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Editorial

Dear esteemed readers!

Welcome to the second issue of the XX Volume of our esteemed journal, where we proudly present a diverse range of research papers that delve into the multifaceted realm of education. This volume encapsulates an array of themes, each shedding light on crucial aspects of the educational landscape. Through rigorous analysis, critical insights, and innovative perspectives, these papers contribute significantly to the discourse on education and its impact on society.

Mathematics Education:
Mathematics, often regarded as the backbone of education, forms the basis of our first theme. Within this realm, we have three papers that explore distinct facets of mathematics education. "Conceptual Understanding in Mathematics: A Literature Review" by Firdoash Bano and Meenakshi Singh provides a comprehensive overview of current research in conceptual understanding. Complementing this, "The Application of Technology-enabled Teaching and Its Effect on Learning Mathematics among Secondary School Students" by S. Saraswathi, K. Nachimuthu, and E. Ramganesh delves into the impact of technology on mathematics education. Lastly, "Novel Approach of Problem-based Learning in Mathematics through Modelling - Some Dominant Instructional Facts" by Seema Lathkar and Sneh Sharma presents an innovative approach to mathematics instruction through problem-based learning and modelling.

Gender Dynamics in Education:
Understanding gender dynamics in the educational context is crucial for promoting equitable learning environments. "A Study of Teachers' Classroom Time and Attention from a Gender Lens" by Pragya and Madhu Kushwaha explores the allocation of teachers' time and attention based on gender. Additionally, Danish Nadim's paper, "Exploring Gender Differences in Teachers' Morale: A Comparative Study of Elementary and Secondary Schools," investigates variations in teachers' morale across different educational levels.

Inclusive Education and Special Needs:
Education that accommodates the diverse needs of learners is essential for fostering an inclusive society. In this theme, we present "Accessing the Inclusive Education: Availability of Facilities for Students with Special Needs in Regular School" by Latha Kathirvel and Vakkil Mathiyan, which examines

the availability of facilities for students with special needs in mainstream schools.

Well-being and Mental Health:
Emphasizing the significance of well-being and mental health, our next theme comprises papers that delve into this crucial aspect. Rajnish Chandra Tripathi's paper, "Yoga: A Healing Therapy for Stress Management among Youth," highlights the therapeutic benefits of yoga for stress management. Furthermore, Bipasha Das and Somnath Roy's paper, "Influence of Internet Addiction on Depression, Anxiety, and Stress of College Students: A Descriptive Survey Study," explores the impact of internet addiction on the mental health of college students.

Social Inclusion and Policy:
Social inclusion remains a pressing concern in education. "Tribal Girls in Policy: A Case Study of Agro-pastoral Gaddi of the Himalayas" by Kanika Sharan examines the educational challenges faced by tribal girls in the Himalayas. Complementing this, Prashant Kumar Dubey and Sanjay Sonkar present "Impact Assessment of the Health Care Education Programs run by Ekal Vidyalaya Foundation in Tribal Areas of Sundargarh and Keonjhar for Social Inclusion," which evaluates the impact of health care education programs on social inclusion.

Innovative Approaches in Education:
Innovation in education is key to fostering engaging and effective learning experiences. Binod Mahakur's paper, "Self-Discovery and Social Relationship Development through Theatre," explores the transformative power of theater in promoting self-discovery and nurturing social relationships. Additionally, Sweta Dvivedi, Adya Shakti Rai, and J H Vanlalzuali's paper, "Effectiveness of Universal Design of Learning at Different Levels of Education: A Meta-Analysis of Literature," provides a comprehensive meta-analysis of the effectiveness of universal design of learning across various educational levels.

Psychological Well-being and Emotional Intelligence:
Understanding and addressing the psychological well-being of learners is of paramount importance. Jooli Sonker, Alok Gardia, and R.P. Shukla's paper, "A Guide for Students to overcome their Negative Emotions by using the PERMA Theory of Happiness," offers valuable insights into promoting positive emotions and well-being among students. Additionally, Saswati Chutia and Jagat Swargiary present "Construction and Validation of an Academic Resilience

Scale," focusing on the development and validation of a scale to measure academic resilience.

