme results in increased number of students in high and very high EQ groups. The students in moderate EQ group are improved in their Emotional Intelligence and shifted to higher levels of EQ

Inferential Analysis

Inferential Analysis draws conclusions about a larger population based on a smaller sample which is assumed to be representative of the larger population from which it is drawn. The next step was to find the extent to which the EQ scores of posttest were different from that of pretest. The difference was calculated and the significance was decided using t' test.

H₁: There is no significant difference in Emotional Understanding of Secondary school students before and after ESP

H₂: There is no significant difference in Regulation of Emotions of Secondary school students before and after ESP

Table 4.14

Comparison of means of EQ scores and branches of EQ of students on pre and post test

(N = 226 and df = 225)

	Mean		S	SD	SI	$\mathbb{E}_{\mathbf{M}}$	t
	Pre	Post	Pre	Post	Pre	Post	
C	42.63	49.12	11.36	9.99	0.75	0.66	8.01 **
D	39.62	45.50	10.49	10.09	0.70	0.67	8.28 **

^{**} p<01

The null hypothesis H_1 and H_2 were rejected at 0.01 level since the 't' value was higher than the table value of t. therefore there is significant difference in the following emotional abilities of Secondary school. Students before and after the ESP

- Understanding & Reasoning about Emotion
- Regulation of Emotion in the Self & Others

That is to say the scores of the two branches of EI of secondary school students increase significantly due to ESP.

As per the results of t test all four Branches showed very high significant difference in pre and posttest. But among the four Branches, Branch B 'Utilization of Emotion' showed the highest increase in emotional intelligence.

Conclusion

As it has been indicated, emotions play an important role in our life, providing us with vital and potentially profitable information and experiences, and they are the main source of motivation that drives a subject to act in a certain way. Repressing emotions, people prevent themselves from experiencing their desires. On the other hand, emotions need to be well known and managed by reason; otherwise uncontrolled emotions can drive anyone to wrong and even dangerous choices.

Thus emotional intelligence is vital to the healthy psycho-social development of children. Educators also have realized the need for emotional literacy. Lack of emotional intelligence in children could be associated with a variety of internalizing and externalizing problem behavior. As this study focuses on emotional development of adolescent students, review of studies pertaining to importance of EI in education and vocation is discussed in the next chapter.

References

ce.htm

- 1. Cobb & Mayer, 2000, Emotional Processing: Emotional Concepts, Retrieved on 19.7.2008 from http://www.emotionalprocessing.org.uk/emotion%20concepts/Emotional%20intelligen
- 2. Greeno, J.G., Collins, A. and Resnick, L., 1996, Cognition and learning, In Berliner, D.C. and Calfee, R.C.(Eds.), Handbook of educational psychology (pp. 15-46), Macmillan, New York. Retrieved on 31st October 2008 from http://projects.edte.utwente.nl/smarternet/version2/cabinet/ico_design_principles.pdf
- 3. Saxsena N.R., Mishra B.K., Mohanty R.K., Fundamentals of Educational Research, Surya Publication, Meerut, (1996)

Bibliography

- Walter Last, (2003), The World Of Feelings And Emotions, Retrieved on 5.6.2008 from http://www.healthciencespirit.com/Feelings.html
- 2. Meanings of Emotions, Retrieved on 5.5.2007 from

The Merriam-Webster Online Collegiate Dictionary

 Encyclopedia, Retrieved on 5.6.2008 from http://www.britannica.com/EBchecked/topic/185972/emotion

- John Cottingham, (1985), The Philosophical Writings of Descartes Rene, Retrieved on 20.6.2008 from http://www.philosophypages.com/ph/desc.htm
- Robert Solomon and Errol Bedford (2002), Philosophical investigations of emotions,
 Retrieved on 27.4.2008 from
 http://web.abo.fi/fak/hf/filosofi/Research/Emotions/research.php
- 6. Klaus R. Scherer, (1994) Plato's legacy Relationships between cognition, emotion, and motivation, University of Geneva, Retrieved on 26.7.2008 from http://www.unige.ch/fapse/emotion/publications/pdf/plato.pdf
- Aristotle (1941). On the soul. In R. McKeon (Ed.), The basic works of Aristotle, New York, Retrieved on 14.6.2007 from http://www.unige.ch/fapse/emotion/publications/pdf/plato.pdf
- Merriam-Webster Online Search Retrieved on 23.6.2008 from http://www.merriam-webster.com/

11. Understanding Self for Personal Transformation

Dr. Sheetal S. Chaudhari

Associate professor, Pushpanjali College of Education, Papdy, Vasai.

Individuals usually identify their existence with their position in society, their friends and family. The needs and desires of body and the emotional and intellectual expressions of mind are also seen as important determinants of individual's existence. But we rarely contemplate on the real nature of our existence; to ask the question, 'Who am I?' It is impossible to change and become self-accepting if we are not aware as to who we are. Having clarity about self is empowering. It gives one the confidence to make changes.

Self awareness is all about knowing your own self. It is a process of better understanding who you are; knowing what you are capable of, why you feel what you feel and what governs your behaviour to make you behave in a particular way. Once we begin to understand this, we have the opportunity to change things about ourselves. This is the first step in creating a life that we want, as unique and separate individuals who are empowered to make changes, ready to build on our areas of strength and improve on areas of weakness. This awareness about self leads to formation of self-esteem.

Self-esteem - It is the collection of an individual's attitudes toward oneself. It reflects an individual's subjective evaluation of their own worth. Self-esteem includes beliefs about as well as emotional states of an individual. It is made up of all the experiences and interpersonal relationships individual has had in life.

Smith and Mackie (2007) defined it by saying "The self-concept is what we think about the self; self-esteem is the positive or negative evaluations of the self, as in how we feel about it."

Characteristics of high self-esteem

Individuals with high self-esteem are generally found to be self-confident people who set demanding goals for themselves. They are ambitious and seek to experience worthwhile challenges in life. They are capable of open, honest communications with others and have courage to express without a fear of being judged by people. Their lives are enriched with new encounters and positive opportunities.

Characteristics of Low Self-Esteem

Individuals with low self-esteem are found to be feeling negatively about self, about their actions and their future. They are generally fearful of change and seek safety of the undemanding and familiar. They see themselves failing before they begin and therefore are afraid to show their creativity and talent. Uncertainty about own thoughts and feelings make them anxious of the listener's response. They are dissatisfied with their lives due to the belief that they can never be as good as others.

Self-efficacy: While self-esteem is an overall determination of self-worth, self-efficacy is an internal evaluation of what one can achieve in terms of specific goals and objectives.

Self-efficacy can be defined as the levels of confidence individuals have in their ability to execute certain courses of action, or achieve specific outcomes (Bandura, 1977, 1982, 1997).

People's beliefs in their capabilities to produce desired effects by their own actions (Bandura, 1997)

Characteristics of High Self-Efficacy

Individuals with high self-efficacy believe in their ability to perform well. They are active and select best opportunities, set goals and establish standards, they manage the situation and neutralize obstacles, visualize success and solve problems creatively, learn from setbacks and limit stress.

Characteristics of Low Self-Efficacy

Individuals with low self-efficacy will believe that they lack the ability to perform well. They are passive and focus on personal deficiencies, avoid difficult tasks and develop weak aspirations and low commitment. They blame setbacks on lack of ability or bad luck and think of excuses for failing.

The primary purpose of this study is to find how B. Ed students perceive their own self. This study tries to find the levels of self-esteem and self-efficacy of students of Pushpanjali College of Education and also suggests strategies to enhance the levels of self-esteem and self-efficacy for personal transformation. The study also tries to find whether there exists any relationship between self-esteem and self-efficacy.

Title of the study

'Study of Self-Esteem and Self-Efficacy of B. Ed students'

Operational Definitions of terms used

Self-Esteem-Self-Esteem is a measure of how much one values, respects, and feels confident about oneself.

Self-Efficacy-Self-Efficacy is a person's belief about chances of successfully accomplishing a specific task.

B. Ed students- Teacher trainees undergoing two years B. Ed programme

Objectives of the Study

- To find the levels of Self-Esteem of B. Ed students
- To find the levels of Self-Efficacy of B. Ed students
- To find the relationship between Self-Esteem and Self-Efficacy of B. Ed students

Hypothesis of the Study

There is no significant relationship between Self-Esteem and Self-Efficacy of B. Ed students

Methodology

The present study is a Quantitative Study carried out using the Descriptive Research Methodology. The numerical data are collected using Self-Esteem Scale and Self-Efficacy Test. This study is aimed at determining the degree and direction of relationship between students' Self-Esteem and Self-Efficacy levels. It attempts to determine whether and to what extent, arelationship exists between these two variables.

Tools used for data collection

Rosenberg's Self-Esteem Scale (RSES) – A widely used tool in social-science research to measure self-esteem of individuals. This scale measures level of self-esteem by asking the respondents to reflect on their present feelings.

Self-Efficacy Test-A list of items dealing with individual's general feelings is provided as a scale. It indicates the amount of one's agreement with his ability to accomplish a task.

Sample of the study: 50 B. Ed students of Pushpanjali College of Education, Vasai Statistical measures used for data analysis

Mean, Standard deviation and Correlation Coefficient

Descriptive Data Analysis

Table No. 1 Values of mean (M) and standard deviation (SD) for Self-Esteem and Self-Efficacy (N=50)

	Mean	SD
Self-Esteem	29	4.399
Self-Efficacy	30.7	4.657

Table No. 2 Range for determining levels of Self-Esteem and Self-Efficacy (N=50)

Range of score	Group	Self-Esteem	Self-Efficacy
Above Mean + 1SD	High level	More than 33.40	More than 35.36
Between Mean + 1SD and Mean – 1SD	Moderate level	24.6 to 33.40	26.04 to 35.36
Below Mean – 1SD	Low level	Less than 24.6	Less than 26.04

Table No. 3 Classification of students according to levels of Self-Esteem and Self-Efficacy (N=50)

Levels	Self-	Esteem	Self-Efficacy		
High	7	14%	11	22%	
Moderate	38	76%	31	62%	
Low	5	10%	8	16%	

Interpretation- From the above table it can be seen that 14% students have high self-esteem, 76% students have moderate level self-esteem whereas 10% students have low self-esteem. Also 22% students have high self-efficacy, 62% students show moderate level self-efficacy and 16% students have low self-efficacy.

Inferential data Analysis

Hypothesis

There is no significant relationship between Self-Esteem and Self-Efficacy of B. Ed students

Self-Esteem	Coefficient of correlation	
Self-Efficacy	0.1604	

Interpretation- From the above table it can be interpreted that there exists weak but positive relationship between Self-esteem and Self-Efficacy of B. Ed students.

Findings of the Study

1. Number of B. Ed students having high and low levels of Self-Esteem is less whereas number of B. Ed students having moderate level of Self-Esteem is high.

- 2. Number of B. Ed students having high and low levels of Self-Efficacy is less whereas number of B. Ed students having moderate level of Self-Efficacy is high.
- There is weak but positive relationship between Self-Esteem and Self-Efficacy of B.Ed students.

Discussion

Self-esteem and self-efficacy can affect individual's self-concept. High self-esteem and self-efficacy will ensure high self-concept. Self-esteem and Self-efficacy beliefs can influence behaviours in the academics and workplace.

Today's B. Ed students are tomorrow's teachers! They are going to be influencing minds and actions of young students. Therefore efforts should be made to increase self-esteem and self-efficacy in B. Ed students. It is necessary to help them have a more positive self-awareness, to see themselves honestly and to like and accept their true self. Building self-esteem involves seeking to understand influential factors in one's life. YOU make your life what it is. It is necessary to make B. Ed students recognize that they are the source of their own choices and actions. This will help them to understand their worth and their ability to accomplish goals at their workplaces. Self-esteem allows creativity at the workplace and thus is a specially critical condition for teaching profession.

Students having low self-esteem need help to enhance skills in the areas that are important foe their self-esteem. It is imperative to empower and skill them to assess their achievements in a positive productive manner. This will create autonomous learners. They should be encouraged to develop support systems both within and outside of the classroom. This will help them to feel more confident to take risks in their learning.

Tips on Improving Self-Esteem

- Identify what is affecting your self-esteem.
- Avoid negative self-talk.
- Relate with people who accept and admire you.
- Learn to be assertive.
- Set yourself an appropriate challenge and set standards.
- Focus on your positives and try to improve on weaknesses.

People with low self-efficacy in a given domain may shy away from difficult tasks. They have low aspirations and a weak commitment to the goals. They fail to concentrate on how to

perform well. This kind of behaviour if displayed by a teacher, is detrimental for the development of her students. Therefore it is most essential for B.Ed students to have high self-efficacy. Then only they will be able to discharge their responsibilities as a teacher more successfully.

Tips on improving self-efficacy

- Awareness about influence of successful experiences and failure on self-efficacy
- Observing someone like yourself performing the task or handling a challenging situation
- Accepting constructive feedback and encouragement from your mentor
- Your emotions influence how you feel about your personal abilities- be confident, feel no anxiety, foster sense of achievement

A weak but positive correlation between self-esteem and self-efficacy of the B. Ed students involved in the study indicates that if self-esteem is high there is possibility of them having better self-efficacy.

References

- Self Awareness: University of Warwick
- https://warwick.ac.uk/services/counselling/informationpages/selfawareness/
- Bandura, A. (1997). Self-efficacy: The exercise of control. New York: W.H. Freeman.
- https://en.wikipedia.org/wiki/Self-efficacy (book)
- Schwarzer, R., & Jerusalem, M. (1995).Generalized Self-Efficacy scale. In J. Weinman,
 S. Wright, & M. Johnston, Measures in health psychology: A user's portfolio.
- www.sciepub.com/reference/220228
- Self-Esteem
- https://en.wikipedia.org/wiki/Self-esteem
 - What is meant by Self-Esteem
- https://brainly.in > Secondary School > English

15. Raising Awareness among Youth about E-Waste - A Call to Transform the World

Dr. Helen Jadhav

Associate Professor, Pushpanjali College of Education, Vasai.

Introduction

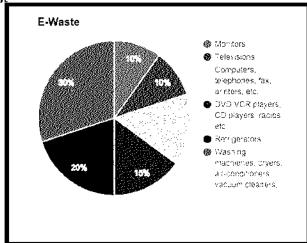
We are living in a very fast paced world where today's technology has sped up and human life is being evolved trying to cope up with the rapid environmental, technological, and societal changes and innovations which are taking place in different fields and in the world at large. The swift progression in Information and Communication Technology has led to an enhancement in the capacity of electronic products and remarkable evolution in its use. Automation, devices and artificial intelligence have captured the attention of people and led to craving for the new version of technological and digital devices. On the other hand, it results into reduction in the products lifespan. The outcome of transition to a more electronic and technological world is generating large quantities of waste electrical and electronic equipment (ewaste). The 'Swach Bharat Abhiyan' launched in India created a general awareness among the Indian population about waste management and has been getting positive response in separating wet and dry garbage. However, the population remains largely unaware of the concept of Electronic Waste or E-Waste, have been gradually building up to become a substantial problem. Initiatives being undertaken by various organization to create awareness about e-waste globally, the study to assess awareness levels of e-waste among common citizens reveals that a majority of Indians are unaware of this toxic waste stream. The companies producing electronic devices encourage customers to buy the latest version of products at smaller intervals, giving low price offer or exchange offers and making old devices incompatible with new software.

Concept of e-Waste and Electronic Pollution

Electronic waste, or e-waste, is a term for electronic products that have become unwanted, non-working or obsolete, and have essentially reached the end of their useful life. Electronic waste or e-waste describes discarded electrical or electronic devices. Used electronics which are destined for reuse, resale, salvage, recycling, or disposal are also considered e-waste. ¹

Sources of E-Waste

- ICT and Telecommunications equipment
- Office electronics
- Large Household Appliances
- Small Household Appliances
- Consumer Equipment
- Toys, leisure and sports equipment
- Lighting and Batteries
- Medical equipment
- Automatic dispensers
- Monitoring and control instruments



Electronic scrap components or e-waste, such as CPUs, contain potentially hazardous chemicals or harmful components such as lead, mercury, cadmium, beryllium, or brominated flame retardants. Unsafe ways adopted to recycle and dispose e-waste product involve substantial threat to well-being of living beings as well as drastically damaging the environment through air pollution, soil contamination, etc. The disastrous toxicity that can release from the water that picks up these different elements dripping of materials such as heavy metals and contaminants from landfills and incinerator ashes is another serious hazard.

Role of Education in creating Awareness about e-waste and its management

NGO's and private organizations play significant role in handling the global issue of e-waste management. They play a key role in the process of e-waste management i.e. assembling, dismantling, separation and exporting e-wastes for recyclers. In the present scenario, schools and teachers have manifold roles to perform to reduce e-waste by creating awareness. Teacher Education Institutions have a great role in invoking responsibilities towards the issue of e-waste and training the student teachers to create consciousness among the students. The key role of a teacher inside and outside the classroom is to instill the awareness about the environment issues especially E-waste and its management for protection. Awareness will help the students to reduce the overall use of electronic product, reuse, and resale and to recycle which is definitely a right step towards saving the planet earth. The present research is an attempt to create awareness among youth about e-waste, its hazardous effects and management of e-waste.

Research Questions:

The researcher had in mind the following questions

- How many students have knowledge about the concept of e-waste?
- Which are the areas of e-waste in which they need knowledge and awareness?
- How can the students be made aware in the areas of e-waste management?

In order to identify the answers to these questions the researcher selected the topic Raising 'Awareness among Youth about e-Waste - A Call to Transform the World '.

Aim and Objectives of the Study

The aim of the study was to create awareness among youth about e-waste.

The objectives were as follows

- To find out the level of Environmental Awareness among youth regarding E-waste and its management.
- To provide guidance to the youth to identify the various sources of e-waste.
- To create awareness about prescribed procedures for handling e-waste in an environmentally sound manner.

Research Methodology

Researcher selected action research for the study. Researcher tried to investigative the knowledge of youth about e-waste and its management. She also tried to develop practical solutions to create awareness about e-waste and its management quickly.

Tool

The researcher prepared a questionnaire to gather information from students of junior college to identify perception, attitude towards use and reuse of electronic products, ways of disposing electronic products, effects of e-waste etc. The questions were open response.

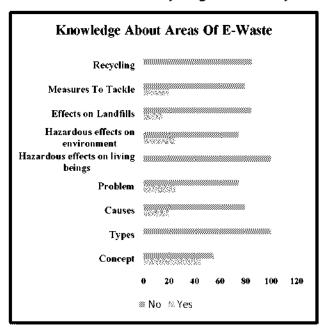
Population and Sample

The sample comprised of 60 students of junior college, selected by the purposive sampling technique.

Findings of the Pre Test

- Analysis of pre test scores revealed that more than 50% students were unaware about the concept of e-waste.
- All the students were unaware about the classification of the e-waste.
- Majority of the students i.e. almost 80% of students were not aware about the sources of e-waste but, 20 % students knew some sources of e-waste.

- More than 50 % students were unaware of the hazardous effects on environment. Few students were aware of some impacts of e-waste on environment.
- All the students were unaware of the hazardous effects of e-waste on the human beings.
 They were unaware of how e-waste affects the human health.
- As many students are unaware about the causes and the problem of e-waste, more than 50% of the students were unaware about the e-waste management by the government.
- All the students were unaware of the recycling of e-waste by the citizens.



Actions taken to create awareness

The pre-test findings show that the students were knowing the meaning of e-waste but unaware of the deeper meaning of it. They were also unaware about its types, sources, harmful effects of e-waste on life and on environment. Hence researcher conducted the following activities for the students of junior college with the help of student teachers.

The following activities were conducted to create the awareness among students.

No	ACTIVITY	OBJECTIVE	RESOURCE	DURATION
1.	Pre-Test	To find the students'	Test	35 Mints
		knowledge on		
		E-waste.		
2.	Power Point	To create awareness about	Internet, power	105 Mints
	Presentation	the scenario of E-waste.	point presentation	

3.	Videos	To make students aware	Internet	20 Mints	
		about			
		E-waste through videos			
4.	Case Study	To make the students aware	, power point	35 Mints	
		about the reality of e-waste	presentation		
		and the current situation.			
5.	Group	To know what are the	Groups	35 Mints	
	Discussion	students view on e-waste.			
6.	Exhibition	To give knowledge of e-	Charts	60 Mints	
		waste through models.			
7.	Post-Test	To find effectiveness of	Test	35 Mints	
		awareness programme			

Comparison of Findings after Implementation of awareness Programme

Sr. No.	Area	Pre-Test			Post-Test				
		Aware		Unaware		Aware		Unaware	
		NO.	%	NO.	%	NO.	%	NO.	%
1.	Concept	27	45%	33	55%	60	100%	0	0%
2.	Classification	0	0%	60	100%	60	100%	0	0%
3.	Sources	12	20%	48	80%	42	70%	18	30%
4.	Impact on environment	15	25%	45	75%	60	100%	0	0%
5.	Impact on human Beings	0	0%	60	100%	51	85%	9	15%
6.	E-waste management by Government	12	20%	48	80%	48	80%	12	20%
7.	Recycling of e- waste by citizens	0	0%	60	100%	42	70%	18	30%

Conclusion

Students got to learn many things about e-waste such as various types of e-waste, the laws and responsibilities of the government in reducing e-waste and various strategies to reduce and recycle e-waste. This e-waste awareness programme has made the students aware about the harmful effects of e-waste on the environment and on human beings. This awareness programme has given the knowledge of how to reduce the e-waste to the students. The students who were unaware about the e-waste became aware after the different sessions conducted to create the awareness. Hence these students can go in the society and spread the knowledge of e-waste. This will help in reducing e-waste.

Reference

- Agarwal, S.P. and Aggarwal, J.C. (1996) Environmental Protection, Education and Development. New Delhi: New Concepts.
- Best. J.W. (1982). Research in Education. New Delhi: Prentice Hall of India Pvt.Ltd.
- Kumar, A. (2009). A text book of environmental science. New Delhi: APH Publishing Corporation.
- Sharma R. A. (1993). Teacher education, Theory, Practice and Research. Meerut:
 International Publishing house
- Teacher's Role in E-Waste Management And Its Impact On The Environment http://oaji.net/articles/2017/488-1520069223.pdf
- Electronic pollution The upcoming environmental concern Envibrary
- https://envibrary.com/electronic-pollution/
- www.bostonelectronicwaste.com/go-green/what-is-e-waste

17. Influence of Problem Solving Strategy on Students' Achievement in Mathematics

Ms. Angelina Keith Nunes

Associate Professor, Pushpanjali College of Education, Vasai.

Introduction

Every second every moment there are changes occurring in the society which may be social or technological, leading to the development. Now nations are investigating existence of life in universe other than earth, conducting various social researches for betterment of life and if analyzed then in every bit of progress, mathematics is either background, link, or support, or vehicle, or tool. That means mathematics is one of the pillars of progress.

Mathematics is pure science with which each subject is connected and interrelated. Being abstract in nature, learning of mathematics needs high cognitive abilities, mathematical language and correlation with existing world. Understanding mathematics requires development of thinking and reasoning capabilities of the students and following a logical approach towards solution of a particular problem. Mathematics involves student's cognitive powers and it helps in concluding and interpreting various concepts and results. Mathematics is responsible for giving us insight, organization and necessary abilities for leading a happy and enriched life.

The study of Mathematics is helpful in developing various life skills. The teaching of Mathematics is aimed at developing appropriate abilities, right appreciation and correct attitude. There is a need for switching over to appropriate learning strategies so as to achieve the desired objectives of teaching mathematics to students; which will be of immense benefit to the society.

Students who truly understand or make sense of mathematical concepts are not just manipulating symbols or following rules invented by others to solve problems. They are applying rules and exploring solutions by using logical thinking and reasoning for finding solution.

Every stage in it is justified, every items is taken for granted as a problem solving question. Perhaps, because of this all-encompassing scope of mathematics; and because of its four orientation viz. as a science, as an art, as a language and as an instrument; mathematics is made inseparable part of school education ever since formal schooling began. In general,

studying the rules and ideas of mathematics can help us. Problem solving is at the core of human evolution. It is the basis for continuous improvement, communication and learning.

Problem Solving Strategies

According to **Lloyd and Keller** (1989), when instruction is broken down into small units from complex tasks, the learning becomes accessible for all students. The learning becomes more accessible because teachers will tailor lessons to the individual need of the student. In addition, the learning becomes accessible because the teacher will be able to interpret errors, give corrective feedback, select examples to illustrate concepts, and explain new ideas in several ways. Therefore, students will achieve more at mathematical problem solving (Lloyd and Keller (1989)).

Mathematical problem solving was said to be pioneered by **George Polya** (Higgins, 1997). He was able to develop a four-phase model of the problem-solving process.

This model involved the following steps

- 1. Understanding the problem,
- 2. Devising a plan,
- 3. Carrying out the plan,
- Looking back.

These steps could be explained through Young's (1924) similar problem-solving model.

The first step to understand the problem, involved an individual getting a clear idea of what information are being asked in the problem. The next step involved the planning stage where an individual decides which information will be useful in his search for an answer and what strategy one must use to get the desired result. In the third step, the person will try to implement his plan. If his first plan does not succeed, he continues to implement other plans until he is able to succeed. The last step, looking back, involved taking a step back and checking whether or not the result satisfies the data being asked in step one.

Need and significance of Study

National Curriculum Framework (2005) has stated that developing children's abilities for mathematization is the main goal of mathematics education. It includes a way of doing things and ability and the attitude to formulate and solve problems.

Understanding mathematics requires development of thinking and reasoning capabilities of the students and following a logical approach towards solution of a particular problem. There

is a need for switching over to appropriate learning strategies so as to achieve the desired objectives of teaching mathematics to students; Hence, status of mathematics learning during the elementary and secondary stage assumes very significant position in the overall education attainment of the students. The research paper will investigate the influence of both conventional and problem solving approach on mathematical achievement.

Title: A Study of Influence of Problem Solving Strategy on Students Achievement in Mathematics.

Operational Definitions

- 1. **Influence:** The difference between pretest and post test score.
- Problem Solving: For present study problem solving is a strategy used for teaching the content.
- Mathematics achievement: It refers to students' scores obtained from mathematics achievement test.
- 4. **Secondary school Std VI students:** Students studying in schools. For the present study, students studying in standard VI of the SSC Board are considered.

Methodology of the Study

The study adopted a pretest-post test of two group (experimental and control group) in a Quasi-experiment setting

Variables for present Study

Following are the variables for the present study.

Independent variables:

- Lesson plan prepared based on problem solving strategy
- Conventional method of teaching mathematics

Dependent variables:

Learning of mathematics as reflected in the scores on Achievement test in mathematics.

Objectives of the Study

- To prepare lesson plan using Problem Solving Strategy on selected topics of Mathematics of Std. VI.
- 2. To compare the influence of Problem Solving Strategy on students' achievement in mathematics.

Hypotheses: The following hypothesis in the null form was formulated with respect to the above objectives.

• There is no significant difference between the students' achievement in mathematics taught using Problem Solving Strategy and Conventional method.

Scope and Limitations

This study covers Std. VI students studying in SSC Board schools. The findings of the study can be useful for students of other type of schools and standards. Due to limitation of time and resources the study was confined to the following:

- 1. The study is limited to SSC Board schools only.
- The study is limited to Std. VI students only.
- The study is limited to specific topics selected from the syllabus of std. VI textbook of mathematics-Decimal Fractions.

The present study has been undertaken as an attempt to investigate the influence of problem solving strategy on students' achievement in mathematics.

In view of the above types of educational researches, the present study is an experimental research. Experimental research because the study focuses on establishing the cause-effect relationship between the independent variable and dependent variable. The cause, independent variable is Problem Solving and the effect, dependent variable is Mathematical Achievement.

Sampling: Sampling

In the sampling frame, English medium schools run by SSC Board were identified. Two sections of Std. VI from the local school were selected by random sampling method. Total 54 students were selected for the study.

Tool of the present study: Achievement test in Mathematics.

Preparation of Lesson Plan: Lesson Plan were prepared by the researcher on the topic Decimal Fractions.

Treatment: Throughout the instruction based on Problem Solving, the activities were carried out on Std. VI students in 2018 academic year. First Pretest was given to both Experimental group and Control group. The lesson plans were prepared based on Problem Solving Approach. The duration of teaching learning session was 30-minutes per day. During the treatment, students participated in a number of diverse instructional activities. Next, students

were introduced to problem-solving strategies. On the 10th day, pos test was given to both the groups i.e. experimental and control group. Their test results were compared and evaluated.

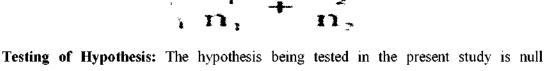
Analysis of Data: In the present study data analysis is carried out in two ways:

Descriptive Analysis: In the present study statistical measures of mean, standard deviation, graphical representations are used for descriptive analysis.

Inferential Analysis: In the present study researchers has used parametric tests.

Parametric tests: Parametric tests are the most powerful tools of testing the trustworthiness of the computed sample statistics. Given below is the detail of the parametric test used by the researcher for the analysis of the data.

t-test of significance: The t-test is any statistical hypothesis test in which the test statistic follows a Student's t-distribution under the null hypothesis. A t-test is used to compare the mean scores obtained by two groups on a single variable. The formula used by the researcher is given below:



Main Hypothesis: There is no significant difference between the students' achievement in mathematics taught using problem solving strategy and conventional method.

Table 1.1 showing Mean and Standard of deviation of Pre-test Scores of Experimental

Group and Controlled Group

Score	Groups	N	Mean	SD
Pretest	Experimental	27	7.19	5.23
	Controlled	27	5.69	3.96

hypothesis.

Table 1.2 showing Mean and Standard deviation of Post -test Scores of Experimental

Group and Controlled Group

Score	Groups	N	Mean	SD	
:	Experimental	27	9.83	5.33	
Post					
test	Controlled	27	6.28	4.71	

Hypothesis-A There is no significant difference between the Pre-test scores of Experimental Group and Controlled Group.

Table 1.3 Showing t Ratio of Pre-test Scores of Experimental Group and Controlled Group

STD	Groups	N	Mean	SD	t-ratio	Significant at
						0.05 Level
	Experimental	27	7.19	5.23		
6th					1.26	NS
	Controlled	27	5.69	3.96	-	

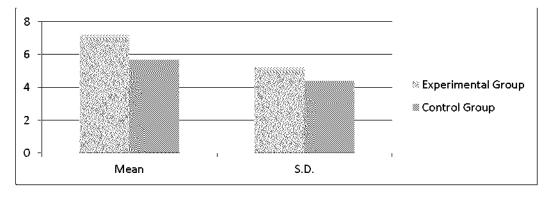
Interpretation

It reveals that 't' value (t=1.26) is not significant.

Hence, the null hypothesis is accepted.

Hence, there is no significant difference between the Pre-test Scores of Experimental Group and Controlled Group.

Fig 1.1 Showing Pretest score of Experimental Group and Controlled Group



Hypothesis- B

There is no significant difference between the Pre-test and Post-test Scores of Experimental Group.

Table 1.4 showing t Ratio of Pre-test Scores and Post-test scores of Experimental Group.

STD	Groups	N	Mean	SD	t-ratio	Significant at
						0.05 Level
_	Pre-Test	27	7.19	5.23	1.85	S
6th	Post-Test	27	9.83	5.33		

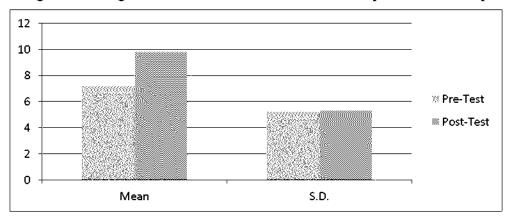
Interpretation

It reveals that 't' value (t=1.85) is significant.

Hence, the null hypothesis is not accepted.

Hence, there is significant difference between the Pre-test scores and Post-test scores of Experimental Group.

Fig 1.2 Showing Pretest score and Post test score of Experimental Group



Hypothesis-C

There is no significant difference between the Pre-test scores and Post-test scores of Controlled Group

Table 1.5 Showing t Ratio of Pre-test Scores and Post-test scores of Controlled Group

STD	Groups	N	Mean	SD	t-ratio	Significant at 0.05 Level
	Pre-Test	27	5.69	3.96		
6th	Post-Test	27	6.28	4.71	0.49	NS

Interpretation

It reveals that 't' value (t=0.49) is not significant. Hence, the null hypothesis is accepted.

Hence, there is no significant difference between the Pre-test Scores and Post-test scores of Controlled Group.

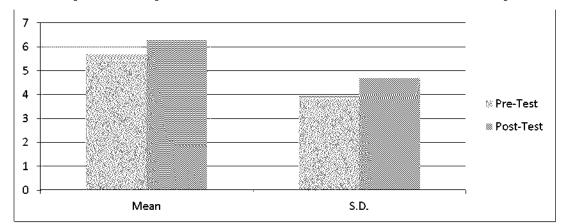


Fig 1.3 Showing Pretest score and Post test scores of Controlled Group

Hypothesis- D

There is no significant difference between the Post-test scores of Experimental Group and Controlled Group.

STD	Groups	N	Mean	SD	t-ratio	Significant at
						0.05 Level
	Experimental	27	9.83	5.33	2.59	S
6th	Controlled	27	6.28	4.71		

Interpretation

It reveals that 't' value (t=2.59) is significant.

Hence, the null hypothesis is not accepted.

Hence, there is significant difference between the Post-test Scores of Experimental Group and Controlled Group.

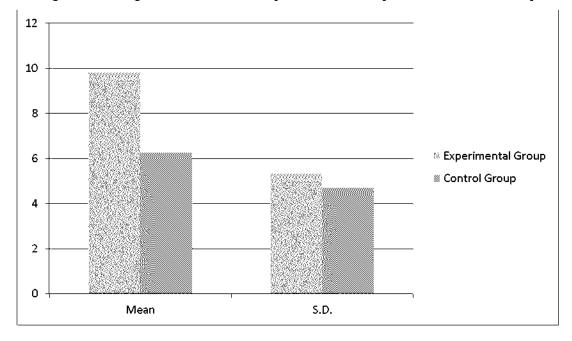


Fig 1.4 Showing Post test score of Experimental Group and Controlled Group

Conclusion: There is significant difference in the achievement of students in mathematics taught using Problem Solving Strategy.

Conclusion of the Study

- 1. Experimental and Controlled group showed no significant difference in the pre test scores.
- Experimental group showed significant difference in pretest and post test scores.
- Controlled group showed no significant differences in the pretest and posttest.
- Experimental group and control group showed significant difference in the post test scores.

Conclusion

The present experimental study has helped in the realization of the objectives with which it was started and following conclusions were drawn on the basis of analysis of data.

A careful examination of the results in Table 1.4 showed that Problem Solving Strategy
is effective in improving the Achievement of students in Mathematics. This means that
the group taught with Problem Solving Strategy exhibited better performance as
compared to group taught with Traditional method. So Problem Solving Strategy in
learning mathematics had positive effect on achievement of students in mathematics.

2. Teaching with Problem Solving Strategy has caused significant differences in achievement in mathematics as compared to teaching with traditional methods. It means that Problem Solving Strategy strengthen the cognitive structure by providing deep routed understanding of the concept and the relations. So it can be used effectively to teach mathematics. Hence, it is suggested that the teachers should use Problem Solving Strategy in teaching mathematics.

References

- Aston, S. (2009). How to Contribute to Student Teachers" Critical Development: A
 Higher Education Practitioner's Personal Account of a Move Towards a More Critical
 and Emancipatory Pedagogy Through Design and Technology. Educational Journal of
 Living Theories.
- 2. Bernando, A.B.I. (1999). Overcoming obstacles to understanding and solving word problems in mathematics. Educational Psychology.
- 3. Bitter, G.G., & Fredrick H. (1989). Techniques and technology in secondary school mathematics. NASSAP Bulletin.
- 4. National Council of Teachers of Mathematics (1989). Curriculum and evaluation standards for school mathematics. Reston, VA: Author.
- 5. Polya, G (1971). How to solve it. Princeton, NJ Princeton University Press.