Early Childhood Education and Readiness:
Early childhood education sets the foundation for lifelong learning. Akshaya E and Nisha Vikraman's paper, "Examining the Perceptions of Parents of Anganwadi Children regarding School Readiness," explores parental perspectives on school readiness among children attending Anganwadi centers.

Education Reformation and Human Rights:
Education reform and the intersection of education with human rights form the backdrop of our final theme. Suman Garg and Bindu Roy's paper, "NEP 2020: A Sustainable Vision towards Reformation in Education Sector," critically examines the National Education Policy 2020 and its potential for driving sustainable educational reform. Furthermore, Ajay Kumar Singh and Vinay Kumar Kashyap's paper, "An Interface of AI with Human Rights: Gaps, Challenges, and Possibilities," explores the ethical and human rights implications of integrating artificial intelligence into education.

Each of these papers contributes unique perspectives and insights, enriching our understanding of the multifaceted aspects of education. We would like to express our sincere gratitude to the diligent and insightful reviewers whose expertise and constructive feedback have played a crucial role in shaping the quality and rigor of the papers included in this edition of the journal. We extend our heartfelt gratitude to all the authors for their valuable contributions. We hope that this collection of research inspires meaningful dialogue, informs educational practices, and contributes to the overall advancement of the field.

As always, we encourage our readers to delve into the papers, engage with the research, and embrace the opportunity to expand their knowledge and understanding. Let this journal serve as a catalyst for transformative discussions and actions that shape the future of education.

Happy reading!

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Conceptual Understanding in Mathematics: A Literature Review

Firdoash Bano*, Meenakshi Singh**

Abstract

Mathematics is considered as the most difficult subject to master by the students at all levels from primary level to university. Mathematics is the discipline which deals with numbers and their operations. It is full of abstract concepts, and it is not possible to achieve the aims of teaching and learning without understanding these concepts. Conceptual understanding in mathematics is the understanding of mathematical concepts and operations. Students demonstrate conceptual understanding in mathematics when they can recognize, label, and generate examples of concepts; use and inter relate models, diagrams, manipulative and varied representations of concepts; identify and apply principles; know and apply facts and definitions; compare, contrast, and integrate related concepts and principles; recognize, interpret, and apply the signs, symbols, and terms used to represent concepts. The purpose of the present study is to review the studies related to conceptual understanding in mathematics and to study the effect of different demographic variables and learning strategies on conceptual understanding in mathematics.

Keywords*: conceptual understanding in mathematics.*

Introduction

Mathematics is one of the oldest and organized disciplines of human knowledge. It is a scientific field that focuses on numbers and their operations. Quantities and numbers permeate every aspect of the universe, from the moment of birth—such as the height and weight of a newborn—to the end of life—such as measurements for burial or cremation. The indispensability of mathematics is unquestionable for every individual. Whether one aspires to study history, geography, psychology, physics, biology, chemistry, economics, art, culture, or even literature, the utilization of numbers and mathematics is inevitable. Mathematics is omnipresent, and it is extremely challenging to accomplish anything without its application.

Mathematics holds significant importance both in educational curricula and in our daily lives. The Education Commission (1964-66) recommended that mathematics be made a mandatory subject for all students in schools. The National Policy on Education (1986) emphasized the role of

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mathematics in training children to think, reason, and analyze. The Position Paper on the Teaching of Mathematics (NCF 2005) states that the goal of teaching mathematics is to develop a child's ability to think and reason mathematically, draw logical conclusions, and work with abstract concepts.

For many students, mathematics is perceived as boring, abstract, complex, and highly challenging to comprehend. The prevalence of fear and feelings of failure towards mathematics among most children is a crucial issue in the teaching and learning of mathematics. One of the primary reasons for this failure is the insufficient emphasis on understanding the underlying concepts. Mathematics is built upon concepts, and without a solid grasp of these fundamentals, efficient mastery of the subject becomes unattainable.

Traditionally, school mathematics has focused on repetitive exercises and procedural knowledge—simply learning how to apply formulas or algorithms to arrive at the correct answer. However, in recent years, there has been a shift towards prioritizing conceptual understanding over procedural knowledge. The National Research Council (2001), in its publication "Adding It Up: Helping Children to Learn Mathematics," identified five essential abilities that students must possess to be mathematically proficient. These abilities include conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and productive discrimination.

Conceptual understanding in mathematics refers to the comprehension of mathematical concepts, operations, and relationships (NCTM, 2001). When students possess conceptual understanding, they can apply and adapt mathematical ideas they have learned to new and unfamiliar situations.

Conceptual understanding in mathematics involves comprehending mathematical concepts, operations, and relationships. It enables students to apply and adapt acquired mathematical ideas to new situations and appreciate the meaning of symbols, words, and relationships associated with specific concepts.

Procedural fluency is the skill of carrying out mathematical procedures flexibly, accurately, efficiently, and appropriately. **Strategic competence** refers to the ability to formulate, represent, and solve mathematical problems. **Adaptive reasoning** is the capacity for logical thought, reflection, explanation, and justification. **Productive disposition** reflects a habitual inclination to view mathematics as sensible, useful, and worthwhile, along with a belief in diligence and one's own efficacy.

The domain of conceptual understanding in mathematics encompasses various aspects such as labeling and generating examples of concepts, using, and relating models and diagrams, identifying, and applying principles, and comparing and integrating related concepts and principles. While mathematics involves manipulating symbols, the mastery of symbol manipulation to answer different types of questions is not the foundation of conceptual understanding in mathematics.

This study aims to analyze existing research on conceptual understanding in mathematics by conducting a comprehensive review of Ph.D. theses, master's dissertations, research papers, and published articles on this topic. The paper also focuses on exploring various factors and processes that influence conceptual understanding in mathematics. The investigator has gathered a substantial body of studies related to conceptual understanding in mathematics and has organized them into the following sections:

- Studies examining the relationship between conceptual understanding and procedural knowledge.
- Studies investigating the relationship between conceptual understanding in mathematics and socio-demographic and environmental factors.
- Studies exploring the impact of different teaching methods and strategies on conceptual understanding in mathematics.

Relationship between Procedural Knowledge and Conceptual Understanding in Mathematics

This section provides an overview of research studies exploring the distinction between procedural knowledge and conceptual understanding in mathematics education. It discusses the characteristics and importance of both types of knowledge, the bidirectional relationship between procedural and conceptual knowledge, different viewpoints on the causal relationship between the two, and the findings of relevant studies examining this relationship.

Based on research on mathematical thinking, mathematical knowledge can be categorized into two parts: procedural knowledge and conceptual understanding (Hiebert, 1986). Procedural knowledge, or procedural fluency, refers to the ability to use steps and apply formulas to solve different problems and obtain the correct answer (NCTM, 2001). On the other hand, conceptual understanding involves knowledge of abstract ideas and concepts (Rittle-Johnson & Schneider, 2014). Procedural knowledge allows individuals to determine how to solve a problem by

employing the appropriate algorithm, while conceptual understanding assists in determining what approach to take in solving the problem. Conceptual understanding is helpful in evaluating which procedure is appropriate in each situation (Byrnes & Wasik, 1991; Carr, Alexander, & Folds-Bennett, 1994; Schneider & Stern, 2012). People who grasp the conceptual foundation of a procedure can successfully generalize and apply it to novel situations (Blote, Klein, & Beishuizen, 2000; National Council of Teachers of Mathematics, 2000; Rittle-Johnson, Siegler, & Alibali, 2001; Baroody & Dowker, 2003; Baroody, Feil, & Johnson, 2007). The domain of conceptual understanding in mathematics encompasses labeling and generating examples of concepts, using and interrelating models and diagrams, identifying and applying principles, and comparing and integrating related concepts and principles. Although mathematics involves symbol manipulation, the learning of symbol manipulation to answer various types of questions is not the basis of conceptual understanding in mathematics.