Websites

1. www.researchpublish.com

(An Intervention into a Secondary School Mathematics Programmed

1 Allen, Gladstone A., 2 Crawford, Tazhmoye V.

International University of the Caribbean, Kingston, Jamaica)

2. stars library.ucf.edu/cgi/viewcontent.cgi?article=4668&context=etd

(Helping at-risk students solve mathematical word problems through the use of direct instruction and problem solving strategies by Lourdes Lopez B.S. University of Massachusetts, 1996)

24. Innovative Practices in Education

Ms. Nikita Rebello

Pushpanjali College of Education.

Introduction

If Mark Zukerburg, the founder of Facebook would have thought that being connected to school friends was just a small idea perhaps we wouldn't have had Facebook. If Brian Acton, the co-founder of WhatsApp would have thought that developing an application just not to miss call while at the gym was a small idea, maybe WhatsApp wouldn't have existed. And both are million dollar organisations. Basically no idea is big or small enough and if channelized properly they can be an innovation. Creativity is thinking the idea whereas innovation is taking the idea to the next level and implementing the idea. Dean Kamen quotes, "Every once in a while, a new technology arises, a problem is fixed and ideas turn into innovation".

Definition of Innovation

Innovation is the implementation of something new. Drew Boyd, a global leader quotes, "Innovation is anything that is new, useful, and surprising." The ideas have to be new, useful and magical. They have to appeal to the people.

Definition of Innovative teaching

"Any kind of teaching which addresses creativity and applies it to the methods and contents can be called as innovative teaching." (https://www.researchgate.net/)

The Current Scenario

"If we teach today's students as we taught yesterday's, we rob them of tomorrow." Times have changed and so has the system so our methodologies need to be updated.

- Modern-Day classrooms: When knowledge is not confined to the four walls of the classroom, then why should education be? It should go much beyond it. Everyone has access to technology. The role of teacher is shifted to "Knowledge facilitator." Earlier the education system was teacher-centric now it is student-centric.
- 2. Smart boards: White boards replaced black boards and smart boards are replacing white boards. So teachers need to be well equipped with the technological know-how. Training teachers how to use technology is also important.

3. Personalised learning: Personalization is the new norm or the go to factor. Everyone needs things that cater to their needs i.e. personalised things. So why not educational methodologies?

Gardener's theory of Multiple Intelligence is the solution. Howard Gardeners' Theory of Multiple Intelligences provides a flexible approach to good teaching. Gardner claims that all human beings have multiple intelligences. These multiple intelligences can be nurtured and strengthened, or ignored and weakened. He believes each individual has nine intelligences.

- a) **Verbal-Linguistic Intelligence** Those with verbal-linguistic intelligence have well developed verbal skills. They love reading and have a good vocabulary. They can articulate their thoughts easily. They show skill in expression in the form of writing stories, poems, creative essays. They are good at languages.
- b) Mathematical-Logical Intelligence This is an ability to think conceptually and abstractly, and capacity to understand logical or numerical patterns.(
 thusharahighschool.com/teaching-methodology)

Such people are good at Mathematics, Logic and Science. They may be good at computer programming. They like to solve problems and think logically. They like to experiment, analyse and come to conclusions.

- c) Musical Intelligence This is the ability to produce and appreciate rhythm and music. These persons have a knack for music; they can distinguish between sounds. They like singing, playing musical instruments or listening to music.
- d) Visual-Spatial Intelligence –Such persons have a good sense of colour, design and form. They like activities such as drawing, painting, embroidery or designing. They have taste for aesthetics and design.
- e) **Bodily-Kinaesthetic Intelligence** This refers to the ability to control one's body movements and to handle objects skilfully. Such people are active on the sports field or like to dance. They enjoy going on hikes or trips. They may also enjoy adventurous activities such as thrilling rides at a theme park, rafting, mountaineering etc.
- f) **Interpersonal Intelligence**—They form very good team members and are adaptable to the situation. They do not take much time to adjust to the people around them.

- g) Intrapersonal Intelligence Such people are reflective by nature, they like to spend time with themselves in a quiet setting and think about their feelings and experiences. They can accept themselves with their faults and strengths.
- h) Naturalist Intelligence Such people like to be in nature, they love animals and plants. They are concerned about the environment and its issues.
- i) **Existential Intelligence** –Such persons can go beyond material topics of life and look at the deeper meaning of life.

Innovative Practices

Let's see what these innovative practices are all about.

- 1. **Role play:** In a role-play, students are given the problem based scenarios and they come up with solutions. They step in the shoes of the given role thus learning empathy, expressing themselves. They are sensitized towards the problem. Indirectly they learn problem solving skills and how to collaborate with each other in the groups.
- 2. **Debate:** In a debate student can be given current affairs, researches. Hence they are updated and are aware of what's happening in the society. In debates, they learn to voice their opinions. They know when to speak and when remain silent. They learn linguistic skills. It is team work. This indirectly tells them how to live in a society.
- 3. Dance: Everyone enjoys a performance and if they are a part of it, it's an add-on. Plus, they are actively involved and knowledge can be grasped easily. This caters to kinesthetic intelligence.
- 4. **Songs:** Collaborating a topic on a song is a fun way to learn. All subjects can be taught using this approach. This focuses on musical intelligence.
- 5. Videos & Film Clips: Integrating relevant videos about a topic to make it interesting so that students get an insight of what is being taught.
- Story Telling: If an entire chapter can be narrated in form of a story, it would be interesting. This can be used for subjects like History and Language.
- 7. Games: Gaming is an entire zone in which students love to be a part of. So if topics are taught to them using games they are going to enjoy it. Also assessment in the form of games can be done.

Examples: The following are the examples of games that can be used in the classroom:

- a) Scramble: Rearranging the alphabets to form words based on the given theme. Here the student learns linguistic skills and the vocabulary is enhanced.
- b) Dumb charades: Names are given and student enacts it accordingly. This can be used in History to enact any historical leader and in language to enact a scene. This can be extended to Science for teaching various topics. This focuses on kinesthetic intelligence.
- c) Feel good factor: In this we can spread positive vibes and make others feel good about themselves by narrating all the positive things we adore about them.
- **d)** Housie: This can be taken for evaluation for all the subjects where in chits with answers are circulated, a question is posed and if the answer is there in the chit, students tick it off.
- e) Who am I? This is a paraphrased version of 'Name the following' wherein teacher poses a question and it has to be answered. This can be used as an evaluation method in all subjects.
- f) Word Search: The questions are asked and students are to find the words in the grid.

 This focuses on verbal-linguistic intelligence.
- g) Riddles: This is where questions are asked and students reply. This can be used to introduce a topic or for evaluation.
- **h)** Atlas: If teachers are going to have fun while teaching, students would definitely enjoy learning by such innovative techniques.

Also while taking activities, we should take into consideration, the students level and age as well as the board & area in which the school is located.

Merits

The merits of using innovative technologies are as follows:

- 1. **Rational Thinking:** Students think rationally when given a topic and respond accordingly.
- Sensitization: They are aware of the problems in the society and hence are sensitized accordingly. They develop empathy
- 3. **Energy Channelized:** Their energy is channelized properly.
- Long term retainment: It helps to understand a concept, grasp it, retain it for longer time & recall it better.

5. Values and Hidden Curriculum: Values are instilled in them indirectly as and when they learn. Thus the hidden curriculum is learnt by them indirectly.

Examples

The examples are as follows:

- 1. **Make use of technology:** Since information is available make the right use of it. Get hands-on on the technology and make use of it.
- Apps: Applications like YouTube help to see the virtual things via videos, Pinterest has
 many creative ideas, Facebook has information, Edmodo is the virtual classroom and
 the assessment application.
- 3. Massive Open Online Course(MOOC): MOOCS help to take a class on the go & learn at your own pace E.g.: Khan academy, Byjus, Udemy, Edx, UnAcademy, etc.
- Google: Google is the repository of information. Anything and everything is available on Google.
- 5. Blog, vlogs: These are online diary's or the are web-logs that contain relevant topics giving information about it. Vlogs are the video version of blogs
- **6. Teaching Aids:** Creative teaching aids helps to convey a topic easily and make it a fun learning experience for the students.

Areas for improvement

When project or assignment topics are given to the students, they should have a real life connect and thus should be practical enough and not obsolete. So students learn something out of but it in a fun way.

Conclusion

No technology can ever replace teachers. Dr. Brene Brown,a research professor quotes,"There is no innovation and creativity without failure." So be innovative, be fun-loving and spread the happiness and the magic of teaching. Thus if innovative practices are used as teaching methodologies, education sector is indeed going to be transformed massively for the better.

References

- Blended Learning in Action by Catlin Tucker
- 2. Multiple Intelligences: New Horizons in Theory and Practice by Howard Gardener

25. Unschooling in the Indian Context

Sr. Delicia S. Fernandes CCR.

Sandor, Vasai (W), Palghar, Maharashtra.

Abstract

Today's educational scenario is quiet alarming with its complex challenges and questionable relevancy. In this grim background, self-education or 'Unschooling' becomes the ray of hope. A 17-year-old girl doesn't have a class X or Class XII certificate but yet has excelled and obtained for herself a scholarship to the prestigious Massachusetts's Institute of Technology(MIT). The term 'Unschooling' was coined in 1970's and used by author and educator John Holt was rightly called 'Father of Unschooling'. Unschooling has less disadvantages than advantages. With quite a few adjustments, our own classrooms can be transformed into hubs of unschooling. This model could be one of the most conducive techniques in education to bring a transformative Change in the Indian context

"Education is not a preparation for life, education is life itself!" – John Dewey Contemporary Challenges in Indian Education

The main of Education is the all-round development of its students. Yet today's educational scenario is quiet alarming with its complex challenges and questionable relevancy. In the present Cyber Age, where a single microchip can enfold in itself millions of massive data banks, simply pressurizing students to mug up knowledge of the different subjects is like creating new 'Information Robots'. Instead of igniting the lamp of knowledge, we set ablaze their individualities through structured syllabus, rigid curriculum, stereotyped learning techniques, monotonous home assignments, meaningless subjects etc.... that fails to arouse the creativity and curiosity among its recipients. High dropout rates, lack of efficient and qualified teachers, lack of basic infrastructure, mass promotions, corporal punishments, exam stress, increasing suicidal rates among students etc. has created an alarming situation in Indian Education System.

"Birds don't go to a flight school"- Linda Dobson. So too, children are born with an innate quest for knowledge which they will discover sooner or later. The modern age children are much more intelligent than their predecessors, such as the Crystal, Rainbow or the Indigo children. These exceptionally gifted children are easily frustrated with our rigid educational system, thus stagnating them to mere chicks rather than eagles!

In this grim background, self-education or 'Unschooling' becomes the ray of hope.

Unschooling success stories in India

The Indian Express dated August 30th 2016, sparkled with a breaking news article-

"Unschooled Mumbai Teenager Malvika Joshi makes it to MIT", surprised the entire educational system. This 17-year-old girl doesn't have a class X or Class XII certificate but yet has excelled and obtained for herself a scholarship to the prestigious Massachusetts's Institute of Technology(MIT).

Another example is of Pune-based couple who decided not to send their children to school in the early 1990s, without aware of an "unschooling movement". Their eldest daughter, has completed a four-year diploma in eurhythmy, which she teaches in Pune, from the Peredur Centre in the UK. Their son, is preparing for his A-levels with a private tutor, and plans to apply for an undergraduate degree in the US. Their youngest son, has just graduated from Swaraj University, a two-year self-designed learning (SDL) programme on the outskirts of Udaipur. ¹

Dola Dasgupta manages the Unschooling in India group on Facebook, where parents seek each other out for support. It currently has 441 members. More recently, former engineer Abhijit Sinha has developed a similar self-directed learning model called Project DEFY (Design Education for Yourself). In Banjarapalya village, 100km from Bengaluru, Sinha created a "nook", a self-learning makerspace, in 2014. He has since set up another in Mangaluru and one in a refugee camp in Uganda. ¹

My interest in un schoolers brought me in touch with Aaryan Prakash Almeida residing in my own neighborhood at Vasai, who is the son of Mr. Prakash Almeida- Founder-Director of Knowledge Fountain and Mrs. Amita Almeida – Director of English Fountain who have voluntarily chosen to un school their kid in order to avoid school related stress and for a free and holistic learning. During my interview with them they spelled out the success of unschooling in

terms of a happy childhood and the resulting Cognitive Development. They aimed at making their child an autonomous happy self-learner and an explorer. They believe that parents should help their children to unleash their full potentials and create a positive learning environment at home itself.

Unschooling

According to Wikipedia, Unschooling is an educational method and philosophy that advocates learner-chosen activities as primary means of learning. Unschooling students learn through their life experiences such as play, household responsibilities, personal interests, curiosity, travel, books, family, mentors and social interaction. The term 'Unschooling' was coined in 1970's and used by author and educator John Holt was rightly called 'Father of Unschooling'.

Developmental psychologist Peter Gray makes a powerful case for giving children the freedom to steer their own learning. He advocates for the benefits of free play, using evidence and anecdotes from anthropology, psychology and history. In his book Deschooling Society (1971), the Austrian philosopher Ivan Illich contested the notion that learning is only possible through instruction: "School is the advertising agency which makes you believe that you need society as it is,"

Advantages of Unschooling

- Unschooling is Learner-Oriented Dynamic Education.
- It allows the child to develop according to his own pace.
- It enables them to choose the subjects of their choice and excel in it. John Holt rightly said- "If children are given access to enough of the world, they will see clearly enough what things are truly important to themselves and others and they will make for themselves a better path into the world than anyone else could make for them".
- Unschooling creates a stronger parental bond as the parents of the un schoolers are responsible for providing them with support, guidance, information and advice to facilitate their learning experience.
- Unschooling develops the cognitive skills.
- It develops their affective domain.

- Develops psychomotor skills they learn by doing themselves.
- It enhances their self –esteem.
- They develop a positive self-image.
- It reduces exam stress and anxiety.
- It gives an enlighten outlook towards life.
- It brings about an attitudinal change towards education quest for knowledge not just for marks.

According to the unschooling pioneer John Holt: "The anxiety children feel at constantly being tested, their fear of failure, punishment and disgrace, severely reduces their ability both to perceive and to remember and drives them away from the material being studied into strategies for fooling teachers into thinking they know what they really don't know".

Disadvantages of Unschooling

Unschooling too has its own drawbacks.

- The main drawback of this method could be the time investment by the parents, their interest and motivation. Not all parents are well equipped for this herculean task.
- Unschooling can lead to Academic excellence or can be an Academic disaster.
- Since children are naturally more inclined to pleasure seeking activities, unschooling may result in a lax approach to learning.
- Un schoolers have to face constant social criticism.
- It may lead to social isolation and make turn out to be introverts.
- Unschooling is not possible for higher education.

But overall, unschooling has less disadvantages than advantages.

Unschooling in the Indian Classroom a future possibility

With quite a few adjustments, our own classrooms can be transformed into hubs of unschooling.

Following are a few pre-requisites and strategies-

- The Teacher- student ratio should be just 1:10, so as to give individual attention to each and every child.
- The Teacher acts only as a facilitator, guide and mentor.

- The focus is on learning and not teaching.
- It should be learner- oriented and child-centered.
- Children learn by themselves and ask for guidance from the mentor as per their need.
- Students learn from life-experiences, books, movies, visiting places, interviewing or just meeting people, internet.
- The teacher should accompany them on their pursuit for knowledge.
- Self- study and discovery of knowledge should be the mode of learning.
- A wide range of subjects should be accessible to the students not just academic but also music, fine arts, cooking, fashion, computers, sports etc.
- School should be another home of happiness.
- Students should be encouraged to journal their academic journey.
- Modern means of communication should be permitted for the use of students such as, tabs, Computers, I-pods etc.
- Learning should be a tangible activity.
- Sufficient activities and time should be given for recreational activities such as hobby cultivation activities and entertainment to make learning a fun-filled activity and a joyful experience.
- Instead of upgrading the students to higher classes, teachers could be replaced annually in the order of their efficiency.
- Testing should be at the child's disposal, whenever he/she is ready for it after the completion of a task. Computerized self- testing method is more meritorious.
- This could solve the problems of misbehavior and stress among modern students.
- Whenever students reach academic maturity, they could apply for the exams conducted by the government for X etc. and obtain a recognized certificate or degree for their higher studies.

This model could be one of the most conducive techniques in education to bring about a transformative Change in the Indian context, thus solving many of the challenges mentioned at the start of this paper.

"Education is the most powerful weapon which you can use to change the world."

Nelson Mandela

References

- Meet the Unschoolers- Livemint (Sept.29, 2018), retrieved from https://www.livemint.com/Leisure/Meet-the-unschoolers.html
- Educational Challenges Faced by Children in India, (09 June 2016), retrieved from https://profugo.org/educational-challenges-faced-by-children-in-india.
- 3. Unschooling, retrieved from https://en.m.wikipedia.org/wiki/unschooling.
- What is Unschooling by Earl Stevens retrieved from https://www.naturalchild.org.earlstevens
- Survey of Grown UnschoolersI: Overview of Findings, (June 07, 2014), retrieved from https://www.psychologytoday.com/us/blog/freedom-learn/201406/survey-grownunschoolers-i-overview-findings.
- 'Unschooled' Mumbai Teenager Malvika Joshi makes it to MIT, (AUG. 30, 2016), https://indianexpress.com,article,India.



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Mehryar Adibpour

Faculty of Computing London Metropolitan University, Holloway Road, London

Dr. Ashaf Fetoh Eata

College of Art's and Science. Salmau Bin Adbul Aziz University. KAS

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Dept. of Chemistry University of Kashmir, Kashmir, India.

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Dr. P. A. Koli

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Dr. P. S. Buvaneswari

Asst. Professor of Commerce, University of Madras Chepauk, Chennai-05.

Dr. (CA) Subrahmanya Bhat K. M.

Principal, Department of Commerce, Swami Vivekananda College, Borim Ponda, Goa.

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Dr. Mabel Pimenta

Principal, Pushpanjali College of Education, Vasai.

Dr. Sheetal Chaudhari

Associate Professor, Pushpanjali College of Education, Vasai.

Ms. Angelina Nunes

Associate Professor, Pushpanjali College of Education, Vasai.

Dr. Agnes DCosta

Associate Professor, Pushpanjali College of Education, Vasai.

Sr. Delicia Fernandes

Assistant Professor. Pushpanjali College of Education, Vasai.



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3. Multidisciplinary Education in NEP 2020 - A Theoretical Overview

Dr. Mabel Pimenta

Principal, Pushpanjali College of Education, Vasai.

Abstract

In ancient India Multidisciplinary education was not an educational philosophy but it was a substantial way of knowing the world. During post-independence era the Union Government of India has founded three education commissions and two policies to prepare the proposals to modernize the education systems of India for the development of human resources and economic upliftment. After the National Policy of Education 1986, NEP 2020 was ready for implementation. Higher Education is an important thrust Area of NEP 2020. The Policy aims to transform higher education by making it more inclusive, holistic, and multidisciplinary in nature. The focus of NEP 2020 is on development integrated individuals well versed in knowledge and skills with a strong foundation of morals and ethics. This integrated approach can make students more marketable in global workforce. For setting up of multidisciplinary HEIs NEP 2020 suggests three approaches- collaboration, merger and strengthening of HEIs. The ultimate aim of NEP 2020 is to transform all HEIs into multidisciplinary institutions by 2030. The most important part of this new policy is the focus on Indian Culture which will lead to developing better citizens for the country.

Key Words: Multi-disciplinary Education, Holistic Education, Four Year Degree Programme.

Multidisciplinary Education in Ancient India

India has an ancient tradition of multidisciplinary education and holistic learning, from universities such as Takshashila and Nalanda, combining subjects across fields. Banabhatta's Kadambari, ancient Indian literary works is comprised of knowledge of the sixty four arts, thus holistic in nature. These sixty four arts include the following: fine arts- singing and painting, sciences - chemistry and mathematics, vocational fields- carpentry and clothes-making, professions-medicine and engineering, soft skills-communication, discussion, and debate. The very idea that all branches of knowledge and skills of creative human endeavor should be

considered arts has distinctly Indian origins. Students in Gurukuls were trained in sciences like medicine, mathematics and astronomy, social sciences such as law, politics. Education included fine arts and the art of warfare along with other vocational skills. Emphasis was also laid on ethics such as humility, truthfulness, self-reliance, discipline, and all other aspects of life. Multidisciplinary education was not an educational philosophy but it was a substantial way of knowing the world. In the era of 21st Century the term 'arts' is coined as 'Liberal Arts' by the Western Universities must be brought back to Indian education to lead the country into the fourth Industrial revolution.

History of Education Commissions and Policies in India

During post-independence era the Union Government of India has founded three education commissions and two policies to prepare the proposals to modernize the education systems of India for the development of human resources and economic upliftment.

- The University Education Commission (1948-49)
- The Secondary Education Commission (1952–1953)
- The Education Commission (1964–1966)
- National Policy of Education 1968
- National Policy of Education 1986
- National Education Policy 2020

Introduction of NEP 2020

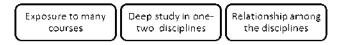
The objective of NEP is to promote holistic, experiential, discussion-based, and analysis-based learning. It also talks about a revision of the curriculum after long time. Change in structure 10 + 2 + 3 system to a 5 + 3 + 3 + 4 system. There is an effort to optimize learning based on the cognitive development of children. On July 29, 2020, the cabinet approved a NEP to introduce numerous changes to the prevailing education system of India. Appropriate and liberal, the NEP 2020 scripts a significant change in our education system.

Higher Education an important Thrust Area of NEP 2020

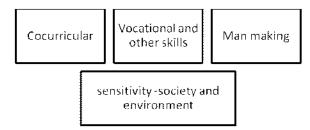
In Higher Education, due to lack of multi-disciplinary approach and flexibility with regards to subject choice, assessment and a skill-gap, dropout rate is also increasing in higher education institutions. Gross Enrolment Ratio (GER) is decreasing (26.3 percent the year 2018) and remained comparatively low in middle and secondary education. It means many students are

not enrolling in higher education. Hence, the policy mainly focuses on to minimizing dropout rate and increasing GER in higher education institutions.

What is Multidisciplinary Education?



What is Holistic Education?



Aims of Multidisciplinary Education in National Education Policy 2020

- To transform higher education by making it more inclusive, holistic, and multidisciplinary in nature
- To increase Gross Enrolment Ratio in higher education (including vocational education) from 26.3% (2018) to 50% by 2030.
- To develop well-rounded individuals who possess multifaceted functional capacities.
- To seek a good balance between knowledge and interpersonal attributes.
- To set up MERUs (Multidisciplinary Education and Research Universities) will aim to attain the highest global standards in quality education.
- To develop integrated individuals well versed in knowledge and skills with a strong foundation of morals and ethics. This integrated approach can make students more marketable in global workforce.
- To integrate Arts stream with STEM (Science, Technology, Engineering, and Mathematics) to increase the happiness and well-being of students.

Variety in Four Year Degree Programmes in Multidisciplinary HEIs

Students can achieve degree in one disciplinary or interdisciplinary area and/or in combination with two or more disciplines of their choice based on their interest and aptitude that are mentioned below:

- Major Degree- Disciplinary or interdisciplinary
- Minor Degree- Disciplinary or interdisciplinary
- Ability enhancement courses-such as languages
- Skill enhancement courses-such as fine art
- Value added courses-like life skills
- Research

Flexibility in Multidisciplinary Education

Due to variety in disciplines it has scope for flexibility. Students can opt for various combinations of degrees such as-

- Single major
- Double major
- Interdisciplinary Programme
- Disciplinary or interdisciplinary minors
- Minor stream relating to vocational education

Approaches towards Setting up of Multidisciplinary HEIs

A. Collaboration

Academic collaboration between institutions leading to Multidisciplinary education and research.

B. Merger

Single stream institutions can be merged with other Multidisciplinary institutions run by the same or different management

C. Strengthening of Institutions

It can be done by adding various streams and subjects needed for Multidisciplinary education

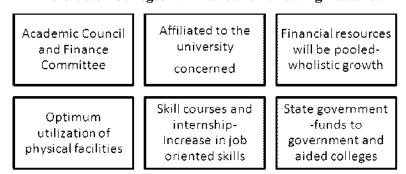
Let us understand the three approaches in detail:

A. Academic collaboration between institutions leading to Multidisciplinary education and research

1. Institutional Collaboration to Award of Dual - Major Degree: In this collaboration, single-stream can integrate their courses with those of nearby Multidisciplinary institutions to enhance own courses.

- 2. The Multidisciplinary Institutions Can Seek Collaboration with Single: stream institutions to enhance their existing programmes. This novel educational structural arrangement will strengthen the Multidisciplinary education. For example a B.Ed. course and a B.Sc. course in collaboration leads to award of dual major degree B.Sc. B.Ed. (Integrated Teacher Education Programme) HEIs need to submit proposals to offer dual-major bachelor's programme to the concerned regulatory body for approval. When two institutions collaborate it should be possible for the students and teachers to share physical and human resources, and ensure student and faculty mobility. The institutions will enter into written Memorandum of Understanding (MOU). The MOU must include the purpose and related provisions of collaboration such as planning of infrastructure, number of students' intake, administration, academic and research activities, tuition fees, etc.
- 3. Collaboration between Two Institutions to Award of Dual Degree: The institution which will enroll the students and complete the first degree is a host and the other institution from which the student will complete the second degree is a partner institution. Both the institutions need to take approval of the university, state government and/or regulatory bodies with respect to number of students, award of degree and modalities of transition from one institution to another. After seeking approval both the institutions can sign an MOU.
- 4. Cluster of Colleges: The existing colleges functioning in the same campus or in close proximity can form a cluster and transform into a multidisciplinary institution. In this restructuring single-stream institutions and multidisciplinary institutions with lower enrollment will benefit in terms of more dynamic courses and better facilities for all. The cluster colleges can offer courses in collaboration with universities, renowned government institutions, reputed industrial centers and also seek online and ODL courses.

The Cluster Colleges Will have the Following Features



B. Merger of HEIs

1. Under the same Management: Institutions functioning under same managements may merge for optimal use of the academic and physical resources and to offer multidisciplinary education.

The managing trust of the institutions need to submit an undertaking declaring that the institutions under its management will merge according to the rules of the State government, affiliating university and/or the regulatory body.

2. Under different Managements: Institutions functioning under different managements may merge as per the procedure of the Societies Registration Act or Trust Act, as the case may be. A private institution willing to merge with a single stream institution or multidisciplinary institution of another registered society, may apply, with the approval of the affiliating university, to the society of the institution to be merged with and become a part of it.

C. Adding New Departments

The Policy on 'Holistic and Multidisciplinary Education' focuses on pulling of courses and resources from a variety of disciplines and providing flexibility to students to choose courses. So that holistic individual development takes place in intellectual, social, physical, emotional and moral dimensions of the learners. The policy will make sure that 21st century competencies such as critical thinking, problem solving, communication, leadership, team work, creativity and innovation are fully developed and put to practice. The teaching-learning has to be linked to life, community and the world of work, environment across all disciplines, including STEM education.

Establishment of Department of Education in Multidisciplinary Institutions

The NEP 2020 visualizes establishment of one Education Department in colleges/universities/ HEIs to contribute to multidisciplinary and holistic education and to contribute to research and development in these areas.

Section 15 of NEP 2020 underlines three purposes:

- i. To conduct cutting-edge research in various aspects of education,
- ii. To support the actualization of all teacher education in multidisciplinary institutions and
- To contribute to multidisciplinary and holistic higher education across disciplines.

In stand-alone Teacher Education Institutes (TEIs)

All existing stand-alone TEIs must aim to become multidisciplinary HEIs. This will bring about a major transformation in the preparation of appropriately qualified teachers by ensuring high-quality training and exposure to teacher trainees for multidisciplinary education. Because teacher education requires multidisciplinary inputs, all programmes for the initial preparation of professionally trained teachers will be moved into multi-disciplinary HEIs in a phased manner. Currently, most TEIs are stand-alone institutions. This has led to the intellectual and professional isolation of teacher education and their faculty from the rest of the disciplines.

Education Departments in Multidisciplinary HEIs

Multidisciplinary universities and multidisciplinary colleges must also aim to establish departments in education, which aside from carrying out teaching and research, can also offer four-year integrated programmes, in collaboration with other departments such as Psychology, Philosophy, Sociology, Neuroscience, Indian languages, Arts, History, Literature, Science and Mathematics.

Challenges in establishment of Multidisciplinary HEIs

- Financial difficulties to pool corpus fund
- when both the institutions have different status-aided and unaided
- To come to consensus while preparing MOU
- Proximity of the stand alone institutions
- Appointment of faculty

Conclusion

The focus of this policy is to humanize the system of education with an emphasis on humanities-related disciplines using multi-disciplinary and inter-disciplinary approaches it enables a student entering a profession can learn some subjects of humanities. This policy has got an emphasis on vocational skills to meet the growing job needs and increase employability. This policy is considering the "Teacher Training" as a foundation. The flexibility and transferable credit banks in the present policy would take care of high dropout levels.

The most important part of this new policy is the focus on Indian Culture which will lead to developing better citizens for the country. With NEP 2020, it is expected to have innovation the education scenario in nearby future and this will take India towards becoming a superpower in the field of education.

References

- D.E. Nigam, M.P. Ganeshand S. Rana, "Review of The Expansion of Higher Education in India: Cardinal Concerns in the Traverse", Journal of Critical Reviews, vol. 7
- J.M. Kumar, "National Education Policy: How does it affect Higher education in India", IETE Technical Review, Vol.37
- M.M. Goel, "New Education Policy2020:Perceptions on higher education", Voice of Research,9(2), (2020)
- N. Malik, P. Malikand H. Singh NEP,2020: "An effort towards transforming India's education landscape parichay", Maharaja Surajmal Institute Journal of applied Research.,vol.491,(2021)
- R. Govinda, "NEP2020: A Critical Examination", Social change, 50(4), (2020).
- University Grants Commission, Guidelines for Transforming Higher Education Institutions (HEIs) into Multidisciplinary Institutions, Bahadur Shah Zafar Marg, New Delhi-110002

Websites

- https://www.dailyexcelsior.com/nep-2020-towards-multidisciplinary-higher-education/
- https://www.educationworld.in/why-nep-2020-prescribes-multi-disciplinary-education/
- https://www.telegraphindia.com/edugraph/news/nep-2020-flexible-multi-disciplinaryapproach-to-skill-students/cid/1845154
- https://www.news18.com/news/education-career/ugc-asks-colleges-to-implement-multidisciplinary-and-holistic-education-3993119.html

6. Perception of School Teachers Regarding NEP 2020

Dr. Agnes DCosta

Associate Professor, Pushpanjali College of Education, Vasai.

Abstract

National Education Policy (NEP) 2020 is considered a path breaking document in Indian education. Many recommendations contained in the document will leverage India into vibrant knowledge economy. The success of the same depends on many factors and teachers will play a vital role in actualizing the vision of NEP2020. This paper attempts to analyse the perception of school teachers towards NEP 2020 and decipher the steps being taken by teachers to contribute meaningfully towards the fundamental principles enshrined in the document.

Key words: NEP 2020, perception of teachers

Introduction

National Education Policy (NEP) 2020 envisions that the education system will transform India that is Bharat into 'an equitable and vibrant knowledge society, by providing high-quality education to all, and thereby making India a global knowledge superpower'. The Policy was announced on 29 July 2020 and over the past two years many programmes have been initiated to move towards the vision. Concerted and connected efforts by the government, apex bodies like Ministry of Education, NCERT along with efforts by educational institutions will play a major role in meeting this vision. Since teachers have a vital role to play, it is necessary to examine their perceptions and also study the efforts made by teachers to understand NEP 2020 and work towards its implementation. This paper is based on a study which includes the inputs received from teachers teaching in Secondary Schools.

Title of the Study

The title of the study is 'Perception of School Teachers regarding NEP 2020'.

Objectives

- 1. To study the efforts made by teachers to understand NEP 2020
- 2 To study the perception of teachers regarding moving away from rote learning
- 3. To identify the challenges that teachers face regarding the use of experiential learning
- 4. To study preferences of teachers regarding their continuous professional development

- 5. To ascertain the efforts made by teachers to ensure holistic, integrated, enjoyable and engaging learning
- 6. To identify steps that teachers intend to take up in order to put into action recommendations of NEP 2020
- 7. To ascertain the expectations that teacher have from their institutions regarding the actualization of NEP 2020

Methodology

The study is based on a survey conducted on school teachers and uses the inductive approach to research. Inductive research¹ involves collecting data relevant to the topic of interest. Once substantial data is collected, the researcher looks for patterns in the data and seeks to explain those patterns. Inductive research is exploratory in nature and hence it has objectives. However hypotheses have not been formulated as the study is just a preliminary exploration.

Tool used in the Study

The investigator has created a tool consisting of a checklist with a total of 27 items and containing the following sections.

- a. Teacher's efforts to understand NEP 2020
- b. Perception of teacher regarding moving away from rote learning
- c. Challenges faced in the use of experiential learning
- d. Preferences regarding teachers' Continuous Professional Development
- e. Efforts made by teachers for holistic, integrated, enjoyable and engaging learning
 The tool also had two open ended questions which sought information on
- i. Actions that teachers propose to undertake to meet the recommendations of NEP 2020
- ii. Teachers' expectations from their schools reading actualization of NEP 2020 The tool has not been standardized because the study is exploratory at present. With the preliminary findings obtained, the tool can be further refined and validated for wider circulation.

Sample

The sample consisted of 34 school teachers teaching in schools affiliated to State Board, CBSE and ICSE Boards. The sample includes teachers teaching Languages, Social Sciences, Mathematics and Science. Convenience sampling was used for gathering data. All teachers had between 2 to 10 years of teaching experience.

Findings of the Study (Note: Respondents Were Free to Choose More than One of the Indicated Options.)

- 1. The respondents were asked the means through which they keep themselves informed about the National Education Policy and its recommendations. Since one can be informed about the document from varied sources, respondents were permitted to choose multiple options. 41.2% teachers had attended seminars or discussions on NEP2020, 52.9% had read the document themselves. 50% respondents got inputs from social media. 32.4% said that they gained an understanding of NEP 2020 from their peers.
- 2. NEP 2020 recommends that education must move away from rote learning. The respondents were asked how they could ensure this shift. 61.8% said that the examination pattern needs changes. 55.9% felt that teachers need to be better trained in use of engaging methods. 73.5% said that use of critical thinking during teaching will facilitate a shift from rote learning. 64.7% said that textbooks must include content that does not emphasize rote learning. 88.2% teachers said that schools need to be better equipped so that there is a shift from rote learning.
- 3. NEP 2020 suggests use of experiential learning. The teachers were asked what challenges they experience in the use of experiential learning. 50% teachers said that there is lack of resources for meaningful experiential learning. 17.6% teachers felt that they do not have adequate knowledge of the proper use of experiential learning. 70.6% teachers said that the focus on marks is a big challenge to use of experiential learning. 50% teachers point out to large numbers as one of the hurdles in use of experiential learning. Lack of adequate time was cited by 64.7% teachers, 23.5% teachers said that learner diversity in the class can be a challenge while designing experiential learning. 52.9% learners said that the evaluation system is largely based on rot learning and hence this is an impediment to use of experiential learning.
- 4. NEP 2020 suggests that every year teachers must participate in at least 50 hours continuous professional development. Multiple means can help in continuous professional development and hence teachers were asked for their preferred choices to be professionally developed. 61.8% teachers preferred to attend courses or programmes in their own school. 61.8% teachers felt that they would like to use

- online courses to be professionally developed. 61.8% teachers were open to taking up action research to try new strategies in teaching learning. 29.4% teachers said that attending courses organised by government bodies would help in continuous professional development.
- 5. NEP 2020 emphasizes that learning must be holistic, integrated, engaging and enjoyable. The teachers were asked to share the means they use to ensure the same. Use of cross curricular pedagogic approaches like integration of art and sports in learning was reported by 47.1% teachers. 38.2% use game based pedagogy. 73.5% teachers emphasize correlation with other subjects. 20.6% report that they regularly take students on field trips. Only 5.9% teachers said that examinations are their prime focus 70.6% teachers report that while planning their lessons they incorporate higher order thinking skills.
- 6. Teachers were asked to share the steps that they intend to take up to put into action the recommendations of NEP 2020. This section invited open ended responses. The steps that teachers propose to undertake were analysed and collated area wise. A brief summary of the same is presented in tabular form.

Area of proposed action	Endeavours that teachers propose to undertake		
Teaching -learning process	integrate more of inquiry based learning		
	provide hands on learning experiences		
	integrate vocational subjects into the teaching		
	learning process		
	encourage exploratory learning		
	incorporate use of regional language or mother		
	tongue to facilitate learning		
	integrate real life experiences in teaching		
	incorporate game based pedagogy,		
Evaluation	incorporate stress-free evaluation like open book		
	test and student portfolio		
	shift from mark oriented performance to learning		
	oriented performance		
	focus on higher learning objectives promote		
	flexibility in evaluation		
Catering to learner diversity	Plan extensively for differentiated instruction		
Participation in Continuous	Attend programmes to be updated about trends in		
Professional development	education		
	Carry out action research		
Miscellaneous	Reduction of syllabus so as to focus on meaningful		
	learning of required topics		

- 7. The support of the institution is very important to make NEP 2020 a reality. Teachers' expectations from their institutions include
 - Well-equipped laboratories
 - Robust learning resources
 - Training programmes for teachers to be acquainted with emerging pedagogical strategies.
 - Shift of school ethos from marks oriented to learning oriented ethos
 - Provisions for more experiential learning
 - Focus on NEP 2020 while planning the annual school plan
 - Teacher student ratio must be suitable
 - Create benchmarks aligned with NEP 2020 and have time to time evaluation

Discussion

The findings of the study are discussed against the background of NEP 2020.

1. Teachers' Preparedness for NEP 2020

The actual implementation of NEP 2020 will be prominently seen after the revision of the syllabi which will be based on the National Curriculum Framework. However most teachers have already begun updating themselves and have read the NEP 2020 document, attended seminars and thus they are keeping themselves updated about the Policy. This is a positive sign as it is the teachers who will be instrumental in the implementation of NEP 2020.

2. Moving away from Rote Learning

More than 50% of the respondents have pointed out that better equipped schools play an important role in moving away from rote learning. They have categorically emphasized the need to have more critical thinking during the learning process. This must be accompanied by appropriate modification in the examination pattern and inclusion of textbooks that promote shift from rote learning. These observations of teachers are echoed in an analysis of various researches done by Violet Harada² where she has concluded that meaningful learning results from use of critical questioning, promotion of interactivity, helping students to negotiate in the direction of learning, learning by doing and integration of problem solving.

3. Use of Experiential Learning

Less than 25% teachers feel that learner diversity is a challenge to experiential learning. Also only 17.6% teachers felt that they do not have adequate knowledge of the proper use of

experiential learning. The major challenges that teachers face in the use of experiential learning is the lack of adequate time, large number of students in the classroom and the undue focus on marks due to the nature of the examination system. This means that teachers desire to include experiential learning and they also deem themselves skillful to use the same, yet factors like examination system pose a hurdle. The answer to this dilemma is contained in NEP 2020 itself, which categorically states that 'assessment will be more competency-based, promote learning and development for students, and test higher-order skills, such as analysis, critical thinking, and conceptual clarity.' If this is given priority, then it will be easier for teachers to focus on experiential learning.

4. Teachers' Continuous Professional Development

All teacher respondents have shown enthusiasm and readiness to undergo continuous professional development. This is a positive sign. While teachers prefer that such courses be conducted by their own institutions or through online means, the least preferred means for continuous professional development is courses conducted by government. This aspect needs to be further explored to find why teachers do not prefer courses conducted by the government agencies/ institutions.

5. Teachers' Efforts to Make Learning Engaging and Enjoyable

NEP 2020 recommends use of game based pedagogy, arts-integrated and sports-integrated education. Less than 50% of the respondents are using these approaches as of now. Only 20.6% teachers use field trips as learning experience. This implies that there need to be concerted efforts to encourage schools to integrate cross curricular pedagogical approaches as recommended by NEP 2020.

6. Teachers' Proposed Endeavours with Respect to NEP 2020

All the respondents have definite ideas regarding how they propose to actualize the recommendations of NEP 2020. It is necessary that schools support these efforts. Also such efforts can be given wider publicity on the school website so that other teachers may be enriched. NEP 2020 suggests that school clusters be formed to exchange resources. This may be also extrapolated to sharing ideas and best practices.

7. Teachers' Expectations form their Institutions

The results of the survey show that teachers are ready to implement recommendations of NEP but they expect the institutions to provide the required support. Infrastructure in form of

resources and laboratories and provisions to support experiential learning are the most prominent needs expressed by teachers. Proper coordination between the educational authorities and schools coupled with support from industry and society can go a long way in providing teachers with the basic amenities.

In conclusion it can be said that the research prominently echoes the fact that the respondents of the survey have a positive attitude towards NEP 2020 and they also have some good ideas to actualize the same. With proper support from schools and educational authorities, the vision of NEP 2020 can definitely be achieved.

References

- Sheppard Valerie, Research Methods for the Social Sciences: An Introduction.
 Retrieved on 14 Aug 2022 from https://pressbooks.bccampus.ca/jibcresearchmethods/
- Harada, Violet & Yoshina, Joan. (2004). Moving from Rote to Inquiry: Creating Learning That Counts. Library Media Connection. 23.
- 3. National Education Policy 2020, Ministry of Education, Govt of India.

8. Academic Bank of Credits for Nurturing Holistic Multidisciplinary Education

Dr. Sheetal Shailesh Chaudhari

Associate Professor, Pushpanjali College of Education, Vasai.

Abstract

Autonomy in India's higher education should not remain restricted to the limited academic freedom academic administrators and teachers enjoy. It has to reach the students in the form of flexibility of courses, adequate time to develop skills and opportunity to engage in the activities of choice. Intra and inter institutional mobility to create integrated campuses can only be achieved by accumulation and transfer of credits earned by the students. Academic bank of Credits is a digital platform for collection, validation and transfer of credits.

Key Words - Academic Bank of Credits, multidisciplinary education

Introduction

Indian education system is on the verge of massive revamp. Implementation of National Education Policy 2020 is in full force. Right from fundamental structural modifications to the revision of various academic and assessment related aspects have been minutely examined and proposed.

UGC has always played a key role in evaluating teaching learning practices as well as bringing innovation in Higher Education. Introduction of various schemes from time to time has helped in quality assurance. Continuing the chain of quality initiatives to build transformative educational set ups UGC has introduced Academic Bank of Credits (ABC). All higher education institutes are expected to register for ABC.

Academic Bank of Credits

Academic Bank of Credits is a vital part of National Education Policy 2020. And it has significant place in the changing scenario. The objective to promote student centric education and implementation of multidisciplinary educational approach focuses on allowing the students to learn courses of their interest at their own pace. Academic Bank of Credits provides a platform for educators to manage and check the credits earned by students at multiple entry and exit points.

Academic Bank of Credits is a digital storehouse. It is developed by the National egovernance division of the Ministry of Electronics and Information Technology under DigiLocker framework. It contains information of the credits earned by students throughout their educational journey.

Academic Bank of Credits will be Responsible for

- Opening , validating and closing of academic accounts of students
- Carrying out tasks such as credit accumulation, credit validation and credit transfer/redemption

Academic Bank of Credits Scheme will be Eligible for

- All kinds of courses –certificate courses, diploma courses, graduation courses, postgraduation courses, Ph. D courses etc. which are recognized by UGC.
- The students can opt for offline, online and distance mode courses offered by government and institutes.
- SWAYAM, NPTEL, V-Lab and any such other schemes offering courses.

Features of Academic Bank of Credits

The validity of the credits will be seven years. So student can redeem these credits for admission to another university or rejoin the course to continue his learning within those seven years. The validity may vary if otherwise specified by a particular course. After a period of validity the credits will expire.

Academic Bank of Credits is likely to play very important role in increasing student autonomy. It will enable students to have greater and smooth academic mobility across the higher education institutions. Students will have more freedom in choosing their courses, it will enable them to exit the course at preliminary levels and yet earn a certificate or a diploma. Students can redeem their credits in future and rejoin the course in the same institution or any other institute to continue their education at their will. The institutes cannot keep students against their will.

Academic Bank of Credits will not accept any course credit document provided by the student. The institution where student is enrolled has complete authority and will be responsible for regular deposition of credits. Thus integrity of the credits is ensured. This will maintain the authenticity and confidentiality. Easy credit transfer and faster credit recognition are the most important features of ABC.

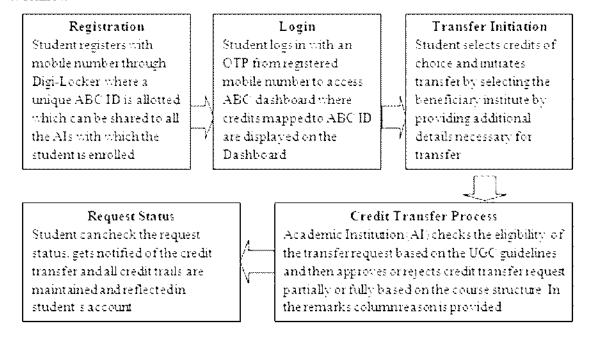
It is also perceived to help students by reducing language barriers and ability to pick best places and teachers for studies.

Responsibility of Academic Institutions (AIs)

Higher education institutes are expected to register on ABC (www.abc.gov.in). This will be closely monitored by UGC to enhance the reach of ABC programme. HEIs have a significant role to play to create awareness among the students and help them to open their ABC accounts. Institutional website will bear hyperlink to ABC URL on their home page. Nodal officers will be deputed for carrying out the responsibilities related to ABC.

Features available for the students:

Students will register on the ABC by logging in at www.abc.digilocker.gov.in for a unique ID. This same ID will be used for any course. So students will get to view total accumulated credits under one window which will make it convenient to redeem the same as per their requirements. Students will be able to view and monitor status and path of credits transfer. Workflow-



Thus the concept of Academic Bank of Credits will boost the efficiency of faculty in monitoring the student learning and also aid students in embracing the multidisciplinary educational approach seamlessly. It is going to be a big game-changer in transforming Indian education system- An access to education at anytime, anywhere and at any level.

References

- Balram Korde, 13th August 2021, 'What is Academic bank of Credits in Higher Education Institutions?' Retrieved from
- https://www.iitms.co.in/blog/what-is-academic-bank-of-credit.html
- Shikshapress, 9th August 2021, 'NEP: What is ABC Academic Bank of Credits?'
 Retrieved from
- https://shikshapress.com/what-is-academic-bank-of-credits/
- Public Notice issued by UGC dated 11 Dec 2019. Retrieved from https:// www.ugc.ac.in/pdfnews/2656827_NAC-BANK.pdf
- Student registration and credit transfer under ABC: User Manual⁵ 17th July 2021.
 Retrieved from https://manuu.edu.in/sites/default/files/2022-05/Academic-Bank-of Credits_User_Manual_V3.pdf.

10. Teacher Education Institutions as Hubs for Innovation

Ms. Angelina Nunes

Associate Professor, Pushpanjali College of Education, Vasai.

Abstract

Innovative practices help an educational ecosystem to grow. These could be practices in teaching-learning, evaluation, administration and management. Innovations in the teaching learning process helps students learn in an engaging and enjoyable way. National Education Policy 2020 emphasizes the need for research and innovation in education. This paper examines how an ethos for innovation has been continually nurtured at Pushpanjali College of Education, Vasai, Maharashtra. The paper is an attempt to identify elements that support an innovative educational landscape.

Key Words - Innovation, Autonomy, Growth Mindset

Introduction

A century ago, John Dewey quoted 'If we teach students of today like we taught yesterday then we rob them of their tomorrow'. The statement holds true even today. In a world where change is rapid and exponential, we need students who are critical thinkers, ready to take calculated risks and plunge into innovation. The National Education Policy 2020 has multiple references to innovation in education. One of the fundamental principles of the Policy recommends "a 'light but tight' regulatory framework to ensure integrity, transparency, and resource efficiency of the educational system through audit and public disclosure while encouraging innovation and out-of-the-box ideas through autonomy, good governance, and empowerment." Schools and institutions of Higher Education must promote innovations in learning. Departments of Education and Teacher Education Institutions, which play a crucial role in pre service and in service teacher education, should be centres where innovations are encouraged and new ideas are incubated. Pushpanjali College of Education, Vasai Maharashtra has always encouraged faculty and students to try new techniques in teaching-learning and evaluation. This paper showcases the attempts made in the past two years i.e from 2020-22 and also tries to identify what contributes to an educational landscape that nurtures innovation.

Innovative Practices Tried out in 2020-22

- i. In 2020, education saw a shift from offline to online mode due to the Covid19 pandemic and the lockdown. During this period, the college conducted many training sessions for student-teachers to help them acquire skills in online teaching. One of the digital platforms introduced was Thinglink which is an app that in creating interactive images and videos by adding tags. Tags can link to websites, social media pages, videos, maps, images, and audio. Student-teacher Ms Alisha Andrades created resources for Science using Thinglink and led the students into a constructivist learning environment. Her efforts were recognized when she won the first place for her learning resources at an inter institutional competition. The resource can be accessed at https://www.thinglink.com/scene/1429567961575718914.
- ii. In 2022, a team of three students Ms Jessica DMello, Ms Sophia Samuel and Sr Riya Baby showcased an innovative practice to teach Science through Blended Learning approach where they used Story Quest. Story Quest was where a story was used as base to learn. The story had activities embedded into it and learners had to complete the activities to go ahead with the story. The innovative idea won the team the first place at a programme organised by Homi Bhabha Centre for Science Education. The team's efforts are showcased at https://www.youtube.com/watch?v=LT5pjnIXDCI
- In September 2020, Mahatma Gandhi National Council of Rural Education and Dept of Education, University of Mumbai conducted an orientation for teacher-educators on VENTEL (Vocational Education Nai Talim and Experiential Learning). Student-teachers delivered lessons using Nai Talim approach. The students of the college tried innovative practices in VENTEL. In April 2021, student-teacher Kiran Salve showcased his efforts in sustainable waste management and won the first place at an inter-institutional programme. These were innovative ideas tried at community level to help in reducing and managing household waste. In October 2021, a team of four students showcased their efforts in VENTEL. (Link https://www.youtube.com/watch?v=Eas4ba2k9F0&t=61s)
- iv. The above are just three examples of how students have tried innovative ideas and refined the same over time. The further discussion attempts to identify how the college supports and nurtures innovation.

Identification of Areas Needing Innovation

Innovation is often the product of a felt need. One may sense a need or may sense that a particular task can be done in a more efficient way. Reflection of the same helps to identify where change is necessary. This is generally fostered through brain storming with students. Students' experiences, especially during internship, are very useful to find areas that require change.

Planning for Change

Once the area for change is identified then one must plan for change. This is done keeping in mind the ultimate goal to be achieved and resources available at hand. Faculty and students work together to plan. Plans are often tried out on a smaller scale and refined before the final try out.

Autonomy to students to engage in innovation

Innovation depends on autonomy. A non-threatening atmosphere, freedom to experiment, risk taking attitude, right amount of mentoring and reflection are factors that support innovation. Feedback is also very important. Students in the college are encouraged to participate in inter institutional programmes which invite innovative practices to be showcased. The three Cs of creative thinking, collaboration and creativity form the pillars of such efforts. Students are encouraged to persistently ask curious questions to develop solutions for a better future. All efforts are duly rewarded by felicitating students in front of their peers. The college blogs also showcase their efforts and achievements. This reinforces a growth mind set which fuels further innovations.

Role of Growth Mindset in Innovation

The college continually supports innovation by students and in this respect nurturing a growth mindset has been found to be effective. The idea of growth mind set was proposed by psychologist Carol Dweck. Dweck has described the growth mindset theory as a response to the self-esteem movement, which held that lavishing students with praise builds confidence that leads to improved achievement. One of her studies showed that praising students' efforts rather than their intelligence made them more likely to pursue more difficult challenges. Some of the strategies to create a growth mindset that contributes to an innovation supportive environment are

I. Valuing the Process over the Result

The process of innovation is more important than the result. The college encourages students to enjoy the process of innovation. If there is undue focus on the result then it may cause performance anxiety.

II. View Challenges as Opportunities

During internship, student teachers may face challenges. They are encouraged to view these as opportunities to try something new and this almost always results in innovative ideas.

III. Celebrate Growth

Every step taken forward is a moment to be celebrated. So whether an innovative idea meets the goal or not even of there is incremental improvement then it is an time to celebrate.

IV. Do not be Afraid to Experiment

No idea is considered insignificant. Every idea deserves to be tried out. Whether one succeeds or fails, there is always something to be learned. This is the philosophy the college encourages in case of innovative ideas.

Besides encouraging innovation the college also provides regular inputs in the form of workshops and interaction with experts. Student-teachers participate in training sessions organised by bodies such as Central Institute of Educational Technology (CIET). Need based Value Added Courses are organised by the college. Students then leverage the knowledge and skills got from such sessions and design innovative solutions to challenges.

Conclusion

NEP 2020 reiterates the need for schools to be centres of innovation. Teacher Education Institutes should work towards instilling zeal in student teachers so that they nurture a growth mindset that promotes innovations. Teacher Education Institutions can also be the hub for neighbouring schools to help them try out new ideas in education. Addressing learner diversity and promoting inclusion are areas where innovation is needed. If teacher- educators, student teachers and inservice teachers work in collaboration surely they will be able to find novel solutions to challenges in education.

References

- 1. How to Foster a Growth Mindset in the Classroom? Retrieved from https://soeonline.american.edu/blog/growth-mindset-in-the-classroom
- National Education Policy 2020. Retrieved from https:// www.education.gov.in/sites/ upload_files/mhrd/files/NEP_Final_English_0.pdf

15. Nurturing Digital Competencies among Teachers

Sr. Delicia S. Fernandes

Assistant Professor, Pushpanjali College of Education, Vasai.

Abstract

Teachers are the most precious asset in the educational world. The 21st century educator needs to be an all-rounder. Apart from the basic skills for teaching, the Gen-next teacher needs to be digitally competent. The teacher today is not just an instructor but also a constructor, facilitator and creator of e-content. A digitally sound teacher can create digitally sound students and global citizens. The National Education Policy (NEP) 2020, emphasizes the use of ICT in the field of education. The NEP aims at a high quality digital education system.

Key Words: Digital Competencies, NEP 2020, ICT, Educational Technology.

Introduction

"Highly effective teachers are worth their weight in diamonds because that's what they are. They sparkle, dazzle and amaze us with their artistry"- James L Casale.

Teachers are the most precious asset in the field of education that can revolutionize the entire education system. Today's educators are not just teachers but are expected to be all in all. Like the multiple hands of the Goddess Sarasvati, the 21st century educator ought to be a multitalented entity- a teacher, a mother, a guide, a guru, a manager, a scheduler, an artist, an entertainer, a fundraiser and the list is endless. Only when well equipped with these qualities, can a teacher in today's challenging era be truly effective in her profession or rather a vocation, as she navigates the academic journey along with her students through the turbulent waters of the educational oceans. Apart from all the skills and competencies for teachers spelt out by various commissions and policies, one of the essential competencies is Digital Competency.

Meaning

Digital Competency refers to the confident and efficient use of information technology for work leisure and communication.

Digital Technical Competency is a general terminology used to refer to the ability to use the ICT in a variety of fields.

Digital Competency for teachers can imply the effective and creative use of ICT in teaching learning process.

Need for digitally competent teachers

The gen-next educator ought to be digitally competent. Digital pedagogy is the convergence of technology and educational pedagogy. A digitally sound teacher can transform students into an effective workforce in the digital world of tomorrow. Today, we live and breathe in a digital era and only a digitally completed teacher can endure the stress and strain of the modern education system. Technologies like Artificial Intelligence and Cloud Computing are initiating drastic technological revolutions and the field of education can no longer be alienated or unaffected by this digital wave. Thus, teachers need to adapt themselves to this digital evolution and help their students to elevate their personal development trajectories and the digital footprint in the digital era. Teachers struggle at times to keep pace with this digital generation. Hence a digitally competent teacher can attain digital mastery to cater to the needs of the digital natives. The digital dynamic age of Information and Technology demands the digitally emigrant teachers to be not just skilled but competent enough to create and use these digital tools and platforms in her daily classroom teaching.

The inexhaustible resources especially in the field of education can revolutionize the entire educational scenario of a digital tomorrow. 'E' is the most essential keyword today in the digital world - email, e-book, e- library, e- learning etc. Today the role of a teacher is not just that of a mere instructor but that of a constructor, a facilitator and creator of a digital learning environment. Only a digitally competent teacher can make a huge difference in the teaching learning process and thereby enhance the teacher effectiveness of an ordinary classroom transforming it into an e-classroom in an e-world.

Significance in the light of NEP 2020

The NEP 2020 is a revolutionary policy that has given tremendous importance to educational technology. It emphasizes the use of digital technology in the field of education for building a digital India. The recent Covid-19 pandemic has given the momentum to this herculean task. ICT has heralded a paradigm shift in the educational world. NEP 2020, visualizes an Indian education system that will transform India into an equitable and a very vibrant society for the creation of high quality education to all.

NEP 2020, speaks about creating an autonomous body the NETF- National Educational Technology Forum to make available a platform for the unrestrained exchange of ideas on the use of ICT to enhance the teaching learning for assessment, for learning and administrative

purposes. Hence, teaching learning e-content needs to be developed. NEP also advocates technology based educational platforms such as DIKSHA and SWAYAM in order to enable e-content developers to create user friendly and quality content in order to make education available in remote inaccessible areas for online educational portals are also advocated by the new education policy.

NEP 2020 makes some recommendations key initiatives in order to promote digital learning. These can be a reality only if the teacher himself/herself is digitally competent. The guidelines provided by NEP need to be followed to help build digital competencies in teachers.

One of the recommendations is that 'an autonomous body, the National Educational Technology Forum (NETF), will be created to provide a platform for the free exchange of ideas on the use of technology to enhance learning, assessment, planning, administration, and so on, both for school and higher education.' A platform like this will be extremely beneficial as it will help to have a robust exchange of ideas. The Policy also recommends that agencies like NETF, CIET, NIOS, IGNOU etc. should conduct pilot studies to evaluate the benefits of online education.

The DIKSHA platform is already a vibrant platform where teachers can access many learning resources in form of Open Education Resources. Agencies like Central Institute of Educational Technology (CIET) regularly conduct training sessions for teachers to make them digitally competent. More awareness about such programs is necessary for teachers so that they can leverage the benefits of technology in teaching.

NEP suggests that 'there is a need to invest in creation of open, interoperable, evolvable, public digital infrastructure in the education sector that can be used by multiple platforms and point solutions, to solve for India's scale, diversity, complexity and device penetration.' If Private Public Partnership is encouraged in this respect then one can overcome many barriers such as connectivity issues or lack of devices and ensure that even teachers in remote areas are able to use technology to the best possible level. The Policy rightly points that the digital divide needs to be addressed. Only digitally competent teachers can make contributions to bridging this divide.

In the world of techno pedagogy, the teacher is a prosumer that is a producer and a consumer. Teachers who are equipped with the right levels of digital competence can create resources that could be shared among the teacher fraternity. A robust repository of such

resources will help to learn from expert teachers from different parts of the country. This will help to increase positive interdependence.

During the pandemic many teachers used digital technology effectively. Post pandemic many have blended digital and face to face learning to leverage the best of both worlds. This is a laudable initiative and schools must invest in Learning Management Systems (LMS) so that a proper blend of digital and non-digital strategies is achieved.

The need of the hour therefore is to reflect on Models like the TPACK (Technology-Pedagogical-Content Knowledge) Model. The TPACK framework by Punya Mishra and Matthew J. Koehler outlines how content (what is being taught) and pedagogy (how the teacher imparts that content) must form the foundation for any effective edtech integration. This order is important because the technology being implemented must communicate the content and support the pedagogy in order to enhance students' learning experience.

Conclusion

The NEP 2020, takes into consideration the present needs of the Indian society and the country at large. Hence it has comprehensively discussed the integration of technology and education. It aims at equipping the modern educator for a digital educational world. NEP 2020 places a tremendous thrust on Digital Education for a Digital India. Commitment on part of educational institutions, whole hearted involvement of teachers and support from the government will help to build digital competencies in teachers and make the vision of NEP 2020 a reality.

References

- National Education Policy 2020. Retrieved from https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf Retrieved on 31 August 2022
- Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for integrating technology in teachers' knowledge. Teachers College Record, 108 (6), 1017–1054
- Digital Competence. Retrieved from http://keyconet.eun.org/digital. Retrieved on 1st September 2022.
- National Education Policy-2020 and Integration of Information and Communications
 Technology (ICT) With Education. Retrieved from https://www.researchgate.net/
 publication / 353738014. Retrieved on 2nd September 2022.



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15. Relationship between Attitude towards **Mathematics and Scholastic Achievement in Mathematics**

Ms. Angelina Keith Nunes

Associate Professor, Pushpanjali College of Education.

Abstract

This study intends to investigate the relationship between scholastic achievement in Mathematics and attitude of students towards the subject. This is a quantitative study using the research methodology, carried out with the help of a survey tool aiming at measuring student's attitude towards Mathematics.

The data gathered from the survey was analysed and graph was generated. The correlation coefficient came out to be 0.250482, which depicts a positive, but somewhat weak linear relationship. The graph interpretation suggested that the two variables - Mathematical achievement and Attitude towards Mathematics - were not necessarily dependent on each other. There were instances where there was a tremendous difference between the two components, and there were some cases which showed that both the variables were directly proportional to each other. The differences could be attributed to various factors like ill-health during exams, misinterpretation of the survey questions, hurry to complete the survey, boredom, unwillingness, etc.

It is, however, extremely crucial that students' negative attitudes towards Mathematics need to be changed to a positive effect. The child can relate on a personal level with Mathematics only if a connection is established between Mathematics and his daily life.

Introduction

Mathematics (from Greek μάθημα máthēma, "knowledge, study, learning") is the study of topics such as space, quantity (numbers), structure, and change.

Galileo Galilei (1564-1642) said, "The universe cannot be read until we have learned the language and become familiar with the characters in which it is written. It is written in mathematical language, and the letters are triangles, circles and other geometrical figures, without which means it is humanly impossible to comprehend a single word. Without these, one is wandering about in a dark labyrinth."

In present Indian education system, mathematics is a **compulsory subject up to** secondary level. At this stage, students begin to perceive the structure of mathematics. At the higher secondary stage, the students' interest and aptitude gets identified and they are guided towards career choices.

Attitude towards Mathematics

Attitudes are generally regarded as having been learnt. They predispose an individual to action that has some degree of consistency and can be evaluated as either negative or positive (Fishbein & Ajzen, 1975). They are linked to beliefs and for each belief an individual would have a corresponding attitude.

Di Martino and Zan (2001) distinguish two basic approaches to defining attitude towards Mathematics:

 A 'simple' definition describes it as the degree of effect associated with Mathematics, i.e. attitude is the emotional disposition towards Mathematics. This kind of definition ignores the cognitive element in attitude.

A 3-component definition distinguishes emotional response, beliefs and behavior as components of attitude.

Literature refers to attitude as "a learned predisposition or tendency of an individual to respond positively or negatively to some object, situation, concept or another person". This positive or negative feeling is of moderate intensity and reasonable stability; sometimes it is especially resistant to change.

A positive attitude towards mathematics reflects a positive emotional disposition in relation to the subject and, in a similar way, a negative attitude towards mathematics relates to a negative emotional disposition. These emotional dispositions have an impact on an individual's behavior, as one is likely to achieve better in a subject that one enjoys, has confidence in or finds useful. For this cause positive attitude towards mathematics is desirable since they may influence one's willingness to learn and also the benefits one can derive from mathematics instruction.

Review of Related Literature

Some of the related literature was reviewed and their conclusions were noted. Many of them pointed to a positive correlation between the attitudes of students towards Mathematics and the academic achievements in the subject. For example, Neale (1969) describes the relationship between the two as a consequence of a reciprocal influence, that is, attitudes affect performance and performance in turn affects attitudes. On the other hand, there is research reporting that the relationship is not statistically significant (e.g., Ng-Gan, 1987; Papanastasiou, 2002). There is also research evidence showing no causal relationship between attitudes and performance. For

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instance, the Third International Mathematics and Science Study (TIMSS) reveals that while Japanese students outperform students from many other countries, they have negative mathematics attitudes (Mullis et al., 2000). Nevertheless, the crucial role of developing positive attitude in mathematics learning has been widely recognized.

Need and Significance of the Study

The study will be of significance to teachers as it will give an insight into the relationship between students' attitude towards Mathematics and the scholastic achievement in Mathematics. It will serve to guide the teachers as to what opinion the students have towards Mathematics, and accordingly devise strategies to improve their attitude towards Mathematics and make learning Mathematics more meaningful.

Title of the Study

Study of the Relationship Between Attitude Towards Mathematics and Scholastic Achievement in Mathematics

Operational Definitions

Certain terms need to be operationally defined so as to have a common understanding of these terms:

Mathematical Attitude

A positive or negative emotional disposition towards Mathematics. (Mc Leod, 1994)

Achievement in Mathematics

A score obtained by class IX students in Mathematics in the First Semester Examination.

Objectives of the Study

In the present study, the objective is -

To study the relationship between Mathematical Attitude and Achievement in Mathematics of students of class IX.

Hypothesis

In the present study, the null hypothesis is -

There is no significant relationship in the Mathematical attitude of students with respect to achievement in Mathematics.

Sampling

In the sampling frame, English medium schools run by S.S.C. board will be identified. They will be stratified as aided and unaided. Out of these, one school will be selected from each stratum by Simple Random Sampling

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One sections of std IX from the local school has been selected by Random Sampling Method. All the students from this section has been considered as sample. Sample of the research study are students aged between 13 and 15 years. Around 25 boys from Local High School have been studied.

Scope and Limitations of the Study

This study covers Std IX students studying in an SSC board school. Findings of the study can be useful for students of other types of schools and standards as well.

Due to the limitation of time and resources, the study is confined to the following -

- > The study is limited to S.S.C. board schools only.
- > The study is limited to English medium schools only.
- The study is limited to the students of std IX only.

Methodology of the Study

The Researchers used Survey Method for the present study.

Survey Method: A Survey Method is a non-experimental, descriptive research method in which subjects respond to a series of statements or questions in a questionnaire or an interview. Because populations are quite large, researchers will usually target a **sample**, which is a part of a population that represents the whole.

According to *Merriam-Webster Dictionary*, a survey is to ask (many people) a question or a series of questions in order to gather information about what most people do or think about something.

Surveys can be useful when the researcher wants to collect data on phenomena that cannot be directly observed.

Tool Used - 'Consumable Booklet of Attitude Towards Mathematics Scale (ATMS)'

The tool used for the survey was prepared by Dr. S. C. Gakhar and published by Rakhi Prakashan, Agra. It has 46 questions in all, divided into the following sections –

- 1. Wider Applicability
- 2. Development of Skills
- Reasoning
- Objectivity
- 5. Intellectual Development
- 6. Non-Intellectual Development
- Individual Outlook
- 8. Universal Outlook

9. There are about 3-10 statements in each section, depending on the aspect of questioning. Each statement had 5 options to be marked – Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD).

Procedure of Data Collection

At first the researcher introduced the students about the research and explained to them about the content which was to be filled in the survey sheet. Then 25 boys were given the sheets to fill. They were assured of the confidentiality of the responses, to avoid biased or pressurized answers.

There were a number of queries from the students which were solved by the researcher. Mostly the queries were related to the way the survey was to be filled – whether multiple answers allowed, overwriting was allowed, pencils could be used, etc. Some of the students also had difficulties understanding the meanings of certain words, like impart, leisure time, accuracy, prejudices, precise, tentative, etc. The researcher helped them understand the meanings of the words in simpler language.

In this manner, the sheets were filled by the students, without any hurdles, by the end of the period.

Data Analysis

Analysis of the data, or Data Analysis, is the process of inspecting, cleansing, transforming and modeling data with the goal of discovering useful information, suggesting conclusions, and supporting decision-making. It is the process of evaluating data, using analytical and logical reasoning to examine each component of the data provided. This form of analysis is just one of the many steps that must be completed when conducting a research experiment. Data from various sources is gathered, reviewed, and then analyzed to form some sort of finding or conclusion. There are a variety of specific data analysis methods – data mining, text analytics, business intelligence, and data visualizations.

Statistical Methods Used

The following statistical methods are used -

- i. Percentage
- ii. Coefficient of Correlation

Percentage: Percentage is a number or a ratio expressed as a fraction of 100. It is a number or amount in each hundred. For Mathematical Attitude test, which is out of 230, the percentage form converts the score to out of 100.

Percentage score = (obtained score / 230) * 100

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Coefficient of Correlation: It is a single number indicating the going togetherness of two variables. The coefficient of correlation varies from +1.00 (perfect positive) to -1.00 (perfect negative) through 0.00 (zero correlations). In statistics, the correlation coefficient r measures the strength and direction of a linear relationship between two variables on a scatter plot.

Calculation of Coefficient of Correlation of Mathematical Attitude and Achievement In Mathematics

Sr. No.	Roll No.	Math Achievemen t 'x' (out of 100)	x²	Math Attitude 'y' (out of 230)	Percenta ge of Math Attitude	y²	ху
1	32	40	1600	198	86.09	39204	7920
2	35	58	3364	177	76.96	31329	10266
3	36	47	2209	175	76.09	30625	8225
4	37	58	3364	163	70.87	26569	9454
5	39	89	7921	177	76.96	31329	15753
6	40	80	6400	165	71.74	27225	13200
7	41	51	2601	180	78.26	32400	9180
8	42	38	1444	143	62.17	20449	5434
9	44	54	2916	182	79.13	33124	9828
10	45	57	3249	181	78.70	32761	10317
11	47	45	2025	167	72.61	27889	7515
12	48	76	5776	179	77.83	32041	13604
13	49	81	6561	187	81.30	34969	15147
14	50	91	8281	184	80.00	33856	16744
15	51	22	484	174	75.65	30276	3828
16	52	60	3600	175	76.09	30625	10500
17	53	25	625	181	78.70	32761	4525
18	54	28	784	188	81.74	35344	5264
19	55	66	4356	187	81.30	34969	12342
20	56	39	1521	172	74.78	29584	6708
21	57	65	4225	155	67.39	24025	10075
22	58	59	3481	172	74.78	29584	10148
23	59	93	8649	195	84.78	38025	18135
24	60	45	2025	150	65.22	22500	6750
25	61	85	7225	191	83.04	36481	16235
Sum 7		$\Sigma x = 1452$	$\Sigma x^2 = 94686$	$\Sigma y = 4398$		$\Sigma y^2 = 777944$	$\Sigma xy = 257097$

The Pearson's correlation coefficient formula, which is -

$$r = \frac{-(\Sigma xy) - (\Sigma x) (\Sigma y)}{\sqrt{[n\Sigma x^2 - (\Sigma x)^2] [n\Sigma y^2 - (\Sigma y)^2]}}$$

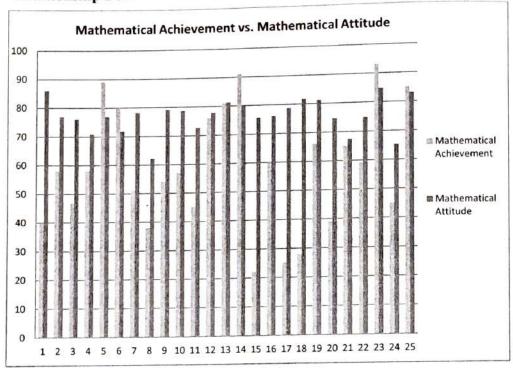
25 x 257097) - (1452 x 4398)

Coefficient of Correlation r

$$\sqrt{[25 \times 94686 - (1452)^2][25 \times 777944 - (4398)^2]}$$

∴ Coefficient of Correlation r = 0.250482

Graph of Relationship Between Mathematical Achievement and Mathematical Attitude



Interpretation

From the graph it can be observed that, many of the students who have excelled academically, do not necessarily have a very good mathematical attitude score. And conversely, there are a few weaker students who may not have fared well academically, but have an excellent attitude towards Mathematics. There are, of course, about 8 to 10 students whose mathematical achievement matches their attitude towards Mathematics as well. Around 4 to 5 students show a drastic difference between the two variables. It is highly possible that their achievement was affected due to ill health or similar reasons during their examination. It could also be possible that their attitude score is high due to misinterpretation of the survey questions, selecting random answers due to boredom or unwillingness, and such other reasons.