Shirkey (2003), in the study "My Current Understanding of Mathematics," stated that understanding in mathematics does not solely arise from memorized knowledge or the ability to apply algorithms without comprehension. Students who possess these skills can only apply them in limited situations and struggle to apply their knowledge in new situations. Understanding necessitates the ability to access a subset of memory containing relevant knowledge, which means that prior knowledge of relevant facts is a prerequisite. However, the presence of accumulated facts alone does not guarantee understanding. Learning based on understanding is more enduring, psychologically satisfying, and useful compared to learning based solely on the memorization of facts.

Johnson and Alibali (1999) conducted a study titled "Conceptual and Procedural Knowledge of Mathematics: Does One Lead to the Other?" The study aimed to explore the relationship between procedural and conceptual knowledge in fourth and fifth-grade students regarding mathematical equivalence. The study also investigated the impact of instruction on equivalence concepts on students' problem-solving procedures and the impact of instruction on problem-solving procedures on students' conceptual understanding of mathematical equivalence. The findings revealed a bidirectional causal relationship between procedural knowledge and conceptual understanding of equivalence. Conceptual instruction facilitated the generation of correct procedures for solving equivalence problems, while procedural instruction led to gains in conceptual understanding. This relationship is not unidirectional but bidirectional. Conceptual understanding enables students to

determine which procedure to select for solving a particular problem, while practice or drilling in using certain procedures or skills strengthens conceptual understanding (Miller & Mercer, 1992; Sophian, 1997).

There are four viewpoints regarding the causal relationship between conceptual and procedural knowledge: the concept first view, the procedure first view, the interaction view, and the iterative view (Alibali, Rittle Johnson, & Siegler, 2001).

1. Concept first view: In this view, children acquire conceptual knowledge first and then derive and build procedural knowledge through repeated practice and drilling (Halford, 1993; Gelman & Williams, 1998).
2. Procedure first view: According to this view, children first learn procedures and then derive conceptual knowledge from them (Karmiloff-Smith, 1992; Siegler & Stern, 1998).
3. Interaction view: In the interaction view, conceptual and procedural knowledge develop independently (Resnik & Omanson, 1987; Haapasalo & Kadijevich, 2000).
4. Iterative view: According to the iterative view, the relationship between conceptual and procedural knowledge is bidirectional (Baroody, 2003).

Haapasalo and Kadijevich examined the relationship between conceptual understanding and procedural knowledge and proposed four views:

1. Inactivation view: Conceptual understanding and procedural knowledge are not related.
2. Simultaneous activation view: Procedural knowledge is necessary and sufficient for conceptual understanding.
3. Dynamic interaction view: Conceptual understanding is necessary but not sufficient for procedural knowledge.
4. Genetic view: Procedural knowledge is necessary but not sufficient for conceptual understanding.

Radu (2002), in the paper "Basic Skills versus Conceptual Understanding in Mathematics Education: The Case of Fraction Division," supported the view that conceptual understanding and procedural skills should be treated as two separate, irreducible, and complementary components of learning.

Ghazali and Zakaria (2011) conducted a study to investigate procedural and conceptual understanding of algebra and their relationship. A survey was conducted on 132 secondary school students in Malaysia to collect data. Analysis of the data revealed that students' procedural

understanding was higher than their conceptual understanding of algebra. Pearson correlation was used to examine the relationship between procedural knowledge and conceptual understanding in algebra, and a positive correlation was found ($r=0.512$, $p<0.05$). This indicates that procedural knowledge and conceptual understanding are positively correlated.

Studies related to relationship of conceptual understanding in mathematics to socio-demographical and environmental factor

This section discusses three studies conducted to examine the level of conceptual understanding in mathematics and the factors influencing it, including intelligence, scientific attitude, gender, age, and locale. The studies also explore the relationship between conceptual understanding and mathematics achievement, as well as the contribution of different factors in predicting conceptual understanding scores.