The coefficient of correlation 'r' = 0.25, which signifies a positive but weak linear relationship between the mathematical attitude and mathematical achievement.

Conclusion

From the data analysis and graph interpretation, we can safely conclude from this study that there is significant but weak linear relationship between mathematical achievement and mathematical attitude. The two variables are not necessarily dependent on each other. Several factors could be the causes for this, for example, the time the survey was taken, the mood of the students, health factors, mental state, etc. From the review of the related literature, it is evident

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that all the studies conducted have different inferences. Though most of them point to a significant positive correlation between the two variables, there are some which conclude that the two components are not significantly related to each other. For the purpose of accuracy, many such surveys and studies can be conducted across varied samples of study to come to the final conclusion.

References

Reference Books

- Action Research In Education: a practical guide Sara Efrat Efron and Ruth David
- Action Research Ernest T. Stringer
- Action Research a Guide for the Teacher Researcher Geoffrey Mills
- Sixth Survey N. B. Bhuj

Websites

- https://www.slideshare.net/alfarhanzahedi/mathematics-28571761
- https://www.pinterest.com/pin/425871708487407370/
- https://www.livescience.com/38936-mathematics.html
- https://en.wikipedia.org/
- https://www.quotemaster.org/importance+of+mathematics
- https://www.pinterest.com/pin/100064422944301728/
- https://www.importantindia.com/8083/mathematics/
- http://teachertrainingmumbai.com/blog/?p=900
- http://shodhganga.inflibnet.ac.in/bitstream/10603/23539/6/06_chapter%201.pdf
- https://bstockus.wordpress.com/2015/07/28/go-big-or-go-home-math-rocks-day-1/
- https://www.hindawi.com/journals/cdr/2012/876028/
- http://www.academia.edu/200464/ATTITUDE_TOWARDS_MATHEMATICS_EMO TIONS_EXPECTATIONS_AND_VALUE
- https://www.merga.net.au/documents/MTED_7_White.pdf
- http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=EBBF6DE370ACADD257C2
 CB2A1DF7FAEF?doi=10.1.1.494.2271&rep=rep1&type=pdf
- http://www.oecd.org/education/school/programmeforinternationalstudentassessmentpis a/33918006.pdf
- https://pdfs.semanticscholar.org/0288/b049f8344c4aaa895c925daa6aea45b5e530.pdf
- https://www.merriam-webster.com/
- http://scholarcommons.usf.edu/cgi/viewcontent.cgi?article=4543&context=etd



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Jaisingpura, Near University Gate, Aurangabad. (M.S.) 431 004 Mob. No. 9579260877, 9822620877 Tel. No.: (0240) 2400877,

ajanta1977@gmail.com, www.ajantaprakashan.com

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11. Development of an Instructional Package Based on Brain Based Learning in Mathematics for Students of Std VIII

Ms. Angelina Keith Nunes

Research Scholar, Associate Professor, Pushpanjali College of Education, Vasai (West)

Dr. Veena Deshmukh

Research Guide, (Honorary Professor) Research Centre, Smt. K.K. College of Education, Santacruz (W).

Abstract

Mathematics is a systematic study of magnitude, relationships between figures and forms, and quantities expressed symbolically. It is abstract, axiomatic and logical in nature Mathematics education is referred to as the practice of teaching and learning of mathematics.

Achievement in Mathematics is considered as a display of student's mathematics learning. Inherent abilities of students such as inborn attributes or natural aptitudes towards an academic subject are considered as crucial factors in learning and achievement in that subject Brain based learning refers to the teaching methods and lesson designs which are based on the latest scientific research about how the brain learns. It includes the aspects related to cognitive development i.e., how students learn differently as they age, grow, and mature socially, emotionally, and cognitively.

The Brain Based Learning approach cater to the differentiated instruction where learners may experience independence and autonomy in their learning as per their capabilities and enjoy the subject. The purpose of the present study is to develop an instructional package based on BBL approach for mathematics and to study the effectiveness of this package with respect to the achievement and interest of students in mathematics. The researcher adopted the ADDIE Model of Instructional Design for developing the instructional package based on BBL approach and testing its effectiveness considering the nature of the study. The analysis of data and testing of all the hypotheses reveal that the performance of the experimental group students on the achievement tests was much better than that of the control group students.

Key words: Brain Based Learning, ADDIE Model, Achievement in Mathematics, EG. Experimental Group, CG-Control Group)

Introduction

Mathematics education is referred to as the practice of teaching and learning of mathematics. It means how people learn and do mathematics. The National Policy on Education (1986) considered mathematics as a "vehicle to train a child to think, reason, analyze and to articulate logically." Achievement in Mathematics is considered as a display of student's mathematics learning. In traditional teaching, Mathematics achievement is measured on an achievement test.

Brain Based Learning (BBL)

Brain based learning is a result of combining the advent of researches in psychology, neuroscience and cognitive science, resulting in the creation of a new set of guiding principles for learning, teaching, training, and education.

BBL is defined as a learning approach that is aligned with how the brain naturally learns best. "Brain-based learning is a way of thinking about the learning process. It is a set of principles; and a base of knowledge and skills upon which we can make better decisions about the learning process" (Jensen, 2000)

Brain based learning refers to the teaching methods and lesson designs which are based on the latest scientific research about how the brain learns. It includes the aspects related to cognitive development i.e., how students learn differently as they age, grow, and mature socially, emotionally, and cognitively. It is a learner-centred and teacher-facilitated strategy that utilizes learners' cognitive endowments. The brain-based approach integrates the engagement of emotions, nutrition, enriched environments, music, movement, meaning making.

Research Methodology and Analysis of the Data

This study investigates the effectiveness of Brain based learning approach in relation to Achievement in Mathematics The purpose of the present study is to develop an instructional package based on BBL approach for mathematics and to study the effectiveness of this package with respect to the achievement of students in mathematics. The researcher adopted the ADDIE Model of Instructional Design for developing the instructional package based on BBL approach and testing its effectiveness considering the nature of the study. The effectiveness of the instructional package was checked in terms of achievement in Mathematics of STD VIII students using Experimental research. Using stratified random sampling technique, the researcher selected schools from each of the strata and approached the authorities for permission to conduct the

research. After seeking the permission, selected the required number of divisions and then randomly assigned the divisions as experimental and control. Based on ADDIE model of instructional design, the research was conducted in two parts, Development and Evaluation. The data collected after implementation stage was subjected to statistical analysis. The details of the statistical analysis, the results obtained from this analysis and the decisions regarding the rejection or non-rejection of hypotheses are as follows.

Hypothesis -Achievement in Mathematics

Ho1: There is no significant difference in the achievements of students in mathematics studied through instructional package based on BBL approach and conventional instructional method. Since the instructional package involved two modules, this hypothesis was tested for the whole package, as well as, for individual modules. (EG stands for Experimental Group and CG stands for Controlled Group)

- H_{1.1}: There is no significant difference in the Achievement test scores of EG and CG for total instructional package.
- H_{1.2}: There is no significant difference in the Achievement test scores of EG and CG for the module M 1 – Quadrilateral.
- H_{1.3}: There is no significant difference in the Achievement test scores of EG and CG for the module M 2 Circle.

Table 1

Comparison of Means of Achievement test scores of EG and CG

Module	Sample	N	Mean	SD	SEM	df	t
M1+M2	EG	147	44.36	3.42	0.28	291	32.62**
	CG	146	26.04	5.86	0.49		
M1	EG	147	21.84	1.95	0.16	291	25.88**
	CG	146	13.15	3.56	0.29		
M2	EG	147	22.52	2.14	0.17	291	24.97**
	CG	146	12.89	4.15	0.34		

^{**}p<0.01; * p <0.05

Interpretation

The t values computed from the achievement scores together and for module 1 and 2 are significant at 0.01 level of probability, Hence the null hypotheses are rejected. It can be concluded that difference in means of Achievement test scores of the Experimental and Control Groups, for the complete instructional package, as well as, for the module M1 and M2 are significant at 0.01 level of significance. Thus, the Experimental group learned through BBL

based instructional modules performed much better than the Control group learned through conventional teaching.

Testing of hypothesis for the moderator variables

From the above analysis, it was concluded that the BBL approach for the Modules; Quadrilateral and Circle was very effective in terms of higher achievement and enhanced interest of the experimental group. It was also necessary to study whether it is effective with respect to gender, type of school and SES status as these variables may have different characteristics. Thus, the experimental group students were classified into sub-groups based on gender, type of school and SES status for comparisons and the respective hypotheses were tested.

Achievement

Holg: There is no significant difference in the achievements of students in mathematics studied through instructional package based on BBL with respect to gender.

Table 2 Comparison of Means of Achievement test scores of EG based on Gender

Module	Sample	N	Mean	SD	SEM	df	t
M1+M2	Boys	80	43.78	3.31	0.37	145	2.25*
IVII TIVIZ	Girls	67	45.04	3.45	0.42	(by place	
M1	Boys	80	21.67	1.87	0.21	145	1.1
	Girls	67	22.03	2.03	0.25		
M2	Boys	80	22.11	2.22	0.25	145	2.59**
	Girls	67	23.01	1.95	0.23		

^{**}p<0.01; * p <0.05

Interpretation

The t value computed from the achievement scores for module 2 is significant at 0.01 level of probability. The t value computed from the achievement scores for module 1 and 2 together is significant at 0.05 level of probability. Hence both these null hypotheses were rejected. However, the t values computed from the achievement scores for module 1 is not significant. Hence, the null hypothesis is retained. It can be concluded that difference in means of Achievement test scores of the boys and girls, is mostly in favour of girls. The data analyses indicate that Girls learned through BBL based instructional modules performed better than the Boys learned through BBL.

HolT: There is no significant difference in the achievement of students in mathematics studied through instructional package based on BBL with respect to type of school.

Table 3
Comparison of Means of Achievement test scores of EG based on Type of School

Sample	N	Mean	CD	O.D.	10	
Aided	51					t
The second secon	5.60	44.04	2.94	0.41	145	0.83
Unaided	96	44.53	3.66	0.37		
Aided	51	22.06			145	1.01
Unaided	96	The state of the s		2,000	143	1.01
Aided	51		TANTESCA		145	2.27*
Unaided	96		In the state of th		143	2.21
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^{**}p<0.01; * p <0.05

Interpretation

The t value computed from the achievement scores for module 2 Circle is significant at 0.05 level of probability in favour of students from unaided school Hence the null hypothesis is rejected. The t value computed from the achievement scores for module 1 and 2 together and for module 1 quadrilateral are not significant. Hence the null hypothesis is retained. It can be concluded that difference in means of Achievement test scores of the students of aided and unaided schools, is not significant except in case of the module Circle. The data analyses indicate that the students of both aided and unaided schools are equally benefitted by learning through BBL approach.

Holses: There is no significant difference in the achievements of students in mathematics studied through instructional package based on BBL with respect to different socio-economic background

Since, this hypothesis involved three samples SES I, SES II and SES III, for comparison of means, the statistics used was One way ANOVA.

Table 4
One way ANOVA of Achievement scores with respect to SES

Marie Ma	SS	df	Mean Square	F	p
Between Groups	60.9615	2	30.4808	2.66	0.073385
Within Groups	1652.9296	144	11.4787		
Total	1713.8912	146			

^{*}p < .05, **p < .01.

Interpretation

As the calculated F (2, 144) = 2.66 was statistically non-significant (p<0.05), the null hypothesis was retained. Thus, there is no significant difference in the Achievement scores of students with respect to different socioeconomic status for the total instructional package. The

result indicates that the BBL approach was equally effective for students from high, average and low socioeconomic status.

Findings of the study

The major findings of this study Pertaining to Achievement in Mathematics are as follows;

- The significant difference was found in the Mathematics achievement scores of the
 experimental group students and the control group students. The students taught
 through the instructional package with the BBL approach scored much better than the
 students taught the same units through conventional method.
- 2. There was significant difference in the achievement of the experimental group students and the control group students for the module on 'Quadrilateral'. The students taught with the BBL approach scored significantly better than the students taught the same module through conventional method.
- 3. There was significant difference in the achievement of the experimental group students and the control group students for the module on 'Circle'. The students taught with the BBL approach scored significantly better than the students taught the same module through conventional method.
- 4. The BBL approach implemented for the experimental group was much effective in better achievement as compared to the conventional teaching.
- 5. There was a significant difference in the achievement scores of the students based on gender. The girls performed significantly better as compared to boys for the Module on 'Circle'. The module on 'Quadrilateral' was found equally effective for both the boys and the girls.
- 6. There was no significant difference in the achievement scores of the students based on type of school except for the module on 'Circle'. The students from unaided school performed better than the students from the aided school in the achievement test on Module 2.
- 7. There was no significant difference in the achievement scores of the students based on their socioeconomic status. This result indicated that the BBL approach was equally effective for students from high, average and low socioeconomic status groups.

Conclusions from the Study

Based on the findings of the study, the following conclusions can be drawn:

- The instructional package designed and developed with Brain Based Learning approach
 was effective in bringing out significant improvement in students' mathematics
 achievement as compared with the students taught the same topics through
 conventional method.
- The BBL approach was equally effective for both aided and unaided types of school and high, average and low socioeconomic status, and more effective for girls than the boys.

Conclusion

To sum up, it can be concluded that the objectives of the present study have been achieved to a great extent. The Brain Based Learning approach was found effective in better achievement for the experimental group as compared to control group who had conventional instruction. The effect of BBL approach is consistent with respect to gender, type of school and socioeconomic status.

References

- Barbara Prashnig (2004), The Power of Diversity: New Ways of Teaching Through Learning Styles ISBN 1-85539-118-X-Retrieved on 17th August 2017, from https://books.google.com/books/about/Power_of_Diversity.html?id=0UiKIAZBo2sC
- Brenda Van Roekel, Brain-based Learning: Implications for the Elementary Classroom, Master of Education Program Theses,2002- Retrieved on 24th February 2016 from https://digitalcollections.dordt.edu/med theses/72/
- Caine, Geoffrey, and Renate Nummela Caine. 12 Brain/Mind Learning Principles in Action. California: Corwin Press, 2005. Retrieved on a5th January 2016 from https://us.corwin.com/en-us/nam/12-brainmind-learning-principles-inaction/book244451
- Caine, Geoffrey, and Renate Nummela Caine. Making Connections: Teaching and the Human Brain. Virginia: Dale Seymour Publications, 1994. Retrieved on 16th January 2016 from https://eric.ed.gov/?id=ED335141
- Chavan, Rekha. Development of an intervention programme on brain based learning strategies, Ph. D. thesis, SND, Mumbai. Retrieved on 9th March 2016 from https://shodhganga.inflibnet.ac.in/handle/10603/9368
- Dehaene, Stanislas. The Number Sense: How the Mind Creates Mathematics. New York: Oxford University Press, 1997. Retrieved on 26th May 2017 from



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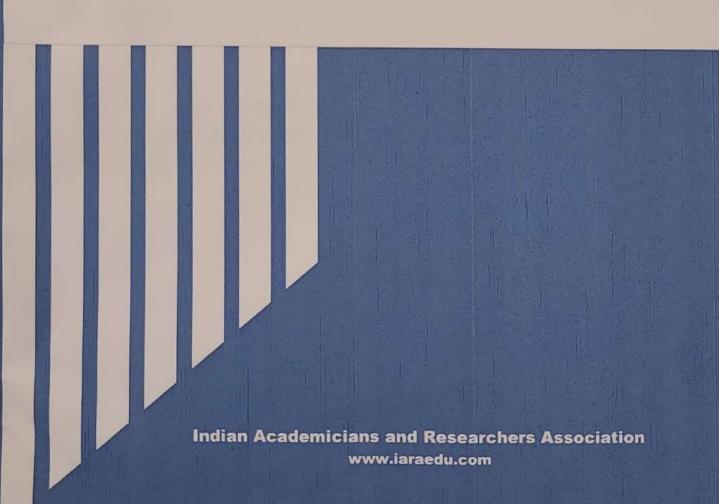
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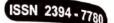
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BRAIN BASED LEARNING IN MATHEMATICS-REVIEW OF RELATED LITERATURE

Ms Angelina Keith Nunes

Associate Professor, Pushpanjali College of Education, Papdy, Vasai

ABSTRACT

Review of literature related to one's research provides insights regarding the work done in that field. It helps the researcher to know what is generally accepted as well as what is emerging in the area being explored. It also helps to discern notable patterns and trends, areas of conflict and controversies, and gaps within the relevant literature. Reviews help to formulate one's own path of research. In short, review of related literature is necessary to summarize and synthesize the arguments and ideas of existing knowledge about the topic of investigation.

For this study, the researcher has delved into researches and articles. Since this research investigates the effectiveness of Brain-Based Learning approach for Mathematics Education in terms of achievement and interest, the researcher reviewed researches on academic achievement and interest in the context of Mathematics Education. Brain Based Learning is connected with Neurosciences and much fundamental research has been done to explore the connection between the human brain and learning. Hence the researcher has review some studies in neuroscience specifically connected with the learning process. These review helped to understand how the brain is involved in learning. The researcher also reviewed studies where Brain based strategies have been tried out in actual classroom situation. Further the researcher reviewed studies that used Brain Based Learning to teach Mathematics. These reviews span over the last three decades from the 1990s to 2021. It helped the researcher to understand the different dimensions; in concretization of various aspects of the research and the current trends in the selected research area.

Keywords: Review of related literature, Summarize, Synthesize, Brain Based Learning, Mathematics education, Achievement, Interest, Anxiety.

INTRODUCTION

Mathematics is a systematic study of magnitude, relationships between figures and forms, and quantities expressed symbolically. It is abstract, axiomatic and logical in nature. The National Policy on Education (1986) considered mathematics as a "vehicle to train a child to think, reason, analyze and to articulate logically."

Mathematics education is referred to as the practice of teaching and learning of mathematics. It means how people learn and do mathematics. Achievement in mathematics is considered as a display of student's mathematics learning in school.

As these researches have different focus areas, the reviews are classified as Every research is based on the earlier work done by others in the selected area. The review of related literature lays the foundation for the new research and establishes the context. It is carried out to get a clear picture identifying the gap in the body of knowledge and avoid duplication. Neurosciences and much fundamental research has been done to explore the connection between the human brain and learning. Hence the researcher has review some studies in neuroscience specifically connected with the learning process. These review helped to understand how the brain is involved in learning. The researcher also reviewed studies where Brain based strategies have been tried out in actual classroom situation. Further the researcher reviewed studies that used Brain Based Learning to teach Mathematics.

- A. Review of Studies related to Neuroscience and Learning
- Review of Studies related to Brain Based Learning in Classroom Settings
- C. Review of Studies on Brain Based Learning with special reference to Mathematics Learning

The review spans nearly last 3 decades from 90s to 2021 It helped the researcher to understand the different dimensions; in concretization of various aspects of the research and the current trends in the selected research area.

Review of Studies related to Neuroscience and Learning

Brain-based education take into cognizance multiple intelligences and learning styles. All three, viz Brain based learning, Multiple Intelligences and Learning styles, focus on how students learn and the unique qualities of each learner. Howard Gardner's Theory of Multiple Intelligences identifies the existence of areas (physiological locations) in the human brain that correspond to certain type of knowledge, all of which are distinct and

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relatively independent of each other. Review of researches in neuroscience has helped the researcher to gain an relatively in research understanding of mental process involved in learning.

Guild and Chock-Eng (1998) examined similarities in implementing theories of multiple intelligences, Guild and learning styles, and brain-based education in middle schools and came out with similar conclusions.

Prashnig (2004) compared learning styles and multiple intelligence in relation to brain function and concluded Prashing (2007)

Prashi that 'learning styles the 'output' function of information intake, knowledge, skills and 'talent'- mathematical, intelligences, are the 'output' function of information intake, knowledge, skills and 'talent'- mathematical, intelligences, and talent - mathematical, linguistic etc. Learning styles "give insight into students' reflective or impulsive thinking styles, musical, linguistic etc. Learning styles "give insight into students' reflective or impulsive thinking styles, musical, imposition or simultaneous brain processing and overall tendencies for either analytic or holistic brain dominance".

Sperlich (2007) argued that applying a few brain-based learning strategies periodically would not change the specifical classroom environment to get the full benefits of brain-based learning. The researcher developed a teacher friendly guide that would help teachers not only apply brain-based strategies in the classroom, but also to see results from transforming their classrooms into brain-based learning environments.

article 'Neuroscience in the classroom' Bruce McCandliss and Elizabeth Toomarian (2020) suggest that when children understand how their brains change as they learn new things, the whole idea of learning in school could change profoundly for them. Their work on school students includes mindfulness practices right from kindergarten, including focused breathing during a "mindful minute." The researchers state that when children complete a mindful minute while wearing the net of sensors on their heads, they can actually see their brain waves change as they do something that is common practice in their classrooms.

All the above researches in the field of neurosciences and learning point out to certain key takeaways viz. active learning involves processes that stimulate multiple neural connections in the brain and promote memory. For optimal learning to occur, neuroplasticity is emphasized that is the brain needs conditions under which it is able to change in response to stimuli. Adequate sleep, proper nutrition, regular exercise are contributors to optimal learning performance. These implications are closely connected with Caine and Caine's principles of Brain based Learning and reinforce the need to integrate these principles into the teaching learning process.

B. Studies related to Brain Based Learning in Classroom Settings

Chavan Rekha (2013) conducted a study 'Development of an intervention programme on brain based learning strategies'. The study involved a mixed method research and it reported that the intervention programme based on brain based learning strategies was effective in increasing achievement, enhancing self-esteem, developing positive attitude towards learning and reducing academic stress of the students. The mean gain scores of achievement of the experimental group is higher than the control group.

Duman Bilal (2006) investigated the effects of Brain-based learning (BBL) on the academic achievement of students with different learning styles. The study group consisted of 68 students from the Department of Social Sciences Teacher Education in the Faculty of Education at Mugla University, Turkey. In the study, a pre-testpost-test experimental design was used. Data was collected by using academic achievement tests and the Kolb's Experiential Learning Style questionnaire. The findings of the study revealed that the BBL approach used in the experimental group was more effective in increasing student achievement than the traditional approach used in the control group. However, no significant difference was observed among the achievement levels of the experimental group students with different learning styles.

Jamdar Kirti and Dasila Prabha (2020) conducted a conceptual research study on Impact of traditional v/s Brain Based Learning approach on knowledge, clinical performance, motivation and self-esteem. Brain Based Learning strategies were employed to teach Critical Care Nursing to the experimental group and the control group were taught the same topic using traditional method. 96% participants from the experimental group reported that the methodology was interesting as compared to 31% from the control group. The researchers found a clear advantage of use of Brain Based Learning over traditional teaching as there is an opportunity to learn from peers and enhancing team spirit among the students.

In the study 'The Effect of Brain Based Learning Strategy on Academic Achievement and Creativity among Secondary School Students' Jayalakshmi Ramakrishnan (2015) found that e Brain-Based Learning Strategy had positive effect in increasing academic achievement and creativity of secondary school students with the experimental group performing significantly better than the control group. The study revealed that Brain-Based Learning Strategy is effective in improving learning and performance outcomes.

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Varghese Mary (2012) in her research 'A Study of Interactive Influence of Brain Based Learning and Hemisphericity of students of Standard VIII on their Academic Achievement in Biology, Study Habits and Stress' conducted a study where experimental group was taught using brain based learning strategies and the control group was through lecture method. The researcher reported that there was no significant difference in pretest scores of both groups. However the post test scores of academic achievement of experimental group was significantly higher the post test scores of the control group. The posttest scores for the study habits of experimental group were also significantly higher than the posttest scores of the control group. Use of brain based strategies was found to reduce the stress experienced by the learners.

Dilek E and Rahmi Y (2001) conducted a study on impact of brain-based learning approach on students' achievement and retention of knowledge. The study investigated the effect of brain-based learning approach on 7th grade students" achievement and retention of knowledge about "work-energy". The study showed that the instructional activities based on brain based learning approach have a great impact on 7th grade students" achievement and retention of knowledge about the topic work and energy, etc. The results of this study have shown that brain based learning have significant positive effect on achievement of students and permanence of knowledge.

Ozden & Gultekin (2008) conducted a study on The effects of Brain Based Learning on Academic Achievement and Retention of Knowledge in Science Course of 5th grade students. The findings suggest that the Brain based learning model is more effective than the traditional teaching in science course.

Nisha, K. P. (2012) explored the elements of brain-based education in the National Curricular Framework for Teacher Education (NCFTE) and concluded that the framework shows presence of brain-based elements in its various curricular and conceptual components and highlighted the brain-based foundation of the NCFTE 2010.

Vyas Karnika.(2016) investigated Brain Based Learning as A Determinant of Academic Stress Test Anxiety and Academic Performance in Struggling Learners. Brain-based Lesson Plans were developed for Struggling Learners and their Academic Performance was assessed. The experimental group taught through Brain Based Approach performed significantly better than the control group taught through traditional methods. It was also seen that neuro-scientific pedagogy was able to reduce the level of Academic Stress in the Struggling Learners. The study showed that a neurological intervention programme helps in decreasing Test-Anxiety.

The above researches have discussed the use of brain based learning strategies in various subjects. The further researches are specifically in the field of Mathematics Learning.

C. Studies on Brain Based Learning with special reference to Mathematics Learning

The following studies are studies specifically related to Brain Based Learning in the context of Mathematics Education.

Kumaraswamy M (2003) in the study Impact of Mathematics Phobia on Self Confidence, Achievement in Mathematics in Relation to Hemisphericity at High School Level found that 1/6th of the students were having severe mathematics phobia. Mathematic phobia in students at high school level is negatively correlated with Achievement in mathematics and Self Confidence. When the researcher investigated about achievement with respect to hemisphericity, it was found that 63.4% of the students fall in the category of Right brain domination. The researcher advocates use of paper folding techniques, kit based Mathematics Education and use of Mathematics laboratory to overcome phobia in Mathematics learning.

A study by Yadav Neeraj (2019) on Designing and Efficacy Testing of Brain Based Learning Approaches in Mathematics Instruction for Junior High School students aimed to develop mathematical instructional material for Brain Based Learning. It was found that the mean achievement of the students exposed to Brain Based Learning was significantly higher than the mean achievement of students taught through traditional method. The research states that Brain Based Learning method is more effective than traditional teaching method to teach Mathematics at Junior High School level due to operation of diverse faculties of human brain like parallel processing, innate search of meaning, perception through simultaneous creation of parts and wholes.

Godse Shubhangi (2016) in the study 'A study of effectiveness of brain based program on the Mathematics achievement of 5th standard students' found that here is a significant increase in the Mathematics achievement of 5 th standard students after implementation of brain based program. The researchers states that the findings of the study are an indicator of the great success of the brain based program, not only in terms of achievement of the students but also increasing the interest, activities participation of the students and making the teaching learning process enjoyable. The learning is enhanced when teachers understands that the physical structure of brain can change through a stimulating classroom environment that promotes dynamic knowledge, a learning process in which the students learns.

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Asha Paul (2017) in the study Effect of brain based learning strategy and circles of learning strategy on achievement in Mathematics and self-efficacy of Standard VII students has stated that Brain Based Learning Strategy is more advantageous over Circles of Learning Strategy and Activity Oriented Method of Teaching in enhancing student's academic achievement and Self efficacy.

Singh Parvinder (2015) conducted a study of Academic Achievement in Mathematics in Relation to Brain Hemispheric Dominance. The purpose of this study was to determine if there exists any relationship between hemispheric dominance and academic achievement in mathematics of the students of XI and XII class and to find the level of brain hemispheric dominance of the boys and girls. The study reveals that there is no significant relationship between academic achievement in mathematics and hemispheric dominance but boys and girl students differ significantly from their level of brain dominance.

M Mekarina and Y P Ningsih (2017) in their study The Effects of Brain Based Learning Approach on Motivation and Students Achievement in Mathematics Learning report that brain based learning approach can be applied to improve students learning outcomes. The students who participated in the study stated that they were motivated with the implementation of brain based learning approach brain and are given contextual problems connected with the material of lesson.

Putri and Hasratuddin (2019) conducted a study to investigate the effectiveness of learning mathematics based on a realistic mathematics education in the spatial and motivational ability of ninth grade students in Nigeria. The results of the study showed the effectiveness of mathematics learning based on a realistic mathematics education in improvement of the spatial ability, motivation, and positive attitudes of the students.

Ahmad Al-Tarawaneh (2021) conducted a research 'Effect of Brain-based Learning in Developing Spatial Ability of Ninth Grade Students with Low Achievement in Mathematics'. The results showed that the training programme based on Brain Based Learning improved spatial ability and its three components(spatial perception, spatial visualisation, and spatial orientation) in the experimental group as compared to the control group. Students are placed in situations where they understand the topic on their own In addition, organising and presenting content for students in a simplified and diverse way, dividing tasks and relying on geometric shapes, drawings and plans helped to reduce errors that students may make.

Thosar Mansi (2018) studied the effectiveness of a programme based on self_regulated learning model for primary level mathematics. Self-regulated learning is an active, constructive process in which learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior and environment. Selfregulated learning leads to construction of knowledge, which makes learning more interesting and meaningful. It boosts the confidence of students, which is reflected through the performance of mathematics related tasks. The study revealed that the mean of scores of mathematical thinking and mathematical achievement of experimental group is significantly higher than that of the control group. The mathematics anxiety of students from experimental group was significantly lower than that of the students from control group. There was no interaction effect of mathematics anxiety and mathematical thinking on achievement in mathematics. There is a moderate effect of programme on mathematical thinking of the students and maximum effect on their mathematical achievement. Qualitative analysis of the study showed that the students could make the connections between goal setting and achieving it. The students started thinking about quality of the output. This indicated that the students were moving towards self-regulated learning.

Bello (2007) studied the effect of brain-based learning strategy for teaching division and fractions after training the teachers in using this strategy The sample consisted of three fifth grade groups comprising 58 students and 23 teachers. The teachers were trained in brain-based learning approach for the mathematics class. The findings indicate that teacher training in brain-based learning helped students increase their mathematics scores.

Awolola (2011) investigated the effect of brain-based learning strategy on mathematics achievement of 522 senior secondary school students in Oyo State, Nigeria. The result showed that brain-based instructional strategy enhanced students' achievement in mathematics more than the conventional lecture method. It is therefore recommended that Teachers of mathematics should adopt the strategy in teaching mathematics in senior secondary school.

Rehaman (2011) compared brain-based learning strategy with the conventional lecture method to teach mathematics at secondary level. Sixty students each of 9th class were selected from two secondary schools They were further categorized as high, average and low achievers. Three chapters of 9th class mathematics textbook, having 15 subtopics were selected as the content and 38 lesson plans were developed based on the principles of BBL by the researcher. The results of the study revealed that the BBL teaching method is more effective for all

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the three achievement levels. The study further concludes that the performance of the students can be enhanced if a teacher manages to activate the innate faculties of human brain of the learners in accordance with its natural physiology.

Nanang Priatna (2017) developed a learning model and teaching materials based on the principles of brain. based learning aided by GeoGebra. Adopting a quasi-experimental non-randomized control group pre-test-post. test design and the 2x3 factorial model, it was observed that the experimental group showed increase in the mathematical representation ability as compared to control group given conventional instruction.

Ghazala, Riffatun and Hijab (2017) explored the effect of brain-based learning methods on students' academic achievement in mathematics at elementary level using Pre-test Post-test control group design. Their findings reveal that experimental group performed significantly higher as compared to control group. However. they observed that teaching through brain-based learning method needs more time as compared to conventional method.

Yulian and Hayati (2019) conducted research on junior high school students, and concluded that students' enhancement in mathematical connecting ability who worked under brain-based learning model is higher than that of students' who worked under expository learning model. They also found that students' who worked under brain-based learning model showed positive attitude toward mathematics.

EPILOGUE

The researches encapsulated above helped to get a clear idea of many aspects of Mathematics learning. The studies on Neurosciences and Learning were very useful to see how the brain works during learning. These studies helped to understand the intricate relationship between brain and learning and also underscored the need to have robust and brain friendly learning strategies. In depth exploration of studies related to Brain Based Learning threw light on various classroom practices that have been implemented in different schools and across different levels of school. The reviews helped to identify Brain Based Learning practices that brought significant changes in students' learning and achievement.

REFERENCES

- Guild, Pat Burke; Chock-Eng, Sandy. Multiple Intelligence, Learning Styles, Brain-Based Education: Where Do the Messages Overlap? Schools in the Middle, v7 n4 p38-40 Mar-Apr 1998
- Prashnig, B. (2006). Learning styles and personalized teaching. London: Network Continuum Education. 2.
- Sperlich, Juntana Ginda (2007). Designing a brain-based learning environment Theses Digitization 3. Project. 3216. https://scholarworks.lib.csusb.edu/etd-project/3216
- McCandliss Bruce and Toomarian Elizabeth (2020). Putting Neuroscience in the classroom: How the Brain Changes as We Learn. Retrieved from https://www.pewtrusts.org/en/trend/archive/spring-2020/putting-4. neuroscience-in-the-classroom-how-the-brain-changes-as-we-learn
- Chavan Rekha (2013) Development of an intervention programme on brain based learning strategies. Retrieved from https://shodhganga.inflibnet.ac.in/handle/10603/9368
- Serap Tufecki and Merek Deremil (2009). The effect of brain based learning on achievement, retention, 6. process. Retrieved learning https://reader.elsevier.com/reader/sd/pii/S187704280900319X?token=6527581F25887F3FDC7F58307175 6AD8A1FCCF25AADDBB32A1DC9BA40986905C6448CF77959D0440FC36D4706F7BCC74&originR egion=eu-west-1&originCreation=20220104110733
- Jamdar Kirti and Dasila Prabha (2020) . Impact of traditional v/s Brain Based Learning approach on self-esteem. Retrieved motivation performance, clinical https://www.annalsofrscb.ro/index.php/journal/article/view/2261/1885 knowledge,
- Kunar J. (2020). Effect of Brain Based Learning on Self-Regulation Skill and Learning Achievement in Students. Retrieved School Secondary Science among http://shodhganga.inflibnet.ac.in:8080/jspui/bitstream/10603/351000/2/jagannath.pdf
- Varghese Mary (2012). A Study of Interactive Influence of Brain Based Learning and Hemisphericity of students of Standard VIII on their Academic Achievement in Biology, Study Habits and Stress. Retrieved form http://shodhganga.inflibnet.ac.in:8080/jspui/handle/10603/282917
- 10. Sharma Anita (2013). Effect of brain based instructional strategies on achievement and self-esteem of from their Science relation to learning styles. Retrieved students in https://shodhganga.inflibnet.ac.in/handle/10603/80849.



ISSN 2394 - 7780

- Keidinger Rhonda (2011). 'Brain-based Learning and its Effects on Reading Outcome In Elementary Aged Students'. Retrieved from https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.389.6207&rep=rep1&type=pdf
- Pinkerton, K. David (1994). Using Brain-Based Learning Techniques in High School Science. Published Teaching and Change, v2 n1 p44-60 Fall 199
- Vyas Karnika. (2016). Brain Based Learning as A Determinant of Academic Stress Test Anxiety and Academic Performance in Struggling Learners. Retrieved from https://shodhganga.inflibnet.ac.in/handle/10603/230613
- Akyürek & Afacan (2013). Effects of Brain-Based Learning Approach on Students' Motivation and Attitudes Levels in Science Class. Retrieved from Mevlana International Journal of Education, 3(1), 104–119. https://doi.org/10.13054/mije.13.08.3.1
- 15. Godse Shubhangi (2016). 'A study of effectiveness of brain based program on the mathematics achievement of 5th standard students'. Retrieved from https://shodhganga.inflibnet.ac.in/handle/10603/143725
- Asha Paul (2017). Effect of brain based learning strategy and circles of learning strategy on achievement in Mathematics and self-efficacy of Standard VII students. Retrieved from https://shodhganga.inflibnet.ac.in/handle/10603/221579
- 17. Parvinder Singh, "Study of Academic Achievement in Mathematics in Relation to Brain Hemispheric Dominance", International Journal of Science and Research (IJSR), https://www.ijsr.net/get_abstract.php?paper_id=4051501, Volume 4 Issue 5, May 2015, 1159 1163
- 18. M Mekarina and Y P Ningsih (2017). The Effects of Brain Based Learning Approach on Motivation and Students Achievement in Mathematics Learning. Retrieved from Journal of Physics: Conference Series, Volume 895, International Conference on Mathematics and Science Education (ICMScE) 24 May 2017, Bandung, Indonesia
- 19. Lili Riskiningtyas, Aqila Darmata Synta, Nurdin Kamil, Dwi Ardi Meylana (2017) Improving Students' Self-efficacy Used Brain Based Learning in Mathematics. Paper presented at International Conference on Mathematics and Mathematics Education. Retrieved from http://seminar.uad.ac.id/index.php/adintercomme/article/view/39/pdf
- Lowrie, T., Logan, T., Harris, D., & Hegarty, M. (2018). The impact of an intervention program on students' spatial reasoning: Student engagement through mathematics enhanced learning activities. Cognitive Research: Principles and Implications, 3(50), 1-10. https://doi.org/10.1186/s41235-018-0147-y
- Thosar Mansi (2018). Effectiveness of a programme based on self_regulated learning model for primary level mathematics. Retrieved from https://shodhganga.inflibnet.ac.in/handle/10603/276630
- 22. Bello, D. M. (2007). The effect of brain-based learning with teacher training in division and fractions in fifth grade students of a private school .Doctoral dissertation, Capella University.
- 23. Awolola, Samuel. (2011). Effect of brain-based learning strategy on students' achievement in senior secondary school mathematics in Oyo State, Nigeria. Cypriot Journal of Educational Sciences.
- Rehman A (2011). Effectiveness of Brain-Based Learning Method and Conventional Method In The Teaching Of Mathematics At Secondary Level In Pakistan: An Experimental Study. Retrieved from http://prr.hec.gov.pk/jspui/bitstream/123456789/1829/2/1546S.pdf
- Nanang Priyatna (2017). The application of brain-based learning principles aided by GeoGebra to improve mathematical representation ability. Retrieved from https://ui.adsabs.harvard.edu/abs/2017AIPC.1868e0030P/abstract
- 26. Ghazala Noureen, Riffatun Nisa Awan and Hijab Fatima(2017). Effect of Brain-based Learning on Academic Achievement of VII Graders in Mathematics. Journal of Elementary Education Volume 27, No. 2, pp. 85-97
- ²⁷. Yulian, V & Hayati, N. (2019). Enhancing students' mathematical connection by brain based learning model. Journal of Physics: Conference Series. 1315. 012029. 10.1088/1742-6596/1315/1/012029.



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> Dr. Subhash D'Souza I/C PRINCIPAL





Original Research Article

VIRTUAL REALITY AND AUGMENTED REALITY IN TEACHING OF SOCIAL SCIENCES

Dr. Agnes Dcosta

Associate Professor, Pushpanjali College of Education, Vasai

Abstract:

Augmented Reality is presently used in various arenas ranging from education to enterprise to entertainment. In the learning of Social Sciences, Augmented Reality plays a vital role by helping students perceive abstract information. Visual representation of information in a three dimensional form helps to comprehend information easily, thus helping to build concepts which are the cornerstone for any learning. This paper reviews some Augmented Reality Apps that can be used in teaching Social Sciences. The author has used few of these and also encouraged B.Ed students to use the same in their lessons. The insights garnered from this endeavor are also described in this paper.

Keywords: Augmented Reality, Virtual Reality, Teaching Learning process, innovations in Social Science pedagogy

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Introduction

Augmented Reality (AR) refers to an interactive way of presenting digital information in the context of physical environment. It involves an overlay of digital content onto the physical world. AR technology uses cameras/sensors, processing, projection and reflection to superimpose sound, graphics and videos in an existing environment and thus facilitates interactive classrooms that increase student engagement. Virtual Reality (VR) is a computer generated environment that gives the user an immersive experience. This may be done through use of special technology that helps in 360 degree exploration of a place or an object. Thomas B. Sheridan¹ describes this as a "sense of being physically present with visual, auditory, or force displays generated by a computer." While teaching History, teachers have to transport their students to the realms of the past. Students need to understand the locale of the events. They often need to understand architectural sources that contribute to historical content. VR helps to overcome barriers of time and space and get an experience that is close to a first-hand experience. Learning Geography involves understanding scientific concepts. The learner has to learn phenomena like earthquakes and volcanic eruptions, formation of rocks, planetary movements. All this can be made more realistic through use of AR and VR where the three dimensional environment is simulated.

Before proceeding with actual examples of apps that incorporate AR and VR it is necessary to differentiate between AR and VR. While VR is completely virtual, AR uses a real world setting for data overlay. AR adds virtual elements to the user's real world experience. AR thus is a blend of real world physical objects with some digital inputs. VR is the creation of simulation of real world where the user is immersed into the immersive environment.





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The following paragraphs describe the use of AR and VR in learning Social Sciences. The author of this paper has tried out one of the apps with B.Ed student-teachers who in turn have used it in their internship lessons. Some experiences of use of AR and VR by Social Science teachers in other countries are also included.

Google Expeditions: Field trips and excursions have always been recognized as first hand experiences that enhance learning of History. Some challenges faced by teachers in organizing frequent field visits include paucity of funds and finding adequate time in the regular schedule. One cannot possible visit every place that is covered in the syllabus. Besides, even if one does visit the monument or historical site, one may not be able to explore inaccessible areas like the roof of the monument or one may not be able to closely examine the structure. In such cases Google expeditions offer a very viable option to explore the historical site. A mixture of 360 degree panoramic views and 2D imagery make such virtual excursions very interesting.

The Google Expeditions App is available on iOs and Android platforms. Panoramic scenes, curricular connections and discussion questions are available. There are over 500 VR expeditions. Students need a VR kit, which includes a special headset, to explore different places. The students can observe these places as if they are physically present in the place. The teacher can have break time for thinking by posing questions and fostering discussions. Objects and places can be seen in the form of a close up thus facilitating better observation. Structures like the Pyramids, the Great Wall of China or the Colosseum can be closely explored. Students can take a virtual underwater tour or plunge into outer space or explore a volcano.

Students can create their own VR tours using Thinglink and view them in VR using the headsets. Apps like Cardboard Camera and Google Street View camera are also useful to create 360 degree panorama tours.

An interesting application is the Public Speaking VR where sees an audience in front og him/her and this can be used to practice public speaking. The Apollo 15 Moon Landing App gives the user the experience of landing on the Moon and exploring the surface by walking around or by using the Rover.

Google Arts and Culture Tours

The Google Art and Culture Site (https://artsandculture.google.com/) is a treasure trove for teachers and learners. There are many world class museums showcased and one can have a virtual walk through these to observe artifacts. Natural sites like the Great Barrier Reef and architectural wonders like the Taj Mahal can be seen at close quarters. Over 2000 museums, 100000 art works and 10000 places can be explored without leaving the comforts of one's home or classroom. The Art to AR section allows exploration of culture through the lens of art, thus promoting cross disciplinary connections.

The author used the Virtual Tours with prospective History teachers. These eight student-teachers undergoing their B.Ed Programme used Virtual Tours to teach topics in History. They led their students to virtually explore monuments and caves like the Taj Mahal, Qutub Minar and the Ajanta Caves. The students were encouraged to note down their observations regarding the site. Students noted down the material used for construction, the architectural features and important facts displayed at these sites. All these sites were explored virtually without any special headsets or viewing glass. However the sites could be maneuvered and views from different angles were got. Close examination was possible by zooming in. The 360 degree panorama feature gave the feeling of actually being present. After students observed the places, they were encouraged to share their observations.





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Discrepancies were sorted by discussion. It was seen that students took keen interest in observing the minute details and the intricate art. As the site has factual information included, the students could read and connect with what they were observing. The students could spend as much time as they wanted to explore the site. When one actually visits such a site, one is often rushed for time and may fail to observe minute details. Secondly in an actual visit, some parts of monuments like the tall ceilings or the upper part of the roof or dome may be inaccessible. A VR tour overcomes this limitation as one can easily access any part of the monument by a simple mouse click. Close views which may not be possible in an onsite visit are possible in virtual visits. The high resolution images were useful to concentrate on intricacies that one might miss out in an actual field visit.

The Google Arts and Culture site has added features like a quiz that asks visitors to match a painting to a particular style or to find a symbol within a specified painting that represents a provided story. This adds the element of critical thinking and thus enhances the effectiveness of the virtual tour.

Using VR apps for Research in Social Science

Research in physical sciences usually involves laboratory work. Since inanimate objects are generally used, such experiments can be repeated many times. Research in Social Science involves human beings and data is usually gathered by observing real life situations. Virtual Reality is being used to add a new dimension to research in Social Science. Nicholas Lanzieri² and others developed a 30 degree VR simulation where using a mobile device and a daydream handset, students were guided through a panoramic urban environment by a pre-recorded voiceover that promotes reflective and analytical thinking as they observe the community through the lens of a social worker. There were 17 navigable interactive panoramic scenes where the students had to observe the scene in VR and were then presented a question. For example the students watched in VR a subway station of New York City. The voice over first guided the students and then they were asked to think about the transportation resources available in the observed neighbourhood. In another scene the narrator posed the question "A sociopetal space encourages social interactions. Identify and name two such spaces on Grand Street. How might these be used for young and older clients?" There were interactive hotspots that on clicking gave information regarding the demographics, mental health and housing of the people. Participants could review statistical data and use it to draw conclusions. The researchers conclude that as novice students gain more experience with the VR environment, they will develop their schematic knowledge and confidence, allowing them to simulate more complex and realistic environments.

Use of AR and VR for studying historical events

Social Science teacher Heidi Martasian used VR to give students an idea of transition from agriculture to industrialization. Students used VR to see how mining was done, something that may not be an easy task considering the safety precautions that need to be taken while entering a mine. While exploring World War One, students used VR to get a first-hand experience of how soldiers fought the war from trenches. Thus with the right equipment one can travel through time and space and get a deeper understanding of historical perspectives.

Benefits of use of AR and VR in learning Social Sciences

The immersive nature of AR and VR helps to share information in engaging ways and it also has the potential to overcome barriers of space and time. Interaction is the key word of AR and VR enhanced learning





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environments. Learning can be customized and each learner can choose an individual path to learning. Seeing and experiencing historical events will help to empathise with people of varied cultural backgrounds. Virtual settings are risk free settings to observe and study situations like war or explore natural phenomena like volcanic eruptions which in reality are risky situations to actually be part of.

National Education Policy 2020³ recommends content creation and dissemination stating 'A digital repository of content including creation of coursework, Learning Games & Simulations, Augmented Reality and Virtual Reality will be developed, with a clear public system for ratings by users on effectiveness and quality. For fun based learning student-appropriate tools like apps, gamification of Indian art and culture, in multiple languages, with clear operating instructions, will also be created.' Such content creation needs a blend of expertise in content, pedagogy and technology. Presently, platforms like Immersive VR Education and Nearpod allow teachers to develop lesson plans with VR and AR technology. Teachers need to explore software to create AR and VR based content.

AR and VR once seemed to be a science fiction dream. However today AR and VR in education has opened new avenues and in the days to come will be as ubiquitous as mobiles. Gearing ourselves to use it effectively therefore is the need of the hour.

References:

Thomas B. Sheridan, "Musings on Telepresence and Virtual Presence" Presence 1, no. 1 (Winter 1992): 120. Lanzieri, N., McAlpin, E., Shilane, D. et al. Virtual Reality: An Immersive Tool for Social Work Students to Interact with Community Environments. Clin Soc Work J 49, 207–219 (2021).

https://doi.org/10.1007/s10615-021-00803-1

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6. ICT and the Five Pillars of NEP 2020

Dr. Agnes DCosta

Associate Profesor, Pushpanjali College of Education, Vasai.

Abstract

NEP 2020 envisions an educational system that will usher an equitable and vibrant knowledge society, by providing high-quality education to all. The Policy rests on the five pillars of accessibility, equity, affordability, accountability and quality. Information and Communication Technology (ICT) plays a vital role in augmenting all efforts to strengthen these pillars. This paper examines the role of ICT in assuring education that will leverage India into a vibrant, knowledge society.

Key words: NEP 2020, ICT, disruptive technologies

Introduction

National Education Policy(NEP) 2020 provides guidelines to transform India's educational landscape. With an emphasis in making education skill centric, accessible and equitable, the Policy draws inspiration from India's rich educational tradition and also stresses on contemporary ideas like Artificial Intelligence, Data Science and Robotics. The five pillars of the Policy viz accessibility, equity, affordability, accountability and quality make the policy consistent to the needs of the Indian society and provide a vision to curriculum designers, educational administrators and teachers. The UN Sustainable Development Goal 4 of Quality Education reiterates that 'Achieving inclusive and quality education for all reaffirms the belief that education is one of the most powerful and proven vehicles for sustainable development'. This goal further hopes to substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship by 2030. It stresses on the need to have inclusive and effective learning environments for all. The SDG Goal 4 focuses on sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development. It also emphasizes adequate teacher training. If one analyses the NEP 2020, one can find many parallels between UN SDG 4 and NEP 2020. The pertinent question is 'How can education be redesigned to transform India into a knowledge society and be an active

contributor to the UN Sustainable Development Goals?' Effective use of ICT is an important key to provide solutions to this question.

ICT and the Five Pillars of NEP 2020

As mentioned earlier, the NEP 2020 rests on the five pillars of accessibility, equity, affordability, accountability and quality. The role of ICT in reinforcing these pillars is discussed below

1. ICT and Access to Education

Repositories like DIKSHA (Digital Infrastructure for Knowledge Sharing) offers access to learning resources, lessons plans, evaluation tools and digital textbooks in more than 18 languages. QR codes in textbooks are also an effective way to offer enriched learning experiences. Teachers can create learning resources and embed the QR code in a digital classroom, on the institutional website or on printouts displayed in the library thus helping students to quickly access a resource. Massive Open Online Courses (MOOCs) on platforms like SWAYAM or MOOCs created by teachers and hosted by the institution on sites like canvas instructure can help to provide 24 x7 access to learning material.

2. ICT and Equity in Education

Equity in an educational landscape is to provide right amount of scaffolding or assistance to learners who may be at a disadvantage due to some reasons. In India, we find lot of diversity in languages and cultural background. While this diversity is actually an asset, we also find that if the medium of instruction is different from one's home language it may be an impediment in learning. ICT tools like Presentation Translator allow the learner to view a presentation in his/her chosen language. ICT can provide multilingual resources and help bring equity in education. Captioning devices, Braille writers, E Readers, Speech to text conversion tools, interactive white boards and embedding formative assessment in presentations using platforms like Nearpod can help learners facing impediments.

3. ICT and Quality in Education

The hallmark of any educational endeavour is its quality. Quality education focuses on knowledge, skills and attitudes and helps learners to grow personally, socially and professionally. Quality education must focus on 21st century skills like communication, critical thinking, collaboration and creativity. ICT is a big boon in providing quality education. Teachers can incorporate multimodal learning and include cross disciplinary experiences that compel learners to think beyond rigid syllabi. By exposing students to enriched content as per their capacity, one can provide quality constructivist education making learners responsible for their own learning. Faculty can also use ICT for Continuous Professional Development. ICT provides

many opportunities to collaborate with fellow faculty and learn from exchange of best practices. The Draft of the National Professional Standards for Teachers has provided a roadmap to traverse from Beginner Teacher (Pragammi shikshak) to Proficient Teacher (Praveen shikshak) to Expert Teacher (Kushal Shikshak) to Lead Teacher (Pramukh shikshak). This journey will be made easy by use of ICT. Quality education will help to shift one's perspectives, analyse the situation and take effective decisions.

4. ICT and Affordability

Skilling, reskilling and up skilling are the watchwords for 21st century education. One needs to be equipped to adapt to a rapidly changing world. Education will help this endeavour but the question about the cost factor will always be present. ICT provides a solution by leading us to the world of Open Education Resources (OERs) which includes textbooks, learning resources, podcasts and courses. The five Rs of OERs viz Retain, Reuse, Revise, Remix and Redistribute. An open resource helps the user to gain knowledge and skills and if such a resource is further revised by another person it enriches the original creator as well. Many a time, we find educational institutions find it difficult to afford state-of-the-art laboratories. ICT brings the laboratory to our screen through virtual laboratories. Organising a tour to a place of historical interest may seem a costly affair. ICT makes it very affordable through virtual tours. Thus the world of simulation, Augmented Reality and Virtual Reality open new vistas in affordable education.

5. ICT and Accountability in Education

ICT holds great potential to ensure transparency in governance by providing seamless integration across different departments. E Kranti which is one of the nine pillars of Digital India aims at providing broadband connectivity to schools to help the sharing of resources. Initiatives such as the Academic Bank of Credits is another step in offering multiple options to students in the course of their learning journey. Tasks such as credit accumulation, credit verification, credit transfer/redemption of students will be handled through the Academic Bank of Credits.

Cross disciplinary learning is expected to increase due to this and students can chart their own learning journey and become skill oriented graduates.

ICT in Education: The Road Ahead

Today words like Blockchain, Artificial Intelligence (AI) and Robotics have become common parlance in our discussions. There is no doubt that these emerging disruptive technologies will slowly change the face of education. Tasks that can be automated will be taken over by devices thus leaving teachers more time to plan creative and effective learning

experiences. Blockchain technology will help to secure student data and employers will find it easy to ascertain the credibility of student records.

The NEP 2020 states that the National Educational Technology Forum (NETF) will be created to provide a platform for the free exchange of ideas on the use of technology to enhance learning, assessment, planning, administration both for school and higher education. Similarly the National Research Foundation is expected to follow a three pronged approach of advancing core AI research, developing and deploying application-based research, and advancing international research efforts to address global challenges in areas such as healthcare, agriculture, and climate change using AI. Similarly Universities are expected to offer Ph.D. and Masters programmes in core areas such as Machine Learning as well as multidisciplinary fields and professional areas like health care, agriculture, and law. As AI strongly relies on data, education at all stages must emphasize on awareness of IT laws and ethics related to data privacy, data handling and data security.

The aforementioned discussion will be futile if one does not address issues like India's digital divide. Where digital connectivity and accessibility to devices is concerned, there is a wide urban-rural gap. Regional divide and gender digital divide also exist. The way to address these issues is by promoting digital literacy, providing digital infrastructure in marginalized zones, promoting natural language processing (NLP) in Indian languages and evolving a robust cyber security framework for data security, safe digital transactions, and redressal of complaints.

ICT can truly help change the face of education. But this will not happen if it is just a fancy word and the privilege of a chosen few. We must accept that ICT is the pen and paper of today's world; it is the lens through which we experience the world.

ICT will undoubtedly play a vital role in transforming India to a vibrant knowledge society,

References

- 1. **National Education Policy 2020**, Government of India. Retrieved from https://www.education.gov.in/sites/up load_files/mhrd/files/NEP_Final_English_0.pdf
- Draft of National Professional Standards for Teachers, Retrieved from https://ncte. gov.in/ WebAdmin Files/PublicNotice/Hindi_0_17_11_2021_637727482281976435. pdf
- 3. Sustainable Development Goals. Retrieved from https://sdgs.un.org/goals
- 4. **Artificial Intelligence in Education.** Retrieved from https://en.unesco.org/artificial-intelligence /education#:~:text=The%20connection%20between%20AI%20and,of% 20AI%20on%20human%20lives).

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BUILDING A CULTURE OF COMPASSION IN THE CLASSROOM

* Dr. Agnes DCosta,

* Associate Professor, Pushpanjali College of Education, Vasai.

Abstract:

A positive classroom climate supports learning. A compassionate classroom culture helps to address the socioemotional needs of learners. This helps learners to realize that they are valued members of their class and makes
every class a precious space for connecting and collaborating. This study surveys how teachers contribute to
creating a classroom culture of compassion. It looks at some challenges faced by teachers in the same and
attempts to identify healthy practices followed by teachers to build a culture of compassion. A convenience
sample of 20 high school teachers was selected. The overall efforts put in by teachers to build a culture of
compassion are significant. The study reveals that syllabus completion and influence of media on students are
the most prominent challenges perceived by teachers. Few schools have structured programmes to
institutionalize practices that promote a healthy ethos for compassion. Thus it is seen that teachers are aware of
their role in building a classroom climate that supports socio emotional learning and they also work towards
enhancing a robust climate. However they need support from their institutions in terms of training for socio
emotional learning strategies. Efforts also need to be made to share stories of success so that all schools can
work towards building a compassionate classroom culture.

Key words: Socio-emotional learning, culture of compassion, connection and collaboration

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Introduction:

Learning depends upon a myriad of factors that could be classified as intrinsic to the learner and extrinsic to the learner. Among the intrinsic factors one can include the disposition of the learner, intelligence, previous knowledge, cognitive and metacognitive abilities whereas the extrinsic factors comprise of factors like the learning material, support extended to the learners, factors related to teacher, learning environment and so on. A positive classroom climate goes a long way in ensuring that learning is maximized. Nurturing a positive classroom climate means setting standards and creating an ambience where students feel accepted and valued by the teacher and peers. Such an atmosphere fosters individuality promotes self-esteem and enhance learner creativity. There is trust among teacher and learners and all these factors help the learner to learn effectively. A culture for compassion, both towards self and others, is the hallmark of a positive classroom climate.

While teachers do aim at creating a positive classroom, there could be challenges that they face in doing so. This study aims at identifying the efforts made by teachers in building a culture of compassion in their classrooms. It also tries to study challenges faced by teachers in the same. Teachers and schools may have some time tested practices that help in building a culture of compassion. The study tries to identify robust practices in this direction.





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Theoretical Background:

In 2008, Karen Armstrong in her acceptance speech on winning the TED prize asked for help in creating, launching and propagating a Charter for Compassion, based on the fundamental principle of the Golden Rule. The Golden Rule means treat others as you would like to be treated. People from over 100 countries contributed to the Charter. Advocates of global peace such as Dalai Lama and Archbishop Desmond Tutu endorsed the Charter. The Compassionate Action Network was launched in 2009 and since then the network has taken up many initiatives to build compassionate communities. Schools are the garden where human values are nurtured. Therefore ensuring an ethos of compassion in schools will help to build a compassionate world.

Review of related researches:

A number of studies point out to the significance in nurturing compassion in the classroom. Roeser and Pinela(2014) noted that the neuroplasticity of the adolescent brain is conducive to cultivating compassion. Emory University developed a cognitive based compassion training (CBCT) programme for elementary students. In this programme, the participants progress through eight topics: developing attention and stability of mind, cultivating insight in the nature of mental experience, cultivating self-compassion, developing equanimity, developing appreciation and gratitude for others, developing affection and empathy, realizing wishing and aspirational compassion, and realizing active compassion for others. Neff and McGehee(2010) studied 235 adolescents for self-compassion and found that self-compassion and connectedness are highly correlated. Students with high level of self-compassion report less substance abuse and psychological distress.

Estrada Marta and others (2021) examined how emotional intelligence plays a key role in optimising student's academic performance in the classroom through compassion and academic commitment. The research model was tested with a questionnaire addressed to 550 students from four higher education institutions and one secondary school. The results of a structural equation analysis confirmed the study hypotheses. Emotional intelligence was shown to be positively related to compassion and higher levels of commitment, which, consequently, led to better academic performance.

Marcela Matos et.al (2022) tried a Compassionate Mind Training Programme for teachers and found that the programme shows promise as a compassion-focused intervention for enhancing compassion, wellbeing and reducing psychophysiological distress in teachers, contributing to nurturing compassionate, pro-social and resilient educational environments.

The related studies helped to gain an understanding of the basics of positive classroom climate. This led to the formulation of the following guiding questions for the study

- 1. What are the efforts made by teachers to build a classroom culture that embodies compassion?
- 2. What difficulties do teachers face in building a classroom culture of compassion?
- 3. What are some healthy practices followed by schools to build a culture of compassion?

The study was entitled 'Building a Culture of Compassion in the Classroom'.

Culture of compassion in the classroom in this study refers to an environment where learners are accepted as complex people. It is an environment where learners feel respected and valued where their ideas and views are listened to and acknowledged. It is an ethos where the learner is not under any threat and inclusivity is celebrated.





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Methodology of the study:

The study involved a descriptive survey where the investigator studied the efforts of 20 high school teachers towards building a classroom climate that nurtures compassion. The sample was a convenience sample with teachers whose teaching experience ranged between 2 to 5 years. The tool used for the survey included 13 statements that had to be responded on a five point rating scale. These statements aimed at studying the teachers efforts towards building a classroom climate that promoted compassion. Challenges faced by teachers in their endeavor to nurture the same were identified through a checklist. Open ended questions in the tool sought information about the healthy practices followed to nurture a classroom climate that builds compassion. The tools have been prepared by the investigator and have not been standardized.

Findings of the study:

Efforts of teachers toward building a classroom culture of compassion:

70% teachers were always open to learning and honoring what students bring to the classroom. 85% teachers said that they always treated their students with dignity and respect and had a genuine desire to help them learn. 65% teachers always tried to understand difficult situations that their students were in and added that they responded to the pain and suffering within them. 50% teachers said that they made efforts to cultivate a cohesive community of students to promote a humanitarian educational experience. 50% teachers said that they listened deeply, fully and actively, absorbing their students' words, gestures, and silence. 45% teachers offered opportunities for their students to feel, reflect, and express themselves. 55% teachers felt that they themselves always radiated positivity. 35% teachers said that catering to the students' feelings and emotions is more important than completion of the syllabus. 45% teachers made efforts to integrate teaching learning activities to build compassion, trust and co-operation. 60% teachers shared their own experiences so that students are inspired to be compassionate and caring. 55% teachers said that they always made efforts to ensure building respect for one another in the classroom. 95% teachers said that they dealt with bullying on the spot. 70% teachers made efforts to ensure that students learn to be empathetic and caring towards all.

Challenges faced in building a classroom culture of compassion:

The teachers were given a list of probable challenges that come in the way of building a compassionate classroom. 95% said that the stress of syllabus completion leaves them with less time to cater to emotional needs of students. 30% teachers said that their students value marks more than building emotions and this is a challenge they face. 40% teachers said that competiveness seen in students becomes a challenge to ensure a compassionate classroom. Only 10% teachers cited their own lack of training a challenge in building a culture of compassion. 60% teachers felt that media influence is strong and this becomes a challenge to have a culture of compassion in the classroom. Only one teacher cited own stress as a hurdle in building a compassionate classroom.

Healthy practices in building a classroom culture of compassion:

Respondents shared the best practices followed in their institutions to help build a culture of compassion. Some interesting practices followed are

- Presenting case studies and video and following it with discussion
- Rapport building, counseling for students is commonly used to help them be compassionate towards self





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and others

- Inclusive learning and cooperative learning is followed
- One of the schools has initiated a programme known as RF21 (Ready for 21st Century Skills) wherein the school focuses on instilling life skills like 'Compassion' amongst many others. The program is designed in such a way that only one skill is focused on during the week through various activities, role plays, worksheets, and media that provides enough scope for the educators to drill the value in students.
- Some schools follow empathy building practices like respect for the support staff by appreciating their work, participating in school cleanliness, visiting orphanages and homes for the aged.
- One school has a program on Mindfulness where once a week there is one lesson reflecting on the needs
 of having compassion for each other. This is done through role play activities, videos or even
 presentations by students.
- Pairing high achieving student with a low achieving student (in terms of academics achievement) to make sure they realise the importance of helping each other is another healthy practice.
- One of the teachers said that he formed a secret superhero group of students called 'Avengers' (A+ students). The function of this group is follow up and help their classmates who are academically weak, to understand concepts and help complete their class work.
- Reinforcing the vision mission and core values of the school at assembly, engaging in sharing sessions where students can share what worries them are some healthy practices followed.
- One of the teachers shared that generally the students are caught for lack of discipline or for breaking the rules. Instead let students be 'caught for being kind and helpful', meaning when the teacher observes such instances then the kindness, co-operation or empathy displayed by the students should be acknowledged so that it becomes an example for other students to emulate.

Discussion of the findings:

The findings of the study offered many insights into awareness and efforts made teachers in order to have a culture of compassion in the classrooms. It is evident that most teachers are committed to making efforts to dovetail compassion, empathy and mindfulness into their teaching learning so only content is not the focus of learning. The responses shared by the teachers indicate that they value student diversity and treat them with respect. Reflective practices are integrated into learning experiences thus giving students a platform to examine their own actions. There is zero tolerance towards bullying and thus the emotional needs of students are catered to. Schools give importance to socio-emotional learning and in campus as well as out of campus activities are duly organised. However only 2 out of 20 teachers i.e 10% teachers said that their school had a structured approach to socio emotional learning. In case of the rest of the teachers, efforts were on an individual basis and not institutionalized. Teachers cited syllabi completion and effect of media are two major challenges that come in the way of building a culture of compassion. The extreme competiveness and hype over high marks sometimes contribute to neglect of socio emotional values.





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Implications of the study:

The results reveal that the teachers are aware of the need for socio emotional learning which can build a culture of compassion. They work towards the same in their own individual capacity. However if these efforts are institutionalized then the effect will be multiplied as students see all teachers involved in the socio emotional learning programme. One more observation was that teachers do not seem to have any formal training in Socio Emotional Learning (besides the inputs during their Teacher Education Course). It is necessary for schools to formulate some tried and tested strategies that can help to make socio emotional learning a part of the regular classroom activities. Teachers lack material and activities that can help promote a culture of compassion. Schools may collate best practices in this area and publicize them so that the entire teaching fraternity is benefitted. Ideally such experiences can be integrated into regular lessons and formulating learning outcomes based on the psychomotor and affective domains should be treated on par with learning outcomes of the cognitive domain. The results of the study are limited to just 20 teachers. But such a study taken up on a larger scale will help to gather more data. The results can be correlated with students' self-esteem or emotional health and valuable inferences could be drawn.

Thus it can be said that socio emotional learning is the need of the hour. With the increasing thrust on Global Citizenship Education, building a culture of compassion in the classroom will helpful as when compassion is ingrained in students, they will be able to extrapolate it to others even out of class. It will help to have empowered students who can contribute to their own well-being as well as the well-being of others.

References

Charter for Compassion. Retrieved 6 February 2023 from https://charterforcompassion.org/charter

Roeser, R.W. and Pinela, C. (2014), *Mindfulness and compassion training in adolescence: a developmental contemplative science perspective*, New Directions for Student Leadership, Vol. 2014 No. 142, pp. 9-30, doi: 10.1002/yd.20094.

Neff, K.D. and McGehee, P. (2010), *Self-compassion and psychological resilience among adolescents and young adults*, Self and Identity, Vol. 9 No. 3, pp. 225-240, doi: 10.1080/15298860902979307.

Matos M, Albuquerque I, Galhardo A, Cunha M, Pedroso Lima M, Palmeira L, Petrocchi N, McEwan K, Maratos FA, Gilbert P. *Nurturing compassion in schools: A randomized controlled trial of the effectiveness of a Compassionate Mind Training program for teachers*. PLoS One. 2022 Mar 1;17(3):e0263480. doi: 10.1371/journal.pone.0263480. PMID: 35231057; PMCID: PMC8887735.

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Original Research Article

SOCIAL - EMOTIONAL COMPETENCY AMONG TEACHERS - A PRE-REQUISITE FOR SOCIAL EMOTIONAL LEARNING AMONG STUDENTS

*Dr. Jayesh Jadhav & ** Sr. Delicia Fernandes,

* Associate Professor, Chembur Sarvankash Shikshan Shastra Mahavidyalaya, Chembur

**I/C Principal, Pushpanjali College of Education, Vasai

Abstract:

This paper focuses on the need and urgency of developing the Social Emotional Competency of teachers as well as the students. Teachers play an important role in helping students deal with their social and emotional crises. In order to enable the students SEL, the teachers themselves should be well-equipped with this soft skill. Hence the 21^{st} century teachers should first be aware of their own social-emotional needs and the ways and means of handing their personal crises, only then can they help her wards. SEC is one of the essential core competencies in today's challenging world so as to foster the students SEL.

Key words: Social- Emotional competency, Social – Emotional Learning,

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Introduction:

"When educating the minds of our youth, we must not forget to educate their hearts", says Dalai Lama.

The heart represents social and emotional skills. But in order to impart Social-Emotional skills to students, the teacher herself should be equipped with these skills. Thus Social-Emotional Competency is the need of the hour in today's chaotic classrooms. Social interaction between the teacher and the student and the quality of their relationship are essential for the students' cognitive, social, and affective-motivational development (Cornelius-White, 2007; Roorda et al., 2011; Kunter et al., 2013; Hamre et al., 2014; Aldrup et al., 2018a).

Teachers experience a wide range of emotions varying from extremely positive to extremely negative emotions such as joy, pride, satisfaction, happiness, contentment, enthusiasm and hope to sadness, dissatisfaction, anger, frustration, hopelessness, lethargy anxiety, depression and burnout.

In the Indian classroom the teacher finds herself in the midst of a multitude of crises such as demotivated students, chaotic administration, stress, lack of communication, misbehaviour, competition and criticism from colleagues, lack of financial stability, lack of job satisfaction, over expectations of stakeholders, excessive workload, poor service conditions, lack of congenial work environment, racial or sexual harassment, pressure from the educational department, lack of job security and the list is endless. Over a period of time, the teachers' feelings such as anger or anxiety and the inability to interact efficiently and the inability to build positive relationships with the students are associated with a low occupational well-being (Schutz and Zembylas, 2009; Klassen et al., 2012; Dicke et al., 2015; Aldrup et al., 2017, 2018b). According to Darling-Hammond (2001), stress and poor emotion management lowers a teacher's intrinsic motives, reduces the feelings of self-efficacy,





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and are the most common causes of a teacher's dissatisfaction and resignation. In this regard, many researchers have repeatedly emphasized the crucial role of the teachers' social-emotional competence for over a decade (Brackett and Katulak, 2006; Jennings and Greenberg, 2009). In this context, we see that the SEC of the teacher plays an important role in the Social Emotional growth of her students.

Social-Emotional Competency (SEC):

SEC roots from Social competence and Emotional competence. However, these two competencies are interrelated. Social competencies are defined as the skills facilitating individuals 'to live together in the world' (Arendt 1958) consisting of aspects of interpersonal, intercultural, social and civic competencies. Lerner (2007) defines emotional competence as "the ability to identify and manage one's emotions. These two competences-Social competency and Emotional competency are intimately intertwined (Denham et al., 2002; Halberstadt, Denham, & Dunsmore, 2001). Social-emotional competence involves a person's knowledge, skills, and motivation necessary to master social and emotional situations (Elias et al., 1997; also see Weinert, 2001). Hence SEC encompasses a variety of skills such as recognising and managing emotions, social skills, responsible decision making, and high ethical standards.