Bachan (1992) conducted a study investigating the understanding of mathematical concepts in relation to intelligence and scientific attitude among grade X students. The objectives of the study were to determine the level of conceptual understanding in mathematics among science students in grade X, identify the factors influencing understanding of concepts, and predict conceptual understanding scores using intelligence and scientific attitude. The study also aimed to determine the relative contribution of different factors in predicting understanding of mathematical concepts. The findings revealed that the distribution of conceptual understanding in mathematics was average. Factors such as sex, age, and locale were found to affect the understanding of concepts. Urban, female, and students aged 15 and above demonstrated higher understanding compared to rural, male, and students aged 16 and 17. Intelligence was found to significantly contribute to the development of conceptual understanding for all groups, while scientific attitude had a significant contribution only for students aged 15 and above.

Adnan, Maat, Yaakob, and Zakaria (2010) conducted a study titled "Conceptual Knowledge and Mathematics Achievement of Matriculation Students." The study involved 250 students from a matriculation college in Malaysia. The objective was to determine the level of conceptual knowledge among matriculation students in the topic of sequences and series and its relationship to their mathematics achievement. A conceptual knowledge test on sequences and series was developed for this purpose. The findings revealed that accounting students had lower conceptual knowledge compared to physical and life science students. Additionally, a positive relationship was found between conceptual knowledge and achievement in mathematics.

Chaudhary (2014) investigated on conceptual understanding in mathematics in relation to intelligence, self-concept, and self-efficacy. The objectives of the study were to determine the level of conceptual understanding in mathematics among ninth-grade students and identify the factors influencing it. The study also aimed to predict conceptual understanding scores using a subset of variables including intelligence and scientific attitude and determine the relative contribution of different factors in predicting conceptual understanding among different groups. The findings revealed that age had no effect on conceptual understanding in mathematics among students in the early formal operational stage. Conceptual understanding in mathematics was found to be influenced by gender and locale and was related to intelligence, self-concept, and self-efficacy. Among the variables, only intelligence made a significant contribution to predicting conceptual understanding in mathematics.

Studies related to effect of different teaching methods and strategies on conceptual understanding in mathematics

Several studies have been conducted to explore the relationship between various instructional strategies and students' conceptual understanding and attitude towards mathematics.

Hirschfeld-Cotton (2008) conducted an action research study titled "Mathematical Communication, Conceptual Understanding, and Students' Attitude Towards Mathematics." The objective was to investigate the impact of oral and written mathematical communication on conceptual understanding and students' attitudes. Grade 8 students were challenged to communicate their mathematical reasoning both orally and in writing. Various data collection methods, such as interviews, quizzes, and assessment of homework presentations, were used. The findings revealed that when students engaged in oral and written communication, they realized that true understanding came from evaluating and assessing their own and others' ideas and reasoning. Furthermore, students enjoyed math more and found it more enjoyable when they were challenged to communicate their reasoning.

Korn (2014) conducted a study on teaching conceptual understanding of mathematics through a hands-on approach. The research question was whether a hands-on approach is an effective way to teach conceptual understanding. The findings revealed that using a hands-on approach provided an effective way to teach conceptual understanding in mathematics.

Qudah (2016) conducted a study to examine the effect of a proposed teaching strategy based on selective thinking on students' acquisition of mathematical concepts. The sample consisted of 74

students from Al-AlBayt University in Jordan, divided equally into a control group and an experimental group. The experimental group received instruction using the selective thinking strategy. Pretests and posttests were administered to measure the acquisition of mathematical concepts. The findings showed a significant difference between the experimental and control groups, with the experimental group outperforming the control group in the posttest.

Orlandini (n.d.) investigated how conceptual understanding can improve mathematical intuition. The study involved 61 high school students, and the goal was to determine whether training their conceptual understanding of exponential growth and decay would enhance their intuition of the concepts. A pretest-posttest research design was used, and the findings indicated that training conceptual understanding improved students' intuition of the concept.

Jazuli et al. (2017) conducted a study on improving conceptual understanding and problem-solving in mathematics through a contextual learning strategy. The purpose was to explore the implementation of a contextual learning strategy to enhance conceptual understanding and problem-solving skills in mathematics. The sample was selected using a cluster random sampling technique, and a 2x2 factorial pretest-posttest non-equivalent control group design was employed. The findings revealed that the conventional learning strategy was more effective in improving students' conceptual understanding, and problem-solving abilities also improved when using the conventional learning strategy.

In summary, these studies highlight the importance of instructional strategies such as communication, hands-on approaches, selective thinking, and contextual learning in enhancing students' conceptual understanding and attitude towards mathematics.

Conclusion

The teaching of mathematics has shifted from focusing solely on calculations to promoting a deeper understanding of mathematical concepts and the ability to think critically and abstractly. Conceptual understanding plays a crucial role in this process, as it reflects a student's capacity to reason and apply mathematical concepts effectively (NCTM, 2000).

Various studies have explored the relationship between procedural knowledge and conceptual understanding in mathematics. Some research suggests that procedural knowledge is built upon a foundation of conceptual understanding (Goleman & Williams, 1997; Halford, 1993). Conversely, other studies propose that conceptual understanding precedes the development of procedural skills (Byrnes & Wasik, 1991; Carr, Alexander, & Folds-Bennett, 1994; Schneider & Stern, 2012).

Conceptual understanding in mathematics has been found to be associated with factors such as intelligence, self-concept, and self-efficacy. Implementing different learning strategies, such as hands-on approaches, constructive approaches, and contextual learning strategies, can enhance students' conceptual understanding of mathematics.

Overall, prioritizing conceptual understanding alongside procedural knowledge in mathematics education is essential for fostering critical thinking, problem-solving abilities, and the application of mathematical concepts in various contexts.

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A Study of Teachers' Classroom Time and Attention from Gender Lens

Pragya*, Madhu Kushwaha**

Abstract

Gender is a social construct, and it is produced in different social locations including schools. Gender inequality whether in society or in classrooms limits the freedom of all individuals to develop their potential to the fullest. Classrooms inside schools are microcosms of the society so the gendered beliefs, values and culture of the society are reflected in the classrooms and shared by the teachers and students alike. Teachers are one of the most important stakeholders of the educational process, and their gender-based beliefs and assumptions have an impact on their classroom instructional practices, strategies, and choices. So, teachers need to be aware of gender stereotypes or gender biases which may interfere with everyday classroom events. It was found in several studies that most of teachers do not even recognize the gender equality implications and gender stereotyping they embody. Teachers may be unconscious validators of gender stereotypes themselves. Teachers' gendered expectations from students affect their pedagogical practices and teaching strategies. The researcher intends to explore these areas through research and the present paper is the outcome of the pilot study conducted as a part of that process.

Keywords: *gender, gender bias, classroom*

Introduction

Ideally, every individual should have equal access to resources, equal rights, and equal opportunities simply by virtue of being human. But the world is plagued with several human-made exploitative structures of discrimination like, race, caste, class, culture, and gender to name a few which places so many persons in a disadvantageous position and breeds inequality. Since gender cuts across all social sections, gender-based discrimination is the most widespread form of discrimination. Gender inequality is a global issue and to address this issue the United Nations has declared gender equality as the 5th Sustainable Development Goal (SDG) among 17Sustainable Development Goals (SDGs).

India is also committed to achieve gender equality and it is a constitutional goal. Despite that, the real experiences of being men and women are in constant tension and contradiction

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(Manjrekar,2021)**.** Gender inequality in a society is the result of gender biased attitudes. Before going deep into the discussion let's understand the term gender.