According to CASEL (Collaborative for Academic, Social, and Emotional Learning), the five core SEL (Social-Emotional Learning) competencies are -

- 1. Self Awareness: is about being true to oneself.
- 2. Self- Management: is the ability to manage one's emotions
- 3. Responsible decision making: implies making the right decisions and taking responsibility for them.
- 4. Social Awareness: is about empathizing with others.
- 5. Relationship skills: involve the ability to make, nurture and sustain positive relationships.

Assessment of Teachers' Social-Emotional Competence:

Different questionnaires for self-reporting can be used to assess the emotion parameter and relationship management skills. E.g. the Emotion Regulation Questionnaire (ERQ - Gross and John, 2003) which asks the partakers to rate how many times they apply reappraisal and suppression. The ICQ - Interpersonal Competence Questionnaire (Buhrmester et al., 1988) measures the degree to which people view themselves as able to initiate a relationship so as to pursue and provide emotional care, to assert themselves and for the resolution of conflicts.

Significance of SEC:

- SEC helps the teacher as well as the students to have positive social and emotional growth.
- It helps in improving the academic scores.
- It gives satisfaction to the teacher as well as students.
- It helps in increasing their self-esteem. SEC nurtures a positive social relationship between the teacher and her students.
- It helps in reducing mental health issues. Healthy development of the Cognitive and Psychomotor domain takes place.
- It enhances interpersonal and intrapersonal skills. It is known to bridge the gap between the teacher





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- student and teacher stakeholders.
- SEC enhances the student's ability to conduct favourable behaviours, build and sustain healthy positive relationships with others and also show a better school performance (Elias, 2019; Greenberg et al., 2017; Schonert-Reichl, 2019). Social-Emotional wellbeing creates a safe and secure congenial learning environment.
- It helps in building a positive institutional climate. SEC helps the teacher in managing the classroom efficiently.
- It enhances the teacher's classroom effectiveness and productivity.
- SEC of the teacher increases her job satisfaction.
- It satisfactorily dictates the physical, mental and social health of the teacher and students.

Thus, SEC plays a very important role in today's educational system. According to Patricia Jennings and Mark Greenberg, the foremost experts in the field of SEL, prove that teachers who hold a high SEC are less likely to experience burnouts as they are capable of handling their Social Emotional states and also of their students.

Emerging Trends in SEL:

According to the **NEP 2020**, the educational system must target to develop good human beings proficient of rational thought and actions possessing compassion and empathy for the holistic development of the children. NEP 2020 explicitly speaks about the need to include SEL in the daily school curricula. It emphasizes the importance of counselling and mental health services in the schools today.

ISELF: Indian Social and Emotional Learning Framework, developed by The Teacher Foundation is a national -level research based educational resource to foster SE development among Indian children. Its main objective is to assist teachers and counsellors to develop the firm social-emotional competencies in children.

Labhya Foundation, is a non-profit organization which focuses on creating SEL programs for students in India. This organization works not only for the social and emotional well-being of the students but also of the teachers. **"Happiness Curriculum"** launched by the Delhi State Education team aims at helping students and teachers to practice emotional regulation, relationship building and action orientation. The students have a bi-weekly Happiness for 45 minutes.

Hence, SEL is a core competency in the changing world of today. SEL requires a constant sharing of the onus by the stakeholders such the policy makers, educators, parents, researchers and investors.

Thus in a digitally ever evolving world of AI, SEC is one of the core competency that will make us truly human. Therefore improving the teachers SEC would not only enhance the teacher's classroom efficiency but on the whole would elevate the overall quality and standard of education. SEC is thus recognized as an important and teachable characteristic and it should to be acquired by both children and by adults (Greenberg, Domitrovich, Weissberg, & Durlak, 2017; Huitt & Dawson, 2018; Inna, 2017; Schonert-Reichl, Kitil, & Hanson-Peterson, 2017). A research study revealed that when social and emotional skills were taught by teachers in the school, the students' conduct and attitude toward the school enhanced (Durlak et al., 2011).

Hence SEC among teachers is a pre-requisite for the SEL among students.







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References:

- Shanmugasundaram, U., & Mohamad, A. R. (2011). Social and emotional competency of beginning teachers. Procedia-Social and Behavioral Sciences, 29, 1788-1796,retrieved on 18th April 2023 from https://pdf.sciencedirectassets.com/
- Dung, D. T., & Zsolnai, A. (2021). Teachers' social and emotional competence: A new approach of teacher education in Vietnam. Hungarian Educational Research Journal, retrieved on 18th April 2023 from https://www.researchgate.net/publication
- Nonglait, W. L., & Myrthong, E. B. (2019) International Journal of Scientific Research and Reviews, retrieved on 19th April 2023 from https://ijcrt.org/papers/IJCRT1133450.pdf
- Sharma, P. (2021). Nurturing socio-emotional skills in the context of schools. *GYANODAYA-The Journal of Progressive Education*, *14*(1and2), 29-39, retrieved on 20th April 2023 from https://cdn.azimpremjiuniversity.edu.in
- Lozano-Peña, G., Sáez-Delgado, F., López-Angulo, Y., & Mella-Norambuena, J. (2021). Teachers' Social—Emotional Competence: History, Concept, Models, Instruments, and Recommendations for Educational Quality. Sustainability, 13(21), 12142, retrieved on 21st April 2023 from https://www.mdpi.com/
- Herndon, C. L. (2021). The Social Emotional Competence of Teachers and Their Responses to Children with Challenging Behaviors. Walden University, retrieved on 22nd April 2023 from https://www.proquest.com
- Measurement of teachers' social-emotional competence: Development of the social-emotional competence teacher rating scale, Tom, K. (2012), retrieved on 22nd April 2023 from https://scholarsbank.uoregon.edu

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Benchmarking Quality and Accrediting Institutions of Teacher Education: The Revised NAAC Framework

National Webinar Sponsored by the National Assessment and Accreditation Council (NAAC)

Editors:
Dr. Sheela Philip
Dr. Giselle D'souza



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Hosted by

St. Teresa's Institute of Education, Santa Cruz (West), Mumbai 400054





Use of TPACK Model for Designing Robust Learning Ecosystems

3

Dr. Agnes Dcosta*

ABSTRACT

The TPACK (Techno-Pedagogic —Content Knowledge) Model developed by Mishra and Kohler (2006) offers a direction to successful integration of technology, pedagogy and content to help teachers design and deploy effective teaching-learning experiences. The Model, which is an extension of Lee Shuman's Pedagogic Content knowledge, focuses on seven components which help a teacher to meaningfully integrate technology into pedagogic practices so as to transact content effectively. This paper analyses the seven components and seeks to identify components that need to be strengthened to help a teacher design an effective learning ecosystem.

Keywords: Technological knowledge, content knowledge, pedagogic knowledge, TPACK

INTRODUCTION

Teaching is a complex process involving sound content knowledge, suitable pedagogic practices and effective use of technology. Sound Content Knowledge(CK) of the teacher is imbibed during the pre-service stages (when the teacher goes through formal education to get his/her academic qualifications). This content knowledge is sustained and



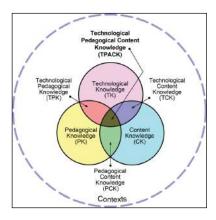
^{*}Associate Professor, Pushpanjali College of Education, Vasai.



enhanced during the in-service period by reading reference material, interacting with online content and also through attending seminars and related events that focus on subject content. Pedagogic Knowledge(PK) is generally developed during the Teacher Education programme that prospective teachers undergo. However as part of formal and informal professional development every teacher is expected to enhance this Pedagogic Knowledge through experimenting with new pedagogic approaches, carrying out Action Research and orienting oneself to new pedagogic tools. Technological Knowledge (TK) is imbibed during both the pre-service and in-service periods through formal ways like undergoing training in technology or informal ways like indulging in self directed learning. The effectiveness of the learning ecosystem created by the teacher depends upon the right blend of Content Knowledge, Pedagogic Knowledge and Technological Knowledge. This paper analyses the status of the above three types of knowledge for a select group of in-service teachers and attempts to make suggestions to nurture robust learning ecosystems by use of TPACK Model. The study is entitled 'Use of TPACK Model for Designing Robust Learning Ecosystems'.

THEORETICAL BACKGROUND

The TPACK Model proposed by Mishra and Kohler support the integration of Technology-Pedagogy and Content Knowledge. It is an extension of Lee Shulman's theory of Pedagogic Content Knowledge. Seven areas emerge from the TPACK Model.



(Source: Rights free image taken from http://tpack.org/)







The seven components of the TPACK Model are described below.

- (i) Technological Knowledge (TK): Knowledge of various technologies from low range technologies like chalkboard to digital technologies involving use of the internet.
- (ii) Pedagogic Knowledge (PK): Knowledge of the methods of teaching, evaluation, lesson planning, classroom management and learner psychology.
- (iii) Content Knowledge (CK): Knowledge of the subject that the teacher teaches.
- (iv) Technological-Pedagogical Knowledge (TPK): Knowledge of which technologies are better suited to the approach that the teacher uses.
- (v) Pedagogical-Content Knowledge (PCK): Knowledge of which pedagogic approaches are better suited to the content that is being taught.
- **(vi) Technological-Content Knowledge (TCK):** Knowledge of how content can be enriched by use of appropriate technology.
- (vii) Technological-Pedagogical-Content Knowledge (TPACK): Knowledge that helps teachers to integrate technology into the content area while incorporating appropriate pedagogic practices.

OBJECTIVE OF THE RESEARCH

The objective of this study is to study the extent to which in-service teachers integrate the TPACK Model in the teaching-learning process.

METHODOLOGY, SAMPLE AND TOOLS

The study is basically a descriptive research involving a survey. It is preliminary study conducted with the intent of finding out further how TPACK Framework is contexualised by teachers. Hence at this stage qualitative aspects are considered more than the quantitative aspects. The sample was limited to 24 in-service teachers to facilitate interaction with the teachers and get insight into how they integrate TPACK Framework within a contexualised situation. These teachers taught different subjects at the Secondary and Higher Secondary School levels. Convenience sampling was used to identify the participants. The tool was circulated on a social networking site comprising of those







who had completed their Teacher Education Programme during the academic year 2016-18. Thus all the participants have two years of teaching experience. A rating scale was used to find the extent to which in-service teachers integrate the seven areas of the TPACK Model. The four point rating scale had four statements for each of the seven areas.

RESULTS

Table-1: Status of various dimensions of TPACK Model

Level of each dimension of the Model	Very High	High	Low
Dimension of TPACK Model			
Technological Knowledge	62.5%	37.5%	0
Pedagogic Knowledge	79.1%	20.9%	0
Content Knowledge	79.1%	20.9%	0
Content Pedagogic Knowledge	66.7%	33.3%	0
Techno-Content knowledge	79.1%	20.9%	0
Techno-Pedagogic Knowledge	58.3%	41.7 %	0
Techno-Pedagogic-Content Knowledge	41.7%	50%	8.3%

The above table indicates that more than 60 % participants report very high levels of knowledge in individual dimensions of the TPACK Model. When asked about levels of knowledge requiring a blend of two dimensions of the TPACK Model, more than 60 % participants have reported very high level for Content-Pedagogic Knowledge and Techno-Content Knowledge and 58.3% report that they have very high levels of Techno-Pedagogic Knowledge. However, where a blend of all three dimensions is need in form of Techno-Pedagogic-Content Knowledge just 41.7% feel that their level in this dimension is high. This indicates that while teachers evaluate themselves as competent in individual dimensions namely Technical Knowledge, Pedagogic Knowledge and Content Knowledge, they feel they are less competent at blending these dimensions together.

It is important to note that these results are based only on a selfdisclosure tool. More research findings will emerge if along with selfdisclosure, the respondents were also observed in actual classroom teaching situations to see how the three dimensions are blended. An







intricate analysis of their lesson plans, in depth interviews regarding the methods used and perhaps data garnered from students will help to have more meaningful data. Since this is only a preliminary study, the investigator has only used a self-disclosure tool. Even this gives some insights into the integration of TPACK Model in teaching and the discussion of these insights is presented in the form of implications.

Implications: The TPACK Framework has implications for Pre-service Teacher Education as well as for In-service Continuous Professional Development. It is also of significance when designing Open and Distance Learning (ODL) programmes.

- (i) Robust Content Knowledge with multidisciplinary nuances: Content Knowledge includes knowledge of theories, concepts and organizational frameworks related to a subject. This will be influenced by other subjects within the discipline. It depends upon the grade or level that the prospective teacher will be teaching but is also linked to the content knowledge of the preceding and succeeding grades. Hence Teacher Education Institutes must include experiences for a strong content base with a multi-disciplinary perspective. For example, a teacher teaching Chemistry must have sound knowledge of Physics, Biology and Mathematics and also have reasonable knowledge of other disciplines as these will reflect on the understanding of the content knowledge of Chemistry. If the teacher teaches Chemistry at Secondary level. He/she must be aware of what the learner has learned at Primary level and what is included at the Higher Secondary level in the subject. Besides this, knowledge of the application of what is in the content is extremely important. Teacher Education should therefore give importance to creating a proper content base. Content enrichment programmes can help in this direction.
- (ii) Meaningful Pedagogic Practices: Pedagogic practices in general include knowledge of the practices and processes of teachinglearning. Child psychology, classroom communication, theories of learning, group dynamics, assessment practices, philosophical and sociological base of education, knowledge of a country educational policies and a very good understanding of the local context are essential to designing meaningful pedagogic practices. While these areas are duly addressed through the Teacher Education curriculum,









it is worthwhile to have theory-practice connects through well planned internships, action research, mentoring by school teachers, sharing of best practices in pedagogy and motivating studentteachers to try innovative pedagogic practices geared to the needs of the students.

- (iii) Building Technological Skills: Having knowledge of technology and possessing the ability to use it skillfully is every essential to a teacher. In the present times, a teacher needs to be aware of use of apps, Virtual Reality/ Augmented Reality, cloud based education and Web 2.0 technology to foster student involvement in learning. Basic trouble shooting skills and ability to choose forma wide array of digital resources coupled with a strong base of media literacy and information literacy are all vital as part of technology skills. Most pre- service Teacher Education programmes do take this aspect into consideration by including a course in Information and Communication Technology. But this needs to be an evolving course with plenty of learner flexibility as new technology keeps getting added every day. So rather than have student-teachers merely learn technological tools, it will be better if they 'learn how to learn about technology'.
- (iv) Ability to have an optimal blend of the TPACK dimensions: It is very important for teachers to find the right blend of the three dimensions of the TPACK Model. This means that teachers know how to use tech tools along with appropriate pedagogic practices appropriate to the content being transacted. For example, if a teacher is using an LMS to support the students learning, then knowledge of content (CK) and knowledge of the LMS (TK) must be supported with sound knowledge of the pedagogy best suited for the LMS. If in this case the teacher only uses the LMs to post text material then there is no optimal use of the LMS in terms of the pedagogic techniques it can support. But if the teacher uses the LMS to foster collaborative learning, to cater to different learning styles, to assess and offer remedial inputs to those who need the same then we can say that the technological features of the LMS are well coordinated with the pedagogic inputs. Thus purposeful blending of Content Knowledge, Technological Knowledge and Pedagogical Knowledge is ensured if one uses the TPACK Model.









For this teachers need to know how to plan using technology be it for in-person face to face learning or online learning. In in person learning, the teacher is present and uses technology to support the classroom experiences. Here since learning in synchronous mode and in presence of peers, use of technology should be judicious. It should not replace hands- on- experiences, discussion and such other experiences that involve student-student and student-teacher interaction. If using the Blended Learning Mode then students may learn asynchronously using appropriate tech tools. Such experiences could include individual or group activities. Teacher Education and Continuous Professional Development experiences for teachers therefore must help teachers to choose the right technology and the right pedagogic approaches.

(v) TPACK Model in the context of ODL Programmes: Open and Distance Learning(ODL) is an important aspect of lifelong learning. ODL programmes present opportunities for professional development and career advancement. Technology provides a platform to reach learners by transcending boundaries of space and time. ODL programmes must be guided by TPACK Model and pedagogies must be aligned to learner attributes like their maturity, need, experience and interests. Many of these learners have varied backgrounds and may join an ODL programme expecting different learning outcomes. TPACK helps to design variety of experiences so that learners can choose learning experiences suitable to their needs. The National Education Policy 2020 states that credits will be given in all Bachelor's Degrees if they are done from various departments in multidisciplinary institutions or through ODL mode when they are not offered in-class at the Higher Education Institutes. For this ODL programmes will assume a new significance and will have to be of high standards. Implementation of the TPACK Model will help to enhance the quality of ODL programmes.

In conclusion, it can be said that the TPACK Model is useful for in-person learning, Blended Learning and Open and Distance Learning. It is useful across all disciplines. The Model can be used to design effective learning experiences during formal education as well as for professional development. Hence all educators need to reflect on the Model and integrate it for teaching-learning and assessment.









REFERENCES

- 1. TPACK Framework, Retrieved from https://www.punyamishra. com/2008/01/12/mishra-koehler-2006/
- 2. Evrin Baram, H. Chaung and Ann Thompson (2011) TPACK- An **Emerging Research and Development Tool for Teacher Educators.** The Turkish Online Journal of Educational Technology – October 2011, volume 10 Issue 4. Retrieved on 21 July 2020 from https://files.eric. ed.gov/fulltext/EJ946646.pdf
- 3. National Education Policy 2020, Ministry of Human Resource Development, Govt. of India. Retrieved on 1 August 2020 from https:// www.mhrd.gov.in/







9

Cloud Drive; Smart Space in Learning Ecosystem

Dr. Mabel Pimenta*

ABSTRACT

Cloud Drive is a new and easy way to store, edit and share all kinds of data. It is a web storage application. It is not necessary to explicitly back up computer systems. It automatically backs up data in real-time. It eliminates the need to carry external hard-drives to other locations. The data is stored onto the cloud and can be easily accessed via the internet. One can access data on the move. In this paper, we come across five Cloud Storage Service Providers: Amazon, Google, Apple, Microsoft, Dropbox.

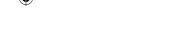
INTRODUCTION

In this pandemic period of Covid 19, all the schools and colleges have created their own Learning Ecosystems. In the ecosystem students are actively using technology tools for inquiry and exploring new apps for learning. The students and teachers interact within the ecosystem to construct learning experiences. In Learning Ecosystem, teachers nurture a community of the students. They know their interest in learning, strengths and challenges in digital classroom. The teachers play roles of learner and explorer along with content expert. Emphasis of teachers need to be on encouraging the students to follow net related etiquettes and make responsible use of technology resources. Students need access





^{*}Principal, Pushpanjali College of Education, University of Mumbai.



to multimedia content, that includes various resources and documents in learning ecosystem. When the students and teachers want to access content, they can use stored data onto the cloud.

Our data is generally scattered in different locations like Computer, Smartphone, Tablet PC, external disks, Etc. Cloud Drive is a new and easy way to store, edit and share all kinds of data. It brings all data together in one location and provides access to data via the internet. One can share documents, movies and photos. Cloud Drive handles all types of files like documents, spreadsheets, pictures, Etc. It enables stream music and movies to iPhone or Android phones. Users can also upload images directly from a phone or a tablet computer. The data will then be instantly available to anyone and choose to share it.



As illustrated in the above example, data can be uploaded via iMac on the cloud drive. They can be accessed and synchronized via desktop with a Windows O.S, laptop, and smartphone.

BIG COMPANIES OFFERING CLOUD DRIVE

Many companies offer Cloud Storage. The writer would focus on the following companies:

- Amazon- Largest online retail store
- Google- Online search engine
- Apple Mac products
- Microsoft- Windows Operating system
- Dropbox- Storing data in cloud









AMAZON DRIVE

Amazon was the first company to start up with the concept of Cloud drive.

- It offers up to 5 GB of free storage and some more with paid plans. Upload anything with no limit on file size and access documents with an internet connection via any PC or handheld device.
- Unique and appealing focus on media- One can store existing music library in Amazon Cloud Drive but also any mp3 you purchase in future.
- User friendly interface-new users are comfortable to use Amazon Drive
- Help and support- The users are entitled to the company's full range of help and support options. They would revert and answer your query in 24 hours.
- · Link: www.amazon.com/clouddrive

GOOGLE DRIVE

Google released on April 24, 2012, Google Drive, is a file storage and synchronization service

- 5GB of free storage is provided to the users.
- Google has integrated into its existing solutions- Users of Gmail
 can send bulky attachments through Drive. It is possible for Google
 Docs users to collaborate on documents from within the platform.
 Google+ users can find their videos and visuals in Drive instantly
 available on the social network. Google is big on integration, and
 once again it has proved with Drive.







- *
- Third-party apps play a crucial role- Google is not establishing a walled garden with Drive. The company says that a host of third-party application suppliers will support the service, which will allow the users to store and share content across multiple platforms. In the online world can transfer data from one service to another is increasingly appealing to users. It is a welcome move by Google and its partners.
- Link: www.drive.google.com



APPLE ICLOUD

The entire logo conveys the meaning to the users. iCloud is yet another cloud storage and cloud computing service from Apple Inc. announced on June 6, 2011. The service allows users to store data such as music and iOS applications on remote computer servers for download to multiple devices

- Acts as a data syncing centre- For email, contacts, calendars, bookmarks, notes, reminders (to-do lists), iWork documents, and other data. The service also allows users to wirelessly back-up their iOS devices to iCloud instead of manually doing so using iTunes.
- iOS device back-up and restore- iCloud allows users the option to back up iOS devices online (users can choose to continue to back-up to their computers), thus they can be restored from online back-up without connecting to a computer
- Photo Stream Photo Stream is a service supplied with the basic iCloud service. When a photo is taken on a device with Photo Stream enabled, it is uploaded automatically to the iCloud servers; from there, it is pushed automatically to the rest of the user's registered devices. The service is also integrated with Apple TV, allowing users to view their recent photos wirelessly on their HDTV.









- 5 GB of free storage of data is given on Apple iCloud
- · Link: www.icloud.com



MICROSOFT SKYDRIVE

On Sky Drive users With Office Web Apps can upload, create, edit, and share Microsoft Office documents directly within a Web browser. Users can create, view and edit Word, Excel, Power point and One note users can co-author Excel directly within the web browser, and One Note documents with another web user. Users can view the version history of Office documents stored on SkyDrive.

- The service offers free storage 7 GB
- Built using HTML-5 technology

Integration with Microsoft Office- Users of the latest versions of Microsoft Office (for Microsoft Windows and OS X) can use all the desktop applications to edit the section of documents stored on Sky Drive simultaneously. when users save the document, changes are synchronized, and where there are conflicts, the saving user is given the option to choose which version to keep. It is a suite known as collaborative real time editing. It enables multiple users to use combinations of desktop applications and web apps to edit a document.

Document embedding- Sky Drive enables users to embed their office documents like Word, Excel and Power Point onto other web pages. These embedded documents allow anyone visiting these web pages to interact with it, for example- to browse an embedded Power Point slide show or perform calculations within an embedded Excel spreadsheet.







Download as. zip file -4GB or 65,000 files- Users can download Entire folders as a single. zip file with SkyDrive. For a single download, there is a limit of 4GB or 65,000 files (whichever comes first).

· Link: www.skydrive.com



DROPBOX

To write the Dropbox server and desktop client software, Python is used. The service offers 2 GB of free storage. Its focus is on synchronization and sharing. Files deleted from the Dropbox folder can be recovered from any of the synced computers, as it supports revision history.

- Delta encoding- Dropbox enables several users to edit and repost files without overwriting versions, thus supports multi-user Version Control. The version history with an unlimited version called "Pack-Rat" available for purchase, is by default kept for 30 days. The version history is combined with the use of technology called delta coding. When a file in a user's Dropbox folder is changed, the Pieces of File that are changed when synchronising Dropbox only uploaded by Dropbox.
- LANSync Allows computers on a local area network to securely download files locally from each other instead of always hitting the central servers
- · Link: www.dropbox.com











USES OF CLOUD

• Data access –You can access data anytime and from anywhere



- Data Security- Data security is a top priority for cloud service providers. It Involves data replication with multiple data centers through redundant dark fiber and the market's most secure firewalls. There are always at least 2 copies of the same data on different physical locations. If there is a crash in the main server room, a backup server will take over the operation very shortly.
- Encrypt and password protect your data- Cloud Drive can be set to automatically encrypt your data and you decide who should have access. Exchange of data between devices and Cloud Drive is secured via SSL connections. User can recover deleted files. Capacity of cloud is very high in terms of storage of data and it can be expanded as per the need. It provides auto back up. It is possible to share files and collaborate.
- Mobile Apps: We are now in the age of mobile computing. iPhone, iPad, Android, other smart phones & tablets are quickly taking the roles of laptop and netbook. It was said that number of mobile computing users will soon surpass that of desktop users. You need to check out whether the provider in interest has apps for your tablets and smart phones.
- Support: Not all people are tech savvy, and support is what makes
 providers different. Most providers offer knowledge base system
 and email support. Some providers have chat and phone support,
 but it is not free.
- Free Cloud storage to consider: JustCloud Unlimited free cloud storage if you refer to friends. CX Immediately get 10GB, no need to refer friends. Dropbox super simple solution, immediately get 2GB, refer 32 friends to expand your Dropbox to 10GBz







CHALLENGES IN USING CLOUD STORAGE

- Stable Internet Connectivity-it is essential to use data stored on the cloud.
- Misuse of credentials is possible while accessing data from the cloud.
- Client installation is mandatory- If we goto a place where we want to access data from Cloud Drive but don't have the Admin rights; we can't install the client and hence can't have an access to the data.
- Data/data packets can be sniffed- Since data is over the internet, data packets can be sniffed by an intruder.
- Pricing: You should also check the price of their paid plans too.
 Your data will grow over time, and you may one day need to upgrade to paid plan. Some providers offer larger free space up front, but if you want more space and buy a subscription, their price may be a little higher than that of other providers.

REFERENCES

- www.amazon.com
- www.readwriteweb.com
- www.one.com
- www.dropbox.com
- · www.drive.google.com
- www.skydrive.com
- www.clouddrive.com
- http://en.wikipedia.org/wiki/Cloud_Backup









Education GenNext Perspectives, Opportunities and Challenges

Editors:

Dr. Sr. Tanuja Waghmare

Dr. Shakuntala S. Nighot



Education GenNext Perspectives, Opportunities and Challenges







17

Case Study of Jeevan Jyoti Inclusive School (Theme-Global Issues in Education)

*Dr. Mabel Pimenta

ABSTRACT

Inclusion is about learning to live and care for each other. Inclusion involves learning how to love and care for one another. Inclusion implies inviting people left out to come in. It is structuring schools as a society where all children can learn. Inclusion is a noble undertaking to comprehend kids with unique needs, requirements, and ambitions. The inclusion ideology is based on the reasoning that "Children learning together learn to live together" It emphasizes changing the system as opposed to the child.

'Inclusive education' policy has been introduced in India, however the concept is in its infancy This qualitative study analyses the case Jeevan Jyoti Inclusive School of Varanasi in India. It elucidates the benefits and challenges of children with disabilities in inclusive education.

This case study was designed to explore how a school in Varanasi (Uttar Pradesh), India adapted and implemented inclusion. The perceptions and experiences of the principal, teachers and parents regarding inclusion were also explored in the context of inclusive practices of the school. Multiple sources of data collection including in-depth interviews, observations, document review and focus group were used to answer research questions.

E-mail: pimentamabel60@gmail.com

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^{*}Principal, Pushpanjali College of Education.



BACKGROUND OF THE STUDY

In India, efforts are made at National, State, and Local levels to promote Inclusive Education. The movement with a motive education for all titled as 'Sarva Shiksha Abhiyaan' is being implemented in the Indian scenario by the government since 2000 to include all types of learners such as children with environmental diversities and diversity in disability. Non-Government Agencies (NGOs) in India play a significant role as it functions at the grass-root level to collect database and start need-based inclusive schools in rural and remote areas. Mass media plays a substantial role in embracing the concept of Inclusive Education in the community, mainly by the parents of non-disable children. Episodes like 'Satyamev Jayate,' videos, and documentaries on the rehabilitation of children with special needs that are widely watched by the masses are successful in accepting and working with them.

Inclusive education is when all students, regardless of any challenges they may have, are placed in age-appropriate general education classes that are in their own neighborhood schools to receive high-quality instruction, interventions, and supports that enable them to meet success in the core curriculum (Bui, Quirk, Almazan, & Valenti, 2010; Alquraini & Gut, 2012).

RESEARCH CONTEXT AND RATIONALE

The policy of 'Inclusive Education' is in infancy in India. However, it is cost-effective, hence beneficial for developing countries. More than 90% of kids with disabilities are discovered in India's rural regions. The special schools and integrated education programs are few and cannot serve all the disabled children. So, inclusive education is essential to provide educational opportunities to all disabled children in their locations.

In India, the 'disability' classification is laid out in Persons with Disabilities Act 1995, which outlines seven kinds of 'disabilities', namely blindness, low vision, hearing impairment, locomotor, leprosy cured, mental illness and mental retardation. In this paper, the first two categories are considered – children with blindness and low vision. Education in the light of the right to education for children with disabilities as laid out in CRC and more illustriously in UNCPRD, this research seeks to understand the experiences of children with disabilities in the inclusive school in Varanasi, India.

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This qualitative study analyses the cases of children with disabilities studying in an Inclusive school in Varanasi, located in Uttar Pradesh, India. The inclusive culture was analyzed after a study of the knowledge, skills, and attitude of teachers, parents, and children in accepting children with disabilities. An effort is made to elucidate the benefits

In the preview of the right to education for children with disabilities as laid out in CRC and more illustriously in UNCPRD, this research seeks to understand the experiences of children with disabilities in the inclusive school in Varanasi, India.

CONCEPTUAL FRAMEWORK

and challenges of inclusive education.

This research considered an 'inclusive school' as one where the children with disabilities studied alongside their non-disabled peers with some support mechanisms for continuing their education in that school.

In India, the 'disability' classification is laid out in Persons with Disabilities Act 1995, which outlines seven kinds of 'disabilities,' namely blindness, low vision, hearing impairment, locomotor, leprosy cured, mental illness and mental retardation. In this paper, the first two categories are considered – children with blindness and low vision.

RESEARCH OBJECTIVES

- To find out how Jeevan Jyoti Inclusive School is with regard to students with special educational needs.
- This study aims to examine the extent to which Jeevan Jyoti Inclusive School meets the criteria for an inclusive school.
- Examine the experiences of children with disabilities in inclusive schools
- Observe the attitude of the teachers
- Study cooperation of the parents

RESEARCH METHODOLOGY

The present qualitative study is about interviews of children with disabilities, general education teachers, resource teachers, and parents of children with disabilities in an inclusive school in Varanasi, Uttar Pradesh. The researcher employed the case study method as it allows an









intensive study (Shepard 2003) within its real-life context of children with disabilities.

Table 1

Ontology	Interview
Viewing the social reality as the social construction of the participants Participant and non participant observation, both the methods were used for the research.	In depth interviewing has been used to gather information from the students, teachers, parents and peers (non disable).

METHODS

To address the inclusivity of 'Jeevan Jyoti Inclusive School' case study research design was used to ascertain multiple perspectives through interviews. A profile of each of the four children was compiled from information obtained from their teachers, special needs assistants, and parents.

This qualitative study is based on the discussion with children with disabilities in the Inclusive school at Varanasi. The researcher employed the case study method as it allows an intensive study (Shepard 2003) within its real-life context of children with disabilities. As a part of the case study total of 17 in-depth interviews were conducted, nine of the students and 8 of teachers, parents, and the principal.

Interview technique - In-depth interviews of 9 learners with special needs, were conducted from an inclusive school in Varanasi. The general characteristics of the children are presented in Table 1.

RECORDING OF INTERVIEW FOLLOWED BY ITS ANALYSIS

Table 2: Characteristics of research respondents-students

Name	Age	Class	Disability
1. Deepti	7	III	Low vision- Acquired at age 5
2. Kriti	9	IV	Partial vision impairment- genetic
3. Sonal	10	V	Blind-genetic
4. Ashika	12	VII	Blind-genetic





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Name	Age	Class	Disability
5. Aastha	15	IX	Blind -genetic
6. Neha	12	VI	Cerebral Palsy-genetic
7. Priti	12	VI	Intellectual disability
8. Sangeeta	11	VI	Regular student
9. Babita	14	IX	Regular student

^{*}Names of all the children have been changed to maintain anonymity.

The discussions related to children's perceptions and experiences regarding themselves and their placement in regular educational settings were noted down. The interviews were recorded by the researcher in the format prepared for the purpose. In this research, it particularly helped as the interview span with children lasted more than an hour in each case, and the questions related to the study were interspersed with a lot of other information sharing.

The students in this study obtain supportive mechanisms for learning as they have special educational needs. The special students were supported by delivering some concession and flexibility in school timing. The schools made the 'writer' available to two students, and one has a visual impairment and polio militias. The school in the study has the policy to give extra time for children with disabilities to complete their examination as these special students possessed a 'Disability certificate.'

Table 3: Characteristics of research respondents- Teachers,
Parents and Principal

Role	No.
Resource Teacher	1
General Education Teacher	1
Parents- Children with special needs	3
Parents-regular students	2
Principal	1

DATA COLLECTION AND ANALYSIS

Permission from the school principal was sought with ease in January 2020. Necessary information about the child's background







information, reports/feedback related to performance, challenges, and achievements were secured from interviews with principals. Interviews with fifteen non-disabled peers, with appropriate consent, provided data pertaining to interpersonal interactions. The fifteen non-disabled peers were identified by the children themselves as their 'good friends' so the researcher explored their attitudes towards their peers with disability.

The principal of the school had communicated to the teachers the purpose of our visits to schools. The concerns raised with the Principals included; the basic requirements for an inclusive school, how do the admissions criteria reflect the needs, attributes and diversity of potential students, in what way the school is different from other schools, what were the support systems available for children with disabilities etc. The researcher had to resort to convenient sampling for the regular teachers. The researcher used to spend time in the 'staff room' and those teachers who visited the place during that time and showed willingness to share their experiences were included.

ABOUT THE INSTITUTION

Sisters of St. Mary's Convent run, 'Jeevan Jyoti Inclusive School', Near Tibetan University, Varanasi, Uttar Pradesh, India. It is a girls' school.

Mission Statement: "To lay a foundation to an inclusive society, through all-round development of the girl child by accepting and celebrating the diversity of every category of students and build a Nation of Justice and Truth."

The Goal of the Institution: To include all students in the mainstreaming of education is their Principle Goal. This "Jeevan Jyoti School" was established in 1975 by Sr, Irene. Initially, it was started for visually impaired students by Sr. Irene Gonsalves, who is an executor director.

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THE ESTABLISHMENT OF CBSE INCLUSIVE SCHOOL

They had the inception of having an institute from 1975 with the motto of an "Inclusive Society." The vision was complete in the year 2011 when the special school was transformed as "Jeevan Jyoti Inclusive School" affiliated to the Central Board of Secondary Education. In the Academic year, 2019-2020 the total strength of the school is 1500 girls. The total number of students with disabilities in school is 72.

The students with special needs pursuing education in the school are as follows –

Special conditions	No of students
Visually impaired- including low vision	56
Mild Hearing Impairment	01
Locomotor Impairment	02
Cerebral Palsy	03
Mild Intellectual Disability	10
Total	72

In these past forty-four years, over 450 visually impaired girls are educated and rehabilitated. Eleven students of this school are awarded by Ph.D. And are professors in different colleges in New Delhi. More than 166 girls are settled in life with good jobs in government officers or good schools. Nearly 270 have secured a good job in government offices and are economically well off, and few others are housewives.

The resource room of the school is well equipped as it has technological devices that are modern and very expensive. They also have the personnel to operate the advanced types of equipment. The schools make the 'writer' available to the children who may need







their help. The 'writers' are usually children from lower grades who volunteer their services.

TRAINED TEACHERS FOR INCLUSIVE SCHOOL

In the year 2008, Jeevan Jyoti climbed one more milestone of preparing the personnel to be the teachers of the visually challenged children through the establishment of the department of Human Resource Development, recognized by the Rehabilitation Council of Indian, New Delhi. The teachers of the school are cooperative and understanding of the needs of these girls. The school organizes seminars regularly for these teachers. The teachers have various symposia. One of the workshops was on the world sight day, "Motivation, Change, and Transformation." Those teachers who take care of the special children had a seminar on "sensory integration and Hand therapy."

Every year 30 students come out fully trained to be the teachers of the Visually Impaired Children. They have teachers to teach them how to read, especially one of the teachers, who is blind.

THE INTERVIEWS OF THE CANDIDATES

The interviews were conducted using a bilingual approach for the teachers. The students and parents were interviewed in Hindi since it is the local language in Varanasi.

The interviews were conducted in Feb. 2020. The questions intended to gain an understanding of the extent to which these students regarded themselves as part of the school and community culture and felt accepted by their friends, classmates, and teachers.

The purpose of the study was stated to the prospective participants before interview; it was also made clear that there would be no consequences to their schooling or in any other way. It was voluntary to participate in the interviews for any of the candidates. It was conducted only after obtaining consent from the candidates. For interviews, the researcher used a bilingual approach for the teachers. The students and parents were interviewed in Hindi since it is the local language in Varanasi.

STRENGTHS OF THE INSTITUTION

Life and working style at 'Jeevan Jyoti Inclusive School' are very informal, like a family. The Principal, regular teachers, special









teachers, and experts in 'Jeevan Jyoti Inclusive School' work to build the life of children in an Inclusive set up as their togetherness is for the building up of society or an organization. This year, there are 124 girls with visual impairment studying from Lower KG to Class XII for CBSE Board. They These children make friends quickly with everyone without any inhibitions. As a classroom in the school is a perfect example of inclusion.

Sincere efforts of the teachers add for the betterment of their world, wherein children with disabilities and without a disability are loved, accepted, and taught together. These visually impaired children have vision loss, but they are well equipped with learning and study materials. They have Braille machines to print the learning material.

The parents of the girls are supportive and cooperative. They cooperate with the teachers and take efforts to complete their studies. All these girls stay in Sister's Convent. The parents of Special School students bring them in the spirit of optimism believing in their God-given extraordinary capacities. They learn through confidence and persevere in steady achievements. Parent's faith in self and determination in daily works leads these children to great accomplishment. As Helen Keller says, "Optimism is the faith that leads to achievement. Nothing can be done without hope and confidence".

They have regular check-ups and counseling sessions for these girls. Therefore they are firm and confident. They study in the school with the regular student. They have writers for their examination. The school has ramps to climb up and come down for all the floors. They get individual attention while teaching the subjects, and their classmates help them to complete their activities. They also have a special school until the fourth standard and extraordinary Audio Room for these girls. They also have a Music Room with various musical instruments.

CHALLENGES

At the beginning of 2008, when Jeevan Jyoti Inclusive School was launched, they had to make arrangements to sell the admission forms to parents. It was a challenging task to convince people to admit their wards in an inclusive school as they were the first generation of Inclusive learners. Since 2008, every year, the school authorities make a temporary arrangement in front of their school gate for admission. They encourage parents to take admission in this school as they have





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only girls in their school. The entire resources of this school were transformed in an inclusive set-up with a disabled-friendly environment. The directors had difficulties in raising funds as it is in the middle-class society. The school could overcome this crunch as it was supported by a religious organization and people from the local community.

RESULTS OF THE STUDY

The researcher believes that Jeevan Jyoti Inclusive School has made significant progress on the road to becoming an inclusive school. The case study highlights the obstacles which are preventing Jeevan Jyoti Inclusive School from becoming even more inclusive towards children with special educational needs. The study shows the importance of having adequate resources and supports in place in the school to ensure that inclusion benefits everyone involved. It also shows how important it is that teachers receive training in the area of special education and the need for teachers to liaise with professionals such as speech therapists, occupational therapists and psychologists.

The study shows: there is a willingness among all members of the school community to include

- Children with special needs; the attitudes of teachers and all members of the school community contribute
- The principal has an important role to play in making the school inclusive;
- Revealing insights by the four parents into the degree of inclusivity in Rose Hill School

CONCLUSION

Inclusion is essential for all, especially children with and without disabilities. "When everyone is included, everyone wins," says Jesse Jackson. Efforts of every person are only a drop in the ocean to make our dream come true of an Inclusive Society. The teachers are parents, too; they should be involved in this inclusive setup. They should understand the difficulties faced by these students. The teacher should have a training session on inclusive school for disabled and impaired. The teachers need to respect and take care of children with special needs. They should be given more attention as they are special. The teacher







should take the initiative to know and to help these students in academics. The inclusive environment will bring hopes and new beginnings, life in these children. Therefore, to make life more visible, these children are an asset to us. They see life beautifully and make our lives beautiful to live in this world

BIBLIOGRAPHY

Books

- Alur, M., Special Needs Policy in India, Education and Children with Special Needs- From Segregation to Inclusion, Sage Publications, New Delhi, 2002
- Davis-Kean, P.E., & Sandler, A meta-analysis of measures of self esteem for young children: a framework for future measures of child development, H.M. Publications, 2001
- Singal N. Working towards inclusion: Reflections from the classroom Teaching and Teacher Education, 2008

Articles from Journals and publications

- Agbenyega, Joseph, "Examining Teachers' Concerns and Attitudes to Inclusive Education in Ghana", International Journal Of Wholeschooling, Jan., 2007.
- Chadha, A., "Perspectives in Special Needs Education in India: A Journey from Isolation to Inclusion", Janshala (Secondary teachers' perceptions of Regular Education Initiative), January-March 2003
- Gerber P. "Being learning disabled and a beginning teacher and teaching a class of students with learning disabilities", Exceptionality: A Research Journal, March 1992
- Kabra Ankita, "Confronting my sense of Inclusion", Teacher Plus: A magazine for contemporary teacher, July 2013
- Yadav Anusuya, "Special needs education in information age", Edu Tracks:
 A monthly scanner of Trends in Education, Feb. 2016

Websites

- Draft Curriculum Framework for Teacher Education in India (2006), Retrieved from http://www.preventionweb.net/files/7711_curriculaTeacherEducIndia.pdf
- Government of Maharashtra website. Mumbai City, Retrieved from http://www.maharashtra.gov.in/marathi/mahInfo/mumbai.php on 12th September 2009.









- International Save the Children Alliance (2001). Children's Rights:
 A Second Chance. Retrieved from www.savethechildren.net/alliance/resources/child second.pdf
- SSA (2001). Scheme of Sarva Shikha Abhiyan. Ministry of Human Resource Development, Government of India, Retrieved from: http://india.gov.in/sectors/education/sarva_shiksha.php
- UN Convention on the Rights of the Child (1989). Retrieved from,
- http://www2.ohchr.org/english/law/crc.htm







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Original Research Article

ROLE OF DIGITAL LITERACY IN WOMEN EMPOWERMENT

* Ms. Sonia Oscar Bombacha,

* Lecturer, Pushpanjali College of Education, Papdy

Abstract:

Digital Literacy plays a significant role in women's empowerment by giving access to information, education and job opportunities. It enables women to learn, communicate, connect with others, raise their voice for self, breaking down social barriers and also reducing isolation. Digital literacy can also improve women's participation in political and civic life, giving them voice and platform to share their opinions and ideas. Additionally, it can lead to better job prospects, increased income and greater financial independence by using various online platforms. However, there are still significant barriers to digital literacy for women, including unavailability of technology, lack of knowledge of using technology, culture and social norms, gender-based violence through online. By considering the above challenges it is essential to achieve gender equality and empower women through digital literacy.

Keywords: Empowerment, Digital Literacy.

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INTRODUCTION:

Indian society worshiped women as goddesses, in the ancient times. However, in the middle age, the status of women was degraded to a great extent. They were thought of as a subordinate part of society to perform duties like upbringing of children, caring for every family member, and other household activities.

Recently with the increase in literacy the trend has been changing, and women are stepping into new areas, overcoming all the barriers of old ideologies and trying to gain prominence in the field of education and industry too. Although this change is becoming apparent in recent times, it has yet to undergo a monumental change.

This is due to the fact that we have not contemplated these issues from the right perspective or don't have

understanding the genuine the gauge performance. This creates a genuine need for us to look for real indicators to measure social change. Women Empowerment can't achieve its peak, if we just consider education and employment of women. Considering their economic contribution, economic freedom, access to health services, decision making at home and offices, being the part of management committees and most importantly achieving Digital Literacy which is the indispensable qualification in today's technological world. These are the true determinants of women empowerment.

WHY IS THERE A NEED FOR DIGITAL LITERACY?

Considering the latest transformation, the world is going through, we see that everything is going virtual. Right from communication to all financial







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transactions, even meetings and discussions are becoming digital. And last but not the least, getting financial resources is going online. Hence to be at par with men or getting close to gender equality, it is must to be on the path where the world is going and hence digital literacy is the most significant step towards women empowerment and going further to become entrepreneurs.

DIGITAL LITERACY AS A SIGNIFICANT ADVANTAGE:

When we say that we are digitally literate, it means that we have acquired a basic understanding of and ability to use digital media and use technologies in a meaningful and fruitful way, so that we can work effectively in today's technologically advanced world. Its simple indicator is the knowledge that gives us ability to use a computer, a smartphone, the internet, e-banking, a website, operating through an e-commerce site, as well as basic operating systems and software applications, in addition to higher education, digital and internet literacy is an essential and important tool that makes women truly employable and empowered.

Digital Literacy is extremely significant in technology because it helps people to understand the use of various digital tools, apps, software's and technologies. In today's world technology is valuable in all sorts of areas like education. communication, entertainment, workplace, entrepreneurship etc. Having digital literacy skills is also essential for personal and professional success. As the paper is focusing on Women Empowerment, we will see how digital literacy plays a vital role in enabling women into their careers or various aspects of life. We are living in the world of technology, and technology is helping women to

advance their careers and contribute to the community. Being digitally literate is significant for women empowerment. Digital literacy enables women to get information, connect with others, creating opportunities to participate in various economic and social activities around the world through online mode. Women who are digitally literate will be more advantageous in various areas like improved access to education, employment opportunities, healthcare, social connections, safety and security, entrepreneurship etc.

ADVANTAGES OF DIGITAL LITERACY **WOMEN EMPOWERMENT:**

With digital literacy the corporate world has shrunk to such an extent that people are working full time from home. Not only in the IT sector but in all fields non-technical work is successfully done from home and during the COVID pandemic time it proved a blessing in disguise. This has paved a way for women on their journey towards empowerment. Digital literacy has many plus points that negate the disadvantages women faced by working from home.

- 1. If digitally literate, women can now work from home full time while simultaneously taking care of her children and family. Women usually are very good at multitasking at home and this makes her best suited for both office jobs as well as caretaker.
- 2. Women's safety is not jeopardized when she is working from home. She is safe from hazards typically arising from traveling as well as psychological and physical harassment the women undergo usually at offices. She is much safer to work from home.
- 3. Digital literacy and related employment don't demand physical strength as compared to factory







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work. So, women can opt to do non-technical work. Many Women are seen working with nontechnical work in Oil & Gas and mining industries too.

- 4. Access to education is limited due to family responsibilities and restrictions. limitations, and most commonly the physical location and its safety aspect. But digital Literacy helps in overcoming the barriers and helps women to gain access to variable educational resources and tools.
- 5. Digital Literacy helps women to access the online database related to health and hygiene thereby leading to a better health at an economical cost. Many digital tools and apps are available almost for free where they can track and manage their physical and even mental health.
- 6. It is very difficult to get government information and services that are not available locally. Digital literacy helps in accessing the information and services to such distant and inaccessible financial services and resources, government services and support in legal issues.

This has significantly increased women employment and they are quite flourishing especially in IT skills, where we get to see many women at managerial positions supervising even a group of men. Going further, women are now emerging as entrepreneurs. For eg. Chitra Gurnani Daga (Thrillophilia.com), Upasana Taku (MobiKwik), Divya Gokul Nath (Byju's) are some of the few women entrepreneurs who are into digital technologies.

1. Digital tools for Entrepreneurship:

SJIF Impact Factor: 7.717

New technologies offer huge potential to increase economic opportunities-from mobile, computer, smartphones etc. Digital technologies which facilitate trade and access to local and global markets which would help women to start their own business. Following are the tools which would help women for their beginning of entrepreneurship

- Social Media: Tools like Instagram, Facebook, YouTube can be used to advertise and promote the product, providing various services, introducing the brand and also getting connected with the customers from any corner of the world. Digitally literate women can influence this platform to reach an audience.
- b. E-Commerce Platforms: there are various websites like Shopify, GooDaddy etc allow women to create their own online stores and sell their products straight to the customers.
- Online marketplaces: platforms such as Amazon, Flipcart, eBay provide easy ways for women to start and manage their own online business. From these platforms they can have large access to customers.
- d. Virtual meets: Managing work at different locations and especially at remote places has become an effortless thing to do, thanks to the online meeting platforms like Zoom, Google Meet etc. Now a team can have a meeting by staying at their respective homes and hence work together online.
- e. New Options to Access Capital: The difficulty in accessing the Digital Financial services like remittance, payments, credits and insurance are now becoming easy with these services available on all devices like computers, tablets and mobiles. Thus, Women entrepreneurs who are facing these issues can subscribe to Kickstarter and Indiegogo, where they can raise money from a global pool of investors. Various







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venture capitalists who are looking to invest in businesses run by women are also at ease to find. This is revolutionizing the digital financial system and making the pathway successful for women entrepreneurs.

2. Digital literacy for financial Education:

Access to Digital landscapes transactions and services is a major hurdle. Digital literacy helps in overcoming this hurdle by providing them the knowledge required in this field. They get access to multiple financial resources like banking services, budgeting apps and several investment platforms which assist women in financial management. Following are some tools which are available online to help in this regard.

Following are some of the online tools which will help to improve financial situation of women

- a. Mobile Banking apps: These apps are easily available on smartphones. They give easy access to banking services and manage their finances without wasting time. Apps like Paytm, ICICI Pockets, SBI Buddy, M-Pesa etc. are specially designed to be user-friendly and usable by individuals with low level literacy.
- b. **Microfinance Institutions:** There are various MFIs like Annapurna Microfinance Pvt Ltd, Asirvad Microfinance Pvt Ltd etc. which offer small loans with less interest and other financial services to individuals which are not able to access traditional banking services. MFIs also provide financial literacy training and business development support to their clients, which are very helpful for even illiterate women who may lack basic financial knowledge and skills.

Women's Institute for Financial Education (WIFE): It is one of the non-profitable organizations which gives financial education for women. It provides various online courses, webinars and financial coaching which will be beneficial for women to achieve financial empowerment.

3. Tools to be used for women's safety:

Women's safety has become very challenging but there are many ways which would help women to keep them safe. Following are the different online apps and tools which would be useful for women's safety

- a. Location sharing maps: there are apps like Google map, Life 360, Snapcharts live Location etc. which could be shared by women in emergency with the trusted contact. This can help her if she is going to a new place and wants someone to know her whereabouts.
- b. Safety wearables: Devices like smart watches can help women who are in distress situations. By pressing a button or by activation the features of the smartwatch can alert designated contacts for emergencies.
- c. Safety apps: apps like 112, My Safetipin, Sheroes, Smart 24×7 etc. could be downloaded on their smartphones which allow women to send emergency alerts and even call for help.
- d. Virtual self-defence courses: Knowing how to protect yourself from the attacker is very important. There are several online self-defence courses available for women who cannot attend physical classes. These online classes can teach how to protect themselves in case of attack.

Social media platforms: Media is also playing a vital role to raise voice against violence and also to create





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awareness. Women can use social media platforms to share information with others. Hashtag like #MeToo, #TimesUp, #YesAllWomen etc.are examples of how social media can be used to bring attention to violence against women.

But it's important to note that while these tools can enhance safety, they are not a replacement for being complacent and unaware of your surroundings. Women need to trust their instincts and take precautions to prevent dangerous situations.

4. Digital platform in support of women's health:

There are many digital platforms that support women's health and well-being. Following are the examples:

- a. **Telemedicine Platforms**: these enable women to access healthcare services remotely, which can be especially important for women who face barriers to accessing healthcare, such as those in rural or remote areas. Platforms like Teladoc, Sesame Care, MeMD etc. consult with healthcare providers via video call.
- b. **Women's Health apps**: These apps can help women track their menstrual cycles, monitor their fertility, and manage their pregnancy. The apps are as follows Clue, Flo, Ovia.

RECOMMENDATIONS:

In addition to the above-mentioned points, Following are the recommendations which would help in strengthening the concept of Empowerment

 It is said, teamwork is always better than individual performance. Having an online forum of Women Entrepreneurs, where problems and issues could be discussed and getting solutions and ideas will have women who are into the same business or face similar issues.

- 2. Mistakes make us learn in the best way. Having a website where the failures are listed along with its lessons learnt, would be a great tool to learn from the mistakes of others. It is the best way where women can implement some solutions which have been implemented earlier and were proved to be successful. For eg. a HSE website (www.hse.gov.uk) for UK's Industrial health, safety and environment site where incidents and lessons learnt are documented for people to get knowledge and use the recommendations.
- 3. Finally, the government can step into this process of strengthening by providing subsidies and grants, like what they do to farmers, fishermen and amateur businesses to give them the initial support to make the business flourish.

CONCLUSION:

Putting it in nutshell, the process of empowerment of women has been initiated but not fully grown and needs further enhancement and back up from the government to reaffirm the importance of this program. This will surely lead us in achieving gender equality. After all, statistics have shown that women who are equally equipped with the talent as their male counterparts can play a vital role in enhancement and upliftment of social, economic or political progress of a society and country. Giving them the digital tool will take them one step further to stand shoulder to shoulder with men. We all as a society, including women themselves and the government should take appropriate steps to make this change happen. We should not only view empowerment in the economic sense, ignoring other variables like health, education, literacy etc as these are also the indicators of women empowerment.



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http://vivekresearchjournal.org/current_issue/nmarc h2021/31%20Women%20Empowerment%2 0and%20Role%20of%20%20ICT.pdf https://digitalcommons.odu.edu/cgi/viewcontent.cgi ?article=1210&context=teachinglearning_fac _pubs

https://www.researchgate.net/publication/3319822
70_Women_Empowerment_and_Technology
_An_Overview
https://www.cashify.in/womens-day-top-safety-apps

https://medtechfounder.com/best-telemedicine-

platforms/

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Original Research Article

THE IMPORTANCE OF INCLUSIVITY AND THE SAFE LEARNING ENVIRONMENT FOR DIVERSE LEARNERS: STRATEGIES FOR INCLUSION CLASSROOM

*Ms. Sonia Oscar Bombacha,

* Lecturer, Pushpanjali College of Education, Vasai.

Abstract:

This paper explores the importance of constructing an inclusive and safe learning environment in educational settings. An inclusive and safe learning environment fosters an environment of respect, equality, and understanding where everyone feels welcomed, valued, and respected, regardless of their background, identity, or experiences. The paper highlights the benefits of creating an inclusive and safe learning environment, including increased engagement, motivation, and academic success for students. It also discusses the importance of cultural competency, addressing the impact of implicit bias, implementing inclusive teaching practices, encouraging open communication, and providing resources and support to students. The paper argues that constructing an inclusive and safe learning environment requires intentional effort and a commitment to understanding and respecting the diverse backgrounds and experiences of all students.

Key words: Academic success, Cultural competency, Implicit Bias

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What is the inclusive learning environment?

An inclusive and safe learning environment is a setting where all students, regardless of their background, identity, or experiences, feel welcomed, valued, and respected. In such an environment, students are free to express themselves, share their thoughts and ideas, and learn without fear of discrimination or harassment. An inclusive and safe learning environment promotes a sense of belonging and community, fosters respect for diversity, and ensures that every student has an equal opportunity to succeed academically. It is a place where teachers, instructors, and administrators recognize and celebrate the unique qualities and experiences of each student and strive to create an environment that is free from bias, discrimination, and harassment.

The benefits of inclusive and safe learning environment:

Creating inclusive and safe learning environment has several benefits, including:

- 1. **Increased academic success**: When students feel valued and respected in their learning environment, they are more likely to be engaged and motivated, leading to improved academic performance and success.
- **2. Improved mental health**: An inclusive environment promotes a sense of belonging and community, which can help to reduce stress, anxiety and improve overall mental health.
- **3. Enhanced social skills**: Students in an inclusive and safe learning environment learn to interact with people from diverse backgrounds, which helps to improve their communication and social skills.
- 4. Reduced discrimination and prejudice: An inclusive learning environment fosters respect for diversity. It







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also reduces discrimination and prejudice which promotes a culture of inclusivity and acceptance.

- **5. Better teacher-student relationships**: When teachers create an inclusive environment, students feel more comfortable and confident in their interactions with their teachers, leading to better teacher-student relationships.
- **6.** Helps to remove disgrace attached to the disability: It helps the abled children to understand needs of disabled students amidst them, and become more thoughtful towards them and their feelings.
- 7. It Prepare students for life after school: An Inclusive education, prepare students for life after school by allowing them to learn in various settings along with different types of learners. This prepares them for the real world, where they will face people from all walks of life. It will help students learn how to work together and respect other's differences. It is an important life skill which will help them to be successful in their personal and professional lives.

Overall, inclusive and safe learning environment benefits, both students and teachers, creating a positive and welcoming environment that promotes academic success and personal growth.

The Importance of the cultural competency:

Cultural competency refers to the ability to understand, appreciate, and respect the cultural differences of others. In an educational setting, cultural competency is essential for creating an inclusive and safe learning environment. Here are some reasons why cultural competency is important:

- 1. Recognizing and respecting diversity: Cultural competency enables teachers and instructors to recognize and respect the diverse backgrounds and experiences of their students, including their cultural, ethnic, and linguistic backgrounds.
- 2. Fostering an inclusive environment: Teachers who are culturally competent are better equipped to create an inclusive and safe learning environment, where students from diverse backgrounds feel welcomed and valued.
- **3. Developing effective teaching strategies:** Culturally competent teachers are able to adapt their teaching strategies to meet the needs of diverse learners, including those who may have different learning styles, language barriers, or cultural expectations.
- **4. Enhancing communication and collaboration:** Cultural competency enables teachers and instructors to communicate and collaborate effectively with students from diverse backgrounds, building relationships based on mutual respect and understanding.
- **5. Reducing discrimination and prejudice:** Teachers who are culturally competent are less likely to exhibit implicit bias or discriminate against students based on their cultural backgrounds.

Overall, cultural competency is critical for creating an inclusive and safe learning environment that fosters respect for diversity and promotes academic success for all students.

The Impact of implicit bias:

Implicit bias refers to unconscious attitudes, beliefs, and stereotypes that individuals hold about certain groups of people, often without their awareness. In an educational setting, implicit bias can have a significant impact on





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students, particularly those from marginalized groups. Here are some ways in which implicit bias can impact students:

- 1. Unequal treatment: Teachers who hold implicit biases may inadvertently treat students from certain groups differently, either by giving them less attention or more negative feedback.
- **2.** Lower expectations: Implicit bias can also lead teachers to have lower expectations of students from certain groups, leading to a self-fulfilling prophecy where these students perform worse academically.
- **3. Reduced motivation:** Students who perceive that they are being treated unfairly due to implicit bias may experience reduced motivation and engagement in their studies.
- **4. Diminished sense of belonging:** Implicit bias can also contribute to a diminished sense of belonging among students from certain groups, leading them to feel excluded and unwelcome in the learning environment.
- **5. Reinforcing stereotypes:** Implicit biases can reinforce negative stereotypes about certain groups of people, perpetuating discrimination and prejudice.

Overall, implicit bias can have a detrimental impact on students' academic performance, motivation, and the sense of belonging. It is important for teachers and instructors to be aware of their implicit biases and take steps to address them, such as implementing diversity training and cultivating cultural competency. Creating an inclusive and safe learning environment requires a commitment to understanding and respecting the diverse backgrounds and experiences of all students, and addressing implicit bias is an essential part of this process.

Implement inclusive teaching practices:

Inclusive teaching practices refer to strategies and methods that teachers and instructors can use to create an inclusive and safe learning environment for all students, regardless of their background, identity, or experiences. Here are some inclusive teaching practices:

- 1. Create a welcoming and safe environment: Teachers can create a welcoming and safe environment by setting clear expectations for behavior and communication, and by ensuring that all students feel valued and respected.
- **2. Use diverse teaching materials**: Teachers can use diverse teaching materials, such as books, videos, and other resources, to expose students to different perspectives and experiences.
- **3. Adapt teaching strategies:** Teachers can adapt their teaching strategies to meet the needs of diverse learners, such as providing different modes of instruction or offering additional support to students who need it.
- **4. Encourage collaboration and interaction**: Teachers can encourage collaboration and interaction among students from diverse backgrounds, creating opportunities for them to learn from one another and develop social skills.
- **5. Provide feedback and support**: Teachers can provide regular feedback and support to all students, helping them to identify their strengths and areas for improvement and providing resources and support to help them succeed.
- **6.** Address implicit bias: Teachers can address implicit bias by being aware of their own biases and taking steps to address them, such as implementing diversity training or cultivating cultural competency.





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Overall, implementing inclusive teaching practices requires a commitment to understanding and respecting the diverse backgrounds and experiences of all students. By creating an inclusive and safe learning environment, teachers can help to promote academic success and personal growth for all students.

Encourage open communication:

Encouraging open communication is an important aspect of creating an inclusive and safe learning environment. Here are some ways, teachers and instructors can encourage open communication among their students:

- **1. Build trust:** Teachers can build trust with their students by being approachable, non-judgmental, and respectful of their opinions and experiences.
- **2. Establish clear communication guidelines:** Teachers can establish clear guidelines for communication, such as respectful language and active listening, to ensure that all students feel comfortable sharing their thoughts and ideas.
- **3.** Use collaborative learning activities: Collaborative learning activities, such as group discussions and projects, can encourage students to share their ideas and perspectives and learn from one another.
- **4. Provide feedback and encouragement:** Teachers can provide feedback and encouragement to students who participate in class discussions or other communication activities, helping to reinforce positive communication behaviors.
- **5.** Address conflict and disagreement: Teachers can use conflict resolution strategies to help students address disagreements and conflicts in a respectful and productive manner.
- **6. Respect diversity:** Teachers can respect the diverse backgrounds and experiences of their students by avoiding assumptions and stereotypes and being open to different perspectives and ideas.
- **7. Develop rapport with every student**: By building a rapport with students you may better be able to understand them. Being positive and empathetic throughout conversation. Students may thus be more willing to trust teachers and open up.

Overall, encouraging open communication can help to foster an inclusive and safe learning environment where all students feel comfortable sharing their thoughts and ideas. By establishing clear communication guidelines, providing feedback and encouragement, and addressing conflict in a respectful and productive manner, teachers can help to promote positive communication behaviors and support academic success for all students.

Provide resources and support:

Providing resources and support is an important part of creating an inclusive and safe learning environment. Here are some ways, teachers and instructors can provide resources and support to their students:

- **1. Identify and address individual needs:** Teachers can identify and address individual student needs by getting to know their students and understanding their strengths, challenges, and learning styles.
- **2. Provide academic support**: Teachers can provide academic support to students by offering extra help sessions, tutoring, or academic resources such as study guides and online materials.
- **3. Offer emotional support:** Teachers can offer emotional support to students by creating a safe and supportive environment where students feel comfortable sharing their thoughts and feelings. This can include offering





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counselling services, mental health resources, and referrals to outside professionals if necessary.

- **4. Connect students to resources**: Teachers can connect students to resources within the school or community, such as academic or career counselling, financial aid, or cultural organizations.
- **5. Provide accommodations:** Teachers can provide accommodations for students with disabilities or special needs to ensure they have equal access to the curriculum and can participate fully in class.
- **6. Foster a growth mind-set**: Teachers can foster a growth mindset by encouraging students to see challenges as opportunities for growth and improvement, and by emphasizing effort and perseverance over natural ability or talent.

Overall, providing resources and support to students can help to create an inclusive and safe learning environment where all students can thrive. By identifying and addressing individual needs, providing academic and emotional support, connecting students to resources, providing accommodations, and fostering a growth mindset, teachers can help to promote academic success and personal growth for all students.

Conclusion:

Inclusive education benefits all students by providing them with an equal opportunity to learn and grow. It is the key to creating a more just and equitable society for everyone. In addition to fostering academic success, an inclusive and safe learning environment can also have positive impacts on the student's social emotional wellbeing. When students feel that they are part of the supportive community, they are more likely to feel a sense of belonging and connectedness, which can help to reduce stress and improve overall mental health. Overall, creating an inclusive and safe learning environment is an important step in ensuring that all students have the opportunity to succeed academically and personally.

Bibliography:

https://bangalore.globalindianschool.org/blog-details/what-is-the-purpose-of-inclusive-

education#:~:text=Inclusive%20education%20helps%20special%2Dneeds,the%20stigma%20attached%20to%20disabilities.

https://www.mentimeter.com/blog/interactive-classrooms/inclusive-teaching-strategies

https://www.teacherph.com/benefits-inclusive-education/

https://poorvucenter.yale.edu/ImplicitBiasAwareness

https://nbacl.nb.ca/module-pages/inclusive-education-and-its-benefits/

Cite This Article:

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Original Research Article

Digitall: INNOVATION AND TECHNOLOGY FOR GENDER EQUALITY

* Mrs. Steffi Mark Colaco,

* Lecturer, Pushpanjali College of Education, Vasai.

Abstract:

Science, technology and innovation can play a very important role in meeting internationally agreed developmental goals. However, they cannot effectively facilitate equitable and sustainable development unless the aims, concerns, situations and abilities of women as well as men are considered in formulating science, technology and innovation policies. Technology and innovation present us new opportunities that never existed before. Not only do they help progress the economy and people's livelihood they also serve as a powerful tool to increase awareness creating space for social movements and making everyone's voice heard. It is undeniable that technology and innovation have contributed to the democratization of access to information and opportunity. But it is true only to a certain extent. If we look closer women and girls across continents have inadequate and limited access to technology. The exclusion of women from science has been historically witnessed by the world for a long time and their participation is still not in parity of expectation. The negative attitude that is held against women pertaining to science and technology remains active due to the influence of socio-psychological parameters. The barriers to women's access to technology and innovation lies in the structural issues, poverty, gender discrimination and digital illiteracy. The lack of such access translates to a lack of information, updates, opportunities and the skills necessary to adapt to the changing circumstances. Proper monitoring, proper informing and creating necessary work conditions in the field of science and technology can help reduce gender inequality. As the pandemic led to a surge in the use of digital technologies in education, it also revealed staggering gender gaps in access to and use of digital technology all around the world. Indeed, gender-based exclusion is present throughout the technological world. However, the pandemic showed that learning can occur anywhere and anytime. Innovative solutions are at finger tips and we have an opportunity now to leverage and grasp global experiences to deliver quality learning for gift.

Keywords: Equitable Future, Digital Platforms, STEM.

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INTRODUCTION:

Science and digital technology has become a critical and inseparable part of human life. Online experiences and opportunities are also important for children's and young people's development across a wide range of areas, including: online education,

access to formal and informal learning; access to information and support relating to health and well-being; being able to engage with their own creative and cultural practices; to express their ideas and opinions; to help them connect with peers; to help them find employment, career information and





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entrepreneurship opportunities. However, there exists a gender divide that is gender based. Women make up only around 35% of the stem workforce. Consequently, women and girls tend to be excluded technological advancement. They disadvantaged when it comes to digital adoption. They have considerably lower levels of access to use of digital technology than the counterpart, and often they are not benefitting from digital technology in the same way as men. There are a number of root causes of the digital gender divide, including hurdles to access, affordability, education thus resulting in lack of technological literacy as well as inherent biases lead to gender based digital exclusion. Affordability is a challenge for all but affects women and girls more disproportionally and thus remains one of the key hurdles in accessing ICTs. In order to meet the realities digital products and services need to be designed with and for girls. Digital technologies and products and content tend to be designed for a default user and fail to consider the girls have to on the digital platform they are on, their digital literacy levels, or content girls find relevant and want to see. Despite best intentions, teams often design for a user base that is predominantly male. Girls are left out of co-creation, design and product testing. As a result, female users often put girls at a further disadvantage. This is not only a loss for women, but for the society as a whole. In order to respond to the needs of women, women need to be involved in the development process. Diversity can bring about development that meets everyone's needs.

WOMEN AND GIRLS INTO THE FIELD OF **SCIENCE:**

Women and girls have made revolutionary

SJIF Impact Factor: 7.717

discoveries, reinvented our future through the power of innovation, imagination and technology and paved the way for a better future. Despite their achievements, women and girls still are underrepresented in Science, Technology, Engineering and Mathematics (STEM) fields. Women remain a minority in STEM education at only 35 per cent, with just 3 per cent studying information and Communication Technology. The statistics is a clear indication of the discrimination faced by women and girls around the world. This stands even more true for marginalized women and girls, such as indigenous women, women with disabilities, women in rural areas, elderly women etc. Gender stereotypes and norms are reinforced through early ages and are found embedded in curricula, textbooks, and teaching-learning practices. Careers in men have a strong male-dominated culture and thus have a limited women representation.

Existing initiatives have proven inadequate. Change for girls in science requires a commitment to longterm, sustainable programmes and initiatives that acknowledge structural barriers and thus work to remove them.

DIGITALL: BRIDGING **GENDER GAPS THROUGH INNOVATION AND** TECHNOLOGY.

This year's International women's Day under the theme DigitALL: Innovation and technology for Gender Equality provides an important reminder of the immense potential that digital transformation possesses for accelerating gender equality and women empowerment. It also reminds us of the risk it bears for repeating and amplifying existing patterns of gender inequality.



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It is essential to make greater and more sustained investments increasing women and girls digital literacy and familiarity with technology. This in turn empowers them to participate effectively in the digital economy and gain access to digital services which include various sectors such as education, healthcare and online banking. In today's world with the advancement in technology E-commerce and technology-based business offer women more flexibility thus providing them more inclusion which is essential for economic empowerment.

Apart from basic skills it is also essential to promote women and girls in ICT sector by developing their skills in areas such as coding, where there is still critical underrepresentation. By enhancing their digital skills and presenting them with female role models, there is potential to increase their opportunities to pursue careers in science, technology, engineering and mathematics (STEM)-a field that has immense growth possibilities and will account to 75% of jobs by 2050. This will require concerned efforts by the government, academia, civil society and a very crucial pillar i.e. the private sector.

Women also need to be involved in the creation of and decision making around digital technology. It is very important to ensure that today's emerging data-driven solutions are not biased of harmful gender stereotypes and patterns of discrimination. There is a need to develop online content and technology with and for women and girls in a way that responds to their specific needs and priorities within a regulatory framework that prioritizes, emphasizes, protects and promotes human rights of women and girls.

Digital platforms and online spaces should be made safe for women and girls. As per a recent survey India has seen significant jump in cyber crimes reported in 2021 from the previous years. Karnataka and Uttar Pradesh accounted for the highest share during the measured time period.

(Survey period-2012-2021).

Number of cyber crimes reported across India from 2012 to 2021.