The concept of gender in the present sense has evolved since the 1970s. Initial feminist discourses were focused on to differentiate it with 'sex', biological and physiological characteristics of females, males, and intersex persons. According to WHO: "Gender refers to the characteristics of women, men, girls, and boys that are socially constructed. This includes norms, behaviors and roles associated with being a woman, man, girl or boy as well as relationships with each other." Gender is a socio-cultural concept and is a learned behavior which varies across cultures and time, diversity in gender roles across cultures is helpful to understand the root cause of discrimination.

Since gender is a social construct therefore it is produced in different social locations including schools. Schools take an active part in the construction of gender identities of students. Classrooms inside schools are microcosms of the society so the gendered beliefs, values and culture of the society are reflected in the classrooms and shared by the teachers and students alike. Teachers are one of the most important stakeholders of the educational process, and it would be naïve to believe that his/ her gender-based beliefs and assumptions won't have any impact on her classroom instructional practices, strategies, and choices. "Gender bias exists when inequitable or discriminatory thinking, activities, interventions and actions discriminate against one gender".(UNESCO, 2015)

Several studies confirm that assumptions and stereotypes about gender influence teachers' pedagogical practices and classroom interactions. "Teachers may be unconscious validators of harmful gender stereotypes themselves. For example, they may use language that suggests that boys and girls naturally have certain qualities or behaviors such as 'sensible, helpful girls', versus 'silly, naughty boys.' Teachers may give more attention to boys if their education is seen to be more important in that context." (UNESCO, 2019).

Researches show that there is gender inequality in schools **(**NCERT, 2006**).** Gender inequality in schools is practiced through hidden curriculum. This inequality present in school ethos affects self-concept, achievement, and aspirations of students (Kushwaha, 2017). Researches also suggest that classroom interaction between teachers and students are short on both quality and equality. (Sadker& Sader,1985). In extensive research conducted from 1980 to 1984 by Mayra Sadker and David Sadker, data was collected from more than 100 fourth, sixth and eighth-grade classrooms in 4 states and districts of Columbia. The sample included urban, suburban, and rural classes. It

was found in the research that, male students received more attention from teachers and there is an inequitable environment in the classroom so the students in the same classroom and being taught by the same teachers experienced very different environments (Sadker& Sadker,1986).

Although great efforts have been made to make school education accessible to all, the effects of gender bias are still noticeable. Women are concentrated in few "female-friendly" (and low-paying) specialties. (Sadker, 2000)**.** A teacher in a higher secondary school in a rural area in M.P. while teaching 10th standard did an experiment with gender issues in the classroom. It was found in the experiment that people still have this notion that its women's work to prepare food and take care of the house and they cannot go out to earn money. (NCERT, 2006). Gender bias and gender-based discrimination still permeate the entire education process in far too many settings. (UNESCO, 2019). National Education Policy 2020 also states that gender gaps remain in India even after successive government efforts. NEP-2020 has put females under the category of Socio Economically Disadvantaged Groups (SEDGs). It also highlights the safety concerns of parents in India regarding their girl child, which hinders the education of girls and thus establishes the fact that girls are not safe in our society and in schools ("providing bicycles and organizing cycling and walking groups to provide access to school have been shown to be particularly powerful methods in increasing participation of female students because of the safety benefits and comfort to parents that they provide."). Thus, such concerns of parents act as a "masquerade" that stifles women's aspiration in the guise of keeping them safe.

Kushwaha & Gautam (2014) conducted a study in which teachers were given identical high school mark-sheets having male and female names and were asked to suggest future subject choices for those students. It was found in the study that teachers suggested boys to opt science and mathematics more often than the girls. Thus, students' gender remains one of the important factors in determining teachers' expectations from them. Teachers' gendered expectations from students affect their pedagogical practices and teaching strategies. Teachers' gendered expectations prepare boys for more challenging tasks whereas girls are relatively denied having these opportunities.

In research conducted in 12 schools (4 co-eds and 8 non-co-ed schools) of Varanasi in which 72 teachers were inquired about gender stereotypes, it was found that based on sex, there is a significant difference in the level of the effect of gender stereotypes of teachers in their classroom

behavior. In this study, data was collected based on interviews and self-report filled by teachers (Kumar, 2017).