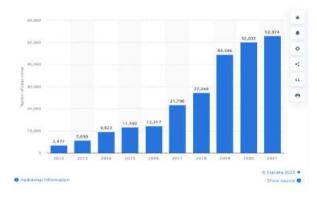


Fig.1Number of cyber crimes reported in India 2012-2021

Unfortunately cyber harassment and violence against women and girls are often not taken seriously which deters them from using the internet and thus threatening their online freedom of expression. It is crucial to tackle the harmful social norms at the root cause of these acts of violence and set up legal and policy frameworks that educate and protect girls and women from cybercrimes. One of the major key factor that will help eradicate cyber violence apart from helping women and girls to recognize, report and recover from online abuse is civic education for perpetrators, often boys and men, to uproot harmful social norms an power dynamics that underline their action. Women need to be made aware of the potential benefits that the internet may bring. It is found that women who do not engage online are not interested in using the internet, and believe that





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accessing the internet would not bring them any benefit. Lack of trust in digital devices or internet is also one main factor. Illiteracy further hinders women's and girls ability to access online services. To try and tackle with this hurdle, some search engines, such as Google, have installed voice navigation systems in local languages to make Internet search queries more accessible and inclusive. The digital gender divide is also fuelled by digital illiteracy, which often translates in lack of comfort in using technology and accessing the Internet. Such "technophobia" is often a result of concurrent factors including education, employment status and income level.

HOW CAN WE BRING ABOUT A CHANGE FOR EQUITABLE FUTURE-

> Bridging the gaps in digital access and skills:

Initiative needs to be taken by governments to invest in evidence-based programmes and initiatives. Allowance of subsidized smartphones and laptops for women and girls and making the provision for incentives and low-cost data plans can benefit in a large way in overcoming gendered access barriers. This is also applicable to digital literacy programmes, which can help give women and girls the skills they need to lead, connect and successfully shape the digital space.

> Provide support to women and girls in STEM:

Working to eliminate gender biases from schools is a key to ensure that girls have access to women mentors as role models in STEM fields with whom they can identify. And connecting STEM to other disciplines-as well as emphasizing its potential applications to the needs of the society, which research shows is a main driving force of girl's career choices. In order to help women succeed in a changing and growing labour market, targeted reskilling and upskilling programmes should be created. The changing transitions in the labour market should be aimed at improving the position of women and ensure that repeating patterns of inequality are not reproduced.

> Technology meeting the current needs of women and girls:

Creating more inclusive, less biased tech starts with designing and regulation processes rooted in human rights. That means centralizing the voices of marginalizes and vulnerable women, as well as social and behavioural scientists and human rights experts, in the design of new digital technology. It also means equal access to exercise different rights online, such as freedom of expression. Ethical frameworks needs to be enforced by rooting them in international human rights standards and norms.

> Empowering women in Education and employment:

Technology can contribute to gender equality by improving access to education for girls and women. One example in which digital innovation and technology has made significant advancement in promoting gender equality in India is the use of mobile apps to provide access to educational resources in rural areas. "Pratham" is an innovative learning organization created with the aim to improve the quality of education in India. It aims to provide education to children in the slums of Mumbai. The app "Learn English" developed by this not profit organisation is a game-based learning to teach English language skills making it accessible to students primarily girls in areas with poor connectivity. Digital platforms help women by providing them with access to the same educational





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resources opportunities as their counterparts. This proves to be beneficial in fields of (STEM), where women are underrepresented. Startup such as SheThePeople.Tv, Nykaa, Zivame, MamaEarth are leveraging technology to provide women with opportunities to upskill, connect with mentors and find employement. Jobs for her is an online portal that connects women with job opportunities and offer support with career transitions. With the rise in the growth of digital entrepreneurship and E-Commerce women are empowered with new opportunities to start their own businesses and be self-employed. D digital platforms have the potential to empower women, due to a lack of knowledge and skills many are unable to use them. To address this, initiatives such as 'Digital Saksharta Abhiyan' are being implemented. It aims to provide digital literacy training to women and girls in rural areas. The program was launched in 2015 by the Ministry of Electronics and Information Technology as part of the Digital India campaign. It particularly focuses on empowering women in rural areas by providing them with the skills and knowledge they need to participate digitally in the growth of economy and access various government services online. The training is provided through a network of training centers located in rural areas, and the program also provides financial incentives to encourage people to participate in the training. Digital technologies have played a significant role in empowering women's health and creating a more just society by providing them with healthcare information, resources and services. Mobile healthcare apps like HealthifyMe, Strava etc and have increasingly devices wearable popularity in India, thus allowing women to seek

medical advice remotely and make more informed decision about their healthcare.

CONCLUSION:

"We have a responsibility to elevate learners, especially those who are disproportionally impacted, with the resources necessary to engage in blended learning and gain vital skills to participate in the digital economy. In doing so, we have the potential to drive better learning outcomes and a brighter collective future." -Betty-Hill-Gracia.

Innovation and technology has potential to play a vital role in promoting gender equality and thus a more equitable future. Ranging from the field of education, to healthcare and the workplace, technology and innovation has scope to offer new solutions to long prevailing challenges. In order to realize their potential to the fullest there is a need to ensure that there is no gap in accessibility considering gender or socioeconomic status. While the growth in digitization and modern advancement developing societies does offer opportunities, its use requires careful thought of mitigating measures to ensure that the gender gap is not further widened.

REFERENCES:

http://bweducation.businessworld.in/article/Empow ering-Women-In-Era-Of-Digital-India/08-03-2468221/#:~:text=To%20address%20this%2 C% 20initiatives% 20such,in% 20rural% 20are as%2C%20including%20women.

https://www.actionaidbd.org/storage/app/media/Res earch%20Findings_Online%20Violence%20 Against%20Women.pdf

https://www.oecd.org/digital/bridging-the-digitalgender-divide.pdf



Educreator Research Journal



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https://www.statista.com/statistics/309435/indiacyber-crime-it-act/

https://www.unicef.org/eap/innovation-andtechnology-gender-equality

needs-to-click-at-csw67/

https://press.un.org/en/2023/wom2224.doc.htm

 $https://unfoundation.org/blog/post/the-digital-\\future-we-want-for-girls-and-women-what-\\$

https://www.unwomen.org/en/newsstories/announcement/2022/12/internationalwomens-day-2023-digitall-innovation-andtechnology-for-gender-equality

Cite This Article:

* Mrs. Colaco S.M., (2023). DigitALL: Innovation and Technology for Gender Equality, Educreator Research Journal, Volume–X, Issue–II, March –April 2023, 196-201.





Original Research Article

EXPERIENTIAL LEARNING: A CONSTRUCTIVIST LEARNING APPROACH FOR HOLISTIC LEARNER DEVELOPMENT

*Ms. Steffi Stannly D'costa,

* Lecturer, Pushpanjali College of Education.

Abstract:

Education as a field is constantly evolving which continuously adapts its structure, vision and objectives which enables it to successfully meet the challenges and significant changes occurring in society. Experiential learning is a suitable alternative which directly focuses on the skills and attitudes related to critical thinking and problem solving, being less reliant on mechanical learning and memorizing. We can describe experiential learning as a process. Experiences that we have in our daily lives are generated through our various ongoing interactions and engagement with the world around us and thus learning becomes a definite product of our experience. Experiential learning theory is different from the various other learning theories as it focuses on a more holistic approach. Experiences play a very important role in our learning; they are formed by the interaction of our emotions, cognition and environmental factors. In this paper we aim to look at how experiential learning provides a great scope for research as to what the experiential learning cycle looks like, the practical use in order to improve upon the human thought process and understand the learning in a better way thus giving an insight into the benefits of this model of learning, and its application in different areas of life.

Keywords: Cognitive Development, Abstract Conceptualization, Kinesthetic Imprint.

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Introduction:

Education guides you how to play; experiences master you when to take those right strokes. Everyone deserves optimal access to education, but it is of equal importance to provide opportunities to learn in a manner that respects every individual's needs and differences. Traditional models of learning seem to be more in favour those with a good memory, but learning is much more than just succeeding in an examination. Experiential learning considers the importance of the role that experiences play in the learning process. It lays emphasizes our emotions, cognition and environmental factors. Behaviourists have developed conceptualizations of learning which imply that effectiveness of learning can be measured by the number of facts or habits a person has learned in response to the stimulus conditions. The elements of thoughts are fixed and the present goal is how to acquire more of them. Contrary to this idea experiential learning advocates that the ideas are not fixed, rather they form and re-form through experience. Every experience provides scope for new learning.

The measure of success therefore moves beyond acquisition of facts, learning through experiences become an incipient process where the learner is placed at the centre of the process. Learning through experiences is based on where the learner is, their relationship with what happened previously, and where they want to be in future. With the interaction taking place between the environment and the learner, the resulting experience and





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knowledge is found to be more applicable in wider contexts, due to the fact that the knowledge is the result of testing and hypothesis, ratherthan learning by rote. Learning that is stimulated to provide experiences should contain the following elements:

- ✓ Being able to reflect upon and critically analyze the situation.
- ✓ Provide meaningful opportunities for students to be initiators, decision makers, and thus hold accountability for their results.
- ✓ Provide experiences for students to stimulate their intellect and creativity.
- ✓ Making the learners capable to learn from natural settings and thus learn from their mistakes and successes.

What is experiential learning?

Experiential learning is contributed to two different elements:

- 1) Learning by oneself
- 2) Experiential Instruction

Experiential learning theory explores the continual recurring pattern of all learning experiences through reflection. Experiential learning theory emphasizes on the importance of the role that true experiences play in the learning process. It is this emphasis that distinguishes experiential learning from other learning theories. Cognitive theories lay its emphasis on cognition whereas Behavioural learning theories deny any role for subjective experience in the learning process.

Researches in the field of education mainly perceive two contrasting views on the concept of experiential learning. The first views experiential learning as a of learning which enables learners to apply newly acquired knowledge in a relevant setting. The relevant setting could be any institution of learning with trainers, instructors, teachers or professors to guide them. The other defines experiential learning as "education that is gained through learning by directly participating in the various events of life."

David. A. Kolb an American educational theorists supports the second definition of experiential learning by developing a model which explains in detail the learning process through experience. Kolb's (1975) experiential learning model is a continuous process consisting of four basic elements:

1) Concrete experience

3) Forming abstract concepts

2) Observation and reflection

4) Testing in new situations

Immediate and concrete experiences form the basis for observation and reflections. These reflections gained through experience are comprehended and broken down into abstract concepts which lays the foundation from which new implications for action can be drawn.

According to the theories of Kolb and Fry (1975), the learner proceeds to the next step once he or she processes their experience in the previous step. This results into a conclusion that learning is not achieved in a formal setting, but through the practice of varied reflection of our daily experiences.

The origin of the theory of experiential learning:

Experiential learning traces its roots back in history and is still found prevalent in our modern day society. It is either found to formalized by educational institutions or occurring informally in day-to-day life. Experiential learning is not an alternative approach, infact it is the most traditional and fundamental method of human





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learning. David Kolb is best known for his work on the theoryof experiential learning or ELT. Experiential learning theory model was published in 1984, influenced from the work of other great theorists including John Dewey, Kurt Lewin and JeanPiaget. The initial two stages of the cycle i.e. concrete learning and reflective observation involve grasping an experience, the second two i.e. abstract conceptualization and experimentation focus on transforming an experience. Kolb is of the opinion that effective learning is seen as the learner goes through and proceeds into this cyclic experience, and that they can enter into the cycle at any time.

The idea of experience:

As quoted by Albert Einstein "Information is not knowledge. The only source of knowledge is experience. You need experience to gain wisdom."

Human body assimilates information through their senses. We take in information through our senses, yet the information is processed into knowledge by doing. First, human senses help us to watch, listen, feel and perceive different thing in our environment. We then attempt doing things on our own. It results into a sense of achievement and sparks our interest thus, motivating us to self-discover. Learning through experiences can be found in various basic activities of our day-to-day life like learning to ride a bicycle, use a mobile phone, or learning to speak. We take an action, see the out-turn of that action, and choose either to continue, or to take a new and different action. In this case what allows us to gain mastery over the new skill is our active participation and our reflection over the learning. Experiences and reflections are found to teach us more than any manual or lecture ever could. Experiential learning is a direct interaction and engagement the phenomena being studied rather than merely considering the possibility of doing something about it. The work of David. A. Kolb in his highly influential book "Experiential Learning: Experience as a source of learning and development" published in 1984, describes learning as a four-step-process. He identifies the steps as:

- 1) watching
- 2) thinking (mind)
- 3) feeling (emotion)
- 4) doing

thus drawing his ideas and inference primarily based on the works of Dewey (who emphasized the need for learning to be grounded in experience) and Jean Piaget. Kolb describes that learners have immediate concrete experiences that allow us to reflect on new experience from different perspectives. It is from these reflective observations, we engage in creating abstract concepts, creating generalizations or principles that culminate our observations into sound theories. These generalizations or the theories act as guidelines for further action. Hands on active experimentation allows us to test what we learn in new and more complex situations.

Kolb's Experiential Learning Cycle:

David. A. Kolb, a Professor of Organizational Behaviour has built upon the earlier work by John Dewey and Kurt Levin. According to Kolb "Learning is the process where knowledge is created through the transformation of experience".(Kolb,1984). The theory presents a continual model of learning, consisting of four stages as shown below. A learner may enter the process at any stage and follow each other in sequence:

• Concrete experience (Involving themselves in active learning experiences)





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- Reflective observation (Observe the outcomes and reflect upon the same)
- Abstract conceptualization (Think rationally and conceptualize)
- Active experimentation (Application)

Kolb's four stage learning model gives us a brief idea on how experience is interpreted through reflection into concepts, which in turn are used as guidelines for active experimentation and the choice of new experiences. The first stage, concrete experience, in which the learner actively experiences hands on learning which could be in a formal setting or an informal experience. The second stage, reflective observation, this stage involves the learner to mindfully reflect on that experience. The third stage, abstract conceptualization, at this stage the learner attempts to conceptualize the theory or model of what is observed. The fourth stage, active experimentation, is where the learner tries to evaluate his learning and is able to apply and connect with in real world situations. Learning cycle can begin at any of the four points and should be approached as a continuous cycle.

Kolb identified four learning styles that highlight conditions under which learner learns better. These styles are: **Assimilators:** Learners who learn better by understanding and creating theoretical models. They are more often oriented towards abstract ideas.

Converges: Learners who develop a better understanding and tend to learn better when provided with practical applications of theories and concepts.

Accommodators: Pupils who learn better when they are provided with "hands-on" experiences.

Diverges: Pupil who learn better with concrete experiences and reflective observation

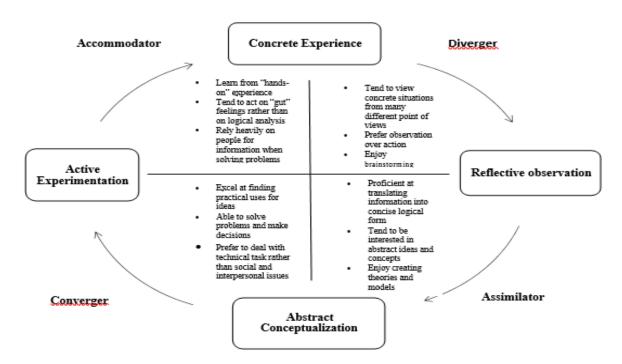


Figure.1 Kolb's model of learning styles, Adapted from Kolb, 1985[1]





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Having an understanding of one's preferred learning style has two benefits:

It helps in getting a better understanding of the areas of strengths and weaknesses, thus givingus the opportunity to work on becoming proficient.

It helps an individual to develop likeliness towards a particular experience which might be useful in certain social situations, such as deciding a career.

Why is Experiential Learning so effective?

It provides scope for more equal opportunities:

There is more scope for novel experiences where all participants are equalin their knowledge about any task and project which they will undertake. Experiential learning provides a unique set of projects and situations require people to draw upon genuine team process skills as opposed to just functional ones.

Creates real-world experiences:

Experiential learning involves using data and ideas and therefore uses them in hands-on activities, creating real results. Hand-on activities with a connect with real life provides a real experiences that helps the learners to grasp it more easily thus helping them to retain the learning for a long time period.

Experiential learning helps to accelerate meaningful learning outcomes:

In higher education experiential learning provides opportunities for learners to develop multiple skillset such as problem-solving and effective decision-making skills simultaneously. While applying the theories students learn to discard methods that don't work, the process of trying something new and improving on the outcomes becomes a valuable part of the learning process.

Experiential learning is helpful for Meta learning:

Reflective observation becomes an integral part of experiential learning. With the help of concrete experiences leading to development of abstract concepts and reflecting on the outcome, students are able to engage their brains into deeper aspects of learning and thus be make personal connections with the material.

Experiential learning leaves a kinesthetic imprint on the learners:

Learners have a kinesthetic imprint on their mind and body as experiential learning plays a pivotal role in development of cognitive material. Experiential learning helps in the development of cognitive principles because the learning is graphic as it involves multiple dimensions of physical, mental and behavioural development.

Experiential learning encourages risk taking:

Since learning is based on trial and error students engage in hands-on-tasks thus discovering one approach works better than another. Experiential learning enables the learners and encourages the learners to take new risks and try on new role. It enables them to learn through mistakes without the fear of failure.

Experiential learning nurtures diversity of strengths:

Co-operative learning encourages team work. Teamwork enables learners to improve their communication and social skills When learners are working as a team they learn how to listen to their leaders in order to perform their individual roles. They learn how to listen to one another in order to function as a cohesive unit. Teamwork nurtures diversity in individual learner differences thus teaching them how to respectfully and confidently





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express their ideas and opinions effectively in a group setting.

Conclusion:

Principles of modern education are derived from the changes taking place at different levels of the society, thus shaping the educational skills of the learners. Experiential learning had led to elimination of gap between practical experiences and theoretical concepts. It is helpful in creating meaningful connections between formal and informal education thus giving more importance to the practical aspects of the concepts being taught. Effective integration of ICT with experiential learning helps developing the skills and abilities which are essential to face real life challenges.

References:

1985_fig1_275068166

https://www.researchgate.net/publication/310736423_Applications_of_Experiential_Learning_in_Science_Education_Non-Formal_Contexts

https://www.researchgate.net/publication/310736423_Applications_of_Experiential_Learning_in_Science_Education_Non-Formal_Contexts

Experiential Learning: Experience as a source of Learning and development -David. A. KolbExperience and Education- John Dewey

https://www.wgu.edu/blog/experiential-learning-theory2006.html#close

https://books.google.co.in/books/about/Processing_the_Adventure_Experience.html?id=SMIkAgAA CAAJ&redir_esc=y - Luckner and Nadler- 2004

https://files.eric.ed.gov/fulltext/EJ1055133.pdf

https://www.academia.edu/25061864/Experiential_learning_theory_A_dynamic_holistic_approach_to_management_learning_education_and_development

https://www.europeanproceedings.com/article/10.15405/epsbs.2016.11.33

https://dl.acm.org/doi/10.1145/1401032.1401052

https://itali.uq.edu.au/files/1264/Discussion-paper-Experiential_learning_an_overview.pdf

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On the occasion of Dr. Babasaheb Ambedkar's 129th birth anniversary on 14th April 2020, the Office of the Dean, Faculty of Humanities, University of Mumbai has launched a free open access online journal, Sambhāṣaṇ. This interdisciplinary journal hopes to bring diverse disciplines in dialogue with each other through critical reflections on contemporary themes.

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RESEARCH PAPERS

Development and Deployment of an Online Course for Training In-Service Teachers in Digital Skills

Agnes D'Costa

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Abstract: Many institutions have embraced digital education to augment face to face learning. To be able to leverage the potential of technology to the maximum, teachers need to be equipped with robust digital skills. This paper entitled 'Development and Deployment of an Online Course for Training In-Service Teachers in Digital Skills' is the result of three online workshops for inservice teachers conducted using Google Classroom. Over 500 teachers were part of the exercise where approximately 80 % completed all prescribed activities successfully. The remaining 20% have completed part of the activities. In this mixed method study, the investigator sought feedback from 181 participants of the third batch of participants and also closely observed how they use Google Classroom as a platform for remote learning. The discussions in this paper are based on the structured feedback and the field notes made by the investigator during the training. The major conclusion drawn is that an online training programme using a robust instructional design, complemented with adequate mentoring and motivational devices can be successfully used to train teachers in the development of digital skills needed to teach in online mode.

Key Words: Google Classroom as an LMS, digital skills for teachers, online teaching

Introduction

Technology has influenced education in a great way. The introduction of Web 2.0 allowed teachers and students to create, collaborate, edit and share content that is user generated. Web-based learning environment offers an opportunity to provide interactive tasks to students. Quiz creation, submission of online assignments, facility to learn 24 x7, inclusion of e-authoring tools, multi media supported learning and the inclusion of multiple mentors became commonly used features of the virtual learning environment. Constructivism, connectivism, and collaboration have formed the philosophical and sociological bases of learning in virtual environments.

In-service teachers need to keep themselves abreast with changes in education, especially changes in educational technology. Tight schedules may be a hurdle to attend a face to face training sessions. Hence teachers teaching across all levels often resort to online faculty development programmes. Web 2.0 helps them to collaborate and learn from peers. E forums provide a platform for discussion and query solving. All this is done without the restrictions of time and space and hence Virtual Learning Environments are a very powerful avenue for faculty development.

Need for the study

The Covid-19 pandemic ushered a sudden need for teachers to get equipped with digital teaching skills. While most teachers have been using Blended Learning to a fair extent, the thought of going cent percent digital was a bit unnerving for many teachers. Several questions such as 'What is a viable and effective platform to deliver lectures? How can we evaluate students? How do we make online sessions interactive? What if students and teachers cannot be online at the same time due to power shortage or internet unavailability' emerged. Virtual Learning Environments provide an answer to these questions. The investigator had used Google Classroom extensively for Blended Learning. With the experience

garnered through this, she decided to launch an online programme for training teachers in digital skills.

Review of Related Literature

Keith Heggart and Joanne Yool in their study 'Getting the most from Google Classrooms: A Pedagogical Framework for Tertiary Educators' found that Google Classroom increased student participation and improved classroom dynamics. The investigators constructed a framework to evaluate the use of online platforms by including four concepts viz pace, ease of access, collaboration and student voice/agency. With reference to Personal Learning Environments (PLEs), Dron (2007) suggests that the effective use of such tools allows students to engage in their own meaning making. Rubin (2010) argues that PLEs can be tools for educational self-empowerment because they encourage self-direction of learning. Izwaan Shahranee and Jastini Jamil have opined that comparative performance is good in the areas of ease of access, perceived usefulness, communication and interaction, instruction delivery and students' satisfaction towards the Google Classroom's learning activities. Other studies done on various Virtual Learning Environments and on Google Classroom in particular also point out to the efficacy of these platforms for promoting learning.

Title of the Study

The title of the study is 'Development and Deployment of an Online Course for Training In-Service Teachers in Digital Skills'.

Operational definitions

Online course here refers to a ten-day course conducted via Google Classroom in asynchronous mode.

Digital Skills in this research refers to skills in creating online tests, online worksheets, online infographics, online story books, online classroom, interactive e-content, blogging, converting PowerPoint Presentations to videos, launching a YouTube channel.

Objectives of the Study

- To evaluate the efficacy of Google Classroom as a platform for online training of inservice teachers
- To find the opinion of teachers regarding the perceived use of online tools for teaching

Variables involved

The independent variable involved in the study was the online course to train in-service teachers in digital skills. The dependent variables are the opinion of teachers regarding perceived use of online tools and the work of participants which is an indication of the efficacy of Google Classroom as a platform for online training. The investigator is mindful that extraneous variables such as age, experience in teaching, experience in the use of the technology, interest of participants in digital learning, the creativity of participants, time available to explore the platform, motivation levels of the participants etc., are likely to impact the findings. However, these variables have not been taken into account as controlling these variables will entail much ground work and in this case, training the teachers in digital skills was of prime importance. Besides in any training programme, one can expect heterogeneous participants with a wide range of need, interest and motivation and trainers have to identify a pedagogical/andragogical approach that caters to all kinds of participants.

Methodology of the Study

The study comprises of mixed method research designs. The quantitative dimension of the study was a descriptive survey where data was gathered through a rating scale to find the opinion of teachers regarding use of online tools for teaching. The study also used qualitative data, which was in the form of field notes maintained by the investigator based on daily interactions, analysis of work output and queries raised by participants. Thus, the qualitative research design used was a grounded theory approach as the investigator studied the processes and interactions in order to develop some middle range theory about the experience of the participants. It was essential to employ a mixed method research design to have a richer and more informed understanding of how online training can be organized for better effect.

The study was designed and deployed using the ADDIE Model as shown in the table below:

Steps	Details			
Analysis	 Learner Analysis: School and Junior College teachers with varied experience from SSC/ HSC, CBSE Boards. Need Analysis: digital learning needed in crisis as well as normal situations Content Analysis: interactive digital tools* for learner centric learning with focus on teaching-learning and evaluation Media Analysis: suitable platforms to launch online training with focus on easy navigation, resolution of queries, showcasing participant work, continual evaluation, mentoring 			
Design	 Use of Google Classroom (asynchronous interaction) and Zoom webinars (synchronous interaction). Learning outcomes, learning resources and learning output were duly formulated in synch with analysis phase Selection of digital skills and appropriate free online tools Time frame: seven to ten days. Three level mentoring: by course developer, other mentors, peers 			
Develop	 Google Classroom was prepared with emphasis on sections for orientation, input of digital skills, showcasing participants' work and answering of queries. Provision made on platform for final output, feedback and certification Mentors added and oriented to assist the investigator Training tools used were evaluated by selected teachers for ease of use and navigation 			

Steps	Details
Implement	 Code of Google Classroom distributed via Teachers' WhatsApp group Online orientation of participants via video Webinars organised to provide inputs and add-ons Self paced Coursework done by participants' as per their convenience Mentoring by experts and peer mentoring within participants Detailed feedback provided to work showcased
Evaluate	 Qualitative Evaluation of tasks by investigator and mentors Quantitative and qualitative evaluation of course done by participants via Google Forms

*The interactive digital tools identified were as follows:

- 1. Online Tests using Google Forms/Quiz
- 2. Digital Posters created with Canvas
- Converting ppts to videos using screen capture tools like Screencastomatic/
 Camstudio
- 4. Creating online story books using Storyboard
- 5. Creating infographics with Canvas
- 6. Use of drag and drop tools and flash cards using H5P tools
- 7. Creating interactive videos using H5P tools
- 8. Launching a Google Class
- 9. Creating blogs and YouTube channel
- 10. Exploring useful websites according to one's subjects

Participants pursued the course at their own pace. About seven to ten days were required to complete all activities and assimilate the skills. The generic form of skill development is denoted below:

to skill using pra videos and text the based guiding ger	actice's e skill and enerates own itput	3. Showcasing of output on the Google Class Learning from peers' output	4. Mentoring by peers and mentors	5.Query resolution through designated section in Google Class
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Sample of the study

243 in-service teachers from CBSE and SSC board affiliated schools registered for the course. 181 completed the course successfully by completing all mandatory activities in ten days. (Data of 62 participants is not included in this study. From these, some have submitted the assignments after ten days due to professional reasons like moderation work of SSC papers. Some participants did the activities partially and requested to be permitted some more days to complete. Their responses are not included in this study.)

Level	Primary school teachers	Secondary school teachers	Higher Secondary school teachers	Total
No of teachers	75	92	14	181

Table No.1. Distribution of sample

Data Collection and Analysis

Data regarding the perceived use of digital tools for learning and response of participants towards use of Google Classroom was gathered through a rating scale which sought information on confidence generated in participants regarding online teaching, general opinion regarding the course, usability of various tools in teaching —learning process and opinion of the participants regarding various digital tools learned in the course. Analysis of quantitative data is done using percentages. The investigator maintained field notes of observation of work showcased by participants and their queries raised by them. Thus the Google classroom itself became a source of data as the nature of participants' contributions (in form of tasks), involvement (evaluated through consistency of work) and feedback (in form of comments expressing satisfaction, difficulties faced) gave a lot of insights to the investigator.

Findings of the study

1. General opinion regarding the course: Most of the participants either strongly agreed or agreed that the learning objectives of the course were clear; the course was well planned and organized. They also found it interesting and were of the opinion that the content load was appropriate enough to be completed without stress.

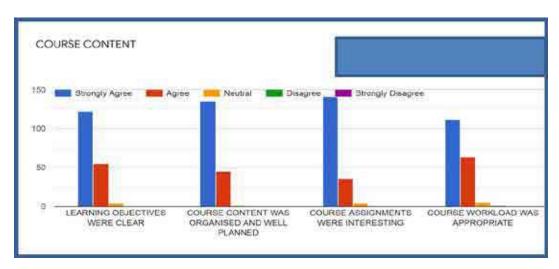


Table No 2. Graphical summary of participants' opinion regarding course content

2. Confidence generated by the course: 95% participants said that the course had given them high or fairly high confidence to launch into online teaching. Most participants had started practice by creating their own Google Classroom and had started adding interactive material and formative evaluation activities into the same.

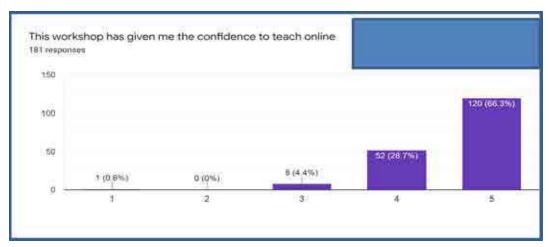


Table No 3. Graphical summary of participants opinion regarding confidence generated with respect to online teaching

3. Participants' response to the usability of digital skills and tools: Participants learned various digital tools that can be used to teach and learn. The graph below shows their opinion regarding the use of these tools. Interactive videos, online story books, online quizzes were the tools that they found most useful. The participants have opined that other tools will also be useful in online teaching.

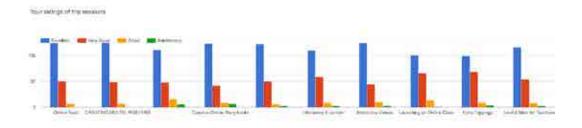


Table No 4. Graphical summary of Participants' response to usability of digital skills and tools

4. Rating of the course: The participants were asked to rate the course on a scale of 1 to 5. 75.1 % participants have given the highest rating of 5, followed by 23.2% giving a rating of 4 and 1.7% giving a rating of 3.

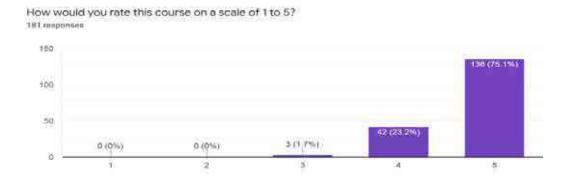


Table 5 Graphical summary of Participants' rating of the course

Discussion of analysis of work observed by the investigator

The investigator carefully analyzed the following:

i. Work submitted on Google Classroom: Participants showcased their work in designated areas on the Google Classroom. The work was not submitted as assignments but rather as posts. Submitting individual work in the form of posts helped other participants to view one another's view. If this work was

submitted as an assignment, then only the teacher/investigator gets to see the work and this does not help peer learning. Good quality work was posted. Some participants went one step ahead of the expected tasks. For example, when told to create an online story book, some even added audio to the book. Such actions are very helpful as learners with reading difficulty can benefit. Also, it helps the user of the story book to hear the right pronunciation and intonation. At times the investigator had oriented one particular digital tool for a task. But if the participants found tools that were more user friendly, then they would share that information on the Google Class. This was very beneficial in exploring different avenues.

ii. Involvement of participants in terms of regularity of use of Google Classroom: Conducting a skill training course asynchronously and entirely through online mode has some restrictions as the trainer does not meet participants face to face neither do they meet online synchronously at a fixed time. (The investigator had chosen asynchronous mode expecting that different individuals would need to work at different times of the day due to different domestic schedules and variable free time got by participants.) It was heartening to note that participants were very regular in their work. In the orientation video, the participants were advised to work and practice one digital skill daily and showcase their product. Daily there would be around 150-170 tasks submitted. If unable to do a task on a particular day they posted two tasks the next day. This shows their interest and commitment to completing the course. Some practised more than one skill per day. Past experience of participants, their interest in technology, free time on hand varied and hence such variation in regularity of work submission was expected 75% of participants completed all tasks in ten days, thus working on average one task a day. Initially navigating the Google Classroom, getting adjusted to only online inputs, understanding how to post work was difficult. But in two days participants became familiar with the architecture of the Google Class and work got more efficient and organized. Though certain tasks like launching one's YouTube channel and creating a blog were kept optional many participants went ahead and successfully completed these tasks. The reason was they were very motivated and success in earlier tasks built their confidence. They also realized that blogs and YouTube have high potential for teachers to display their content.

- iii. Queries and comments posted regarding the work done: The queries were generally related to the technicalities of the digital tools. Different platforms/tools such as Canvas, Google Apps, screen capture tools, Storyboard, YouTube were used. Each platform/tool had a different operational style. Mostly participants would try to resolve their own query (constructivism approach) or by co ordinating with peers (connectivism approach). If still unresolved the query would be posted on the Google Classroom where the teacher-mentor or some peer would resolve (Use of More Knowledgeable Other and learning through social constructivism). The comments posted revealed high level of satisfaction. Thus intrinsic motivation was evident. Some comments are shared below
- It was an enriching experience. Even though I am not tech-savvy, I was able to understand and do the assignments.
- Teaching by these techniques can surely develop interest among students.
 I can't wait to teach my own students by using these techniques.
- I love the way it is designed and delivered. I learned a lot. The most important part is that I enjoy every bit of the session.
- It was really a wonderful experience. I teach Marathi and Hindi. I thought it would be so difficult for me but as completed the task, it was more fun learning online. I learnt to prepare presentation in Marathi.

The analysis of data has been encapsulated in the form of implications which help to develop insights to the functional aspect of online training thus justifying the qualitative nature of the study.

Implications of the Study

- Implications with respect to Google Classroom as a platform for training
- An LMS like Google Classroom is a viable option for training as it is accessible, easy to navigate and promotes robust organization of work.

- 2. Online skills development courses must capitalize on the fact that peer learning is very effective and hence showcasing one's work must be an integral part of such training.
- 3. Mentoring is very essential in a remotely run course. Ensure a healthy mentor to participant ratio for enhancing the efficacy of an online course.

Implications with respect to skill-based online training programmes

- 1. Skills must be in synch with immediate needs of participants as this increases chances of completion of course. Hence need analysis stage of Instructional Design is a must.
- 2. Participants will vary with respect to their pre-programme skills. If this data is sought and duly analysed before the programme it will help to design inputs in synch with the most felt needs.
- 3. Face to face training may be the best approach for skill training as participants can be monitored closely. Mistakes can be reduced. However, when the situation demands it, online programmes conducted systematically can also be equally effective. Visualise the expected difficulties and have troubleshooting mechanisms in the form of FAQs or guiding videos. In an online training entailing skill development, the learner explores on his/her own and thus, this experience may be more enriching than a face to face training session.

The road ahead

The investigator has conducted three courses so far. Two participants of the first course turned to mentors for the next course and they are now conducting the course on their own with guidance from the investigator. It is very satisfying to note that these mentors have since developed the programme still further by including more skills according to the needs of specific groups. The investigator hopes to have a repository of learning sources (created by teachers in such sessions)

which will be available for all as OERs. The study reveals that faculty development programmes can be conducted through virtual mode where Personalised Learning Environments help participants to learn through constructivist and connectivist approach.

References

- 1. Heggart, K. R., & Yoo, J. (2018). Getting the Most from Google Classroom: A Pedagogical Framework for Tertiary Educators. Australian Journal of Teacher Education, 43(3). Retrieved from http://ro.ecu.edu.au/ajte/vol43/iss3/9
- 2. Dron, J. (2007). Control and constraint in e-learning: Choosing when to choose. Hershey, PA: Idea Group.
- 3. Rubin, N. (2010). Creating a user-centric learning environment with Campus Pack personal learning spaces: PLS Webinar. Available from Learning Objects Community http://community.learningobjects.com/Users/Nancy.Rubin/Creating_a_UserCentric_Learning
- 4. Izwaan Shahranee and Jastini Jamil. (2016) . The Application of Google Classroom as a tool for Teaching and Learning. Retrieved on 1 June 2020 from https://www.researchgate.net/publication/313717807_The_application_of_Google_Classroom_as_a_tool_for_teaching_and_learning