Another research was conducted in 4 teacher training institutes affiliated to Andhra University and Bangalore University comprising 36 teacher educators, 178 teacher trainees and 6 administrators. 58 classes of 18 teacher educators were observed and it was found that neither curriculum provided an integrated gender perspective nor teacher educators received training on gender sensitization and the teacher educators used gender insensitive language. It was also found that nearly half of the teacher educators were of the view that all genders do not require equal opportunities and access to higher education. Most of the teacher educators did not support the idea that husbands and wives should have equal roles in decision-making. Three fourth of the teacher educators agreed that employment is required only for men (Joseph,2018).

Bhattacharjee (2021) conducted an ethnographic fieldwork in a coeducational municipal primary school in Baroda, Gujrat. It was found that everyday classroom events reinforced sexual division of labor and sexual division of labor intensifies the gender dichotomy. Girls' behavior was shaped as being dependable, responsible, and adaptable to adult authority through the assignment of tasks in schools. Girls were given responsibility in the closed spaces of classrooms and schools, and they were kept under strict control and supervision of teachers while boys were given freedom to leave the school premises.

"Gracce and Gravestock (2009) list the following gender-based trends observed among some teachers; some do not even recognize the gender equality implications and gender stereotyping they embody. For example, teachers do the following:

- Call on male students more frequently.
- Wait longer for males to respond to a question
- Give male students more eye contact following questions
- Remember the names of male students.
- Use these names when calling on male students.
- Attribute male students' comments in class discussions.
- Interrupt female students before the end of their response.
- Ask males more questions that call for 'higher order' critical thinking as opposed to 'lower order' recounting of facts" (as cited in UNESCO, 2015).

In 'A Guide for gender equality in teacher education policy and Practices' of UNESCO (2015) it was stated that teachers need to be aware of the above-mentioned gender-bias behaviors. To analyze such behaviors of teachers, classroom observation can be done. Also, people have the right to know about what is happening in the classroom because it is the place where very important teaching and learning is taking place and so much money is being spent on educating the next generations.

Sadker & Sadker, 1985 conducted extensive research on classroom observation on more than 100, fourth, sixth, and eighth-grade classrooms in New England, Washington DC and the Baltimore metropolitan area in the USA, it was found that female students received less teacher attention than male students received and when girls tried to call out their conduct was remediated by the teachers " often boys received additional attention by asserting themselves and literally calling out for attention,…. When girls did call out, they were far more likely to be squelched by teachers who remediated their conduct by saying such things as 'you are supposed to raise your hand before you talk in the class'."

In Chile, 237 videotaped classes of fourth graders were analyzed and it was found that teachers spent more time with boys and boys were given more attention than girls. It was also found that gender biases of teachers affected students' self-perception and motivation. (Bassi, Blumberg, & Diaz,2016).

It was found that although girls' participation in education increased but girls are still lagging boys in terms of earning money, contribution to the workforce, their role in decision making and above all being independent (Jha, 2021; Sadker, 2000; UNESCO, 2019; NEP, 2020; Global gender gap report 2021).

Knowledge Gap: After extensive review, it was found that very few classrooms observation-based studies on teachers' gendered behavior have been done in school and there is a dearth of classroom observation-based researches in the Indian social context.

In India, researcher found only three classroom-based observational studies focused on gender bias or gender socialization in schools**.** One of the research projects was conducted to study the gender stereotype of school teachers based on interviews and questionnaires filled by the teachers themselves. Another research was done in teacher- training institutes. Only one research was done to study gender socialization in a primary school through classroom observation and this was an ethnographic study.

Research question

Does the distribution of teachers' classroom time and attention is affected by students' gender?

Objective

To study the teachers' classroom interaction (time and attention) from gender lens.

Method and procedure

Sample Description

Total 7 teachers' classroom teaching was observed of which 4 teachers were male and 3 teachers were female. People of different age groups were included in the research the youngest was of 27 years having 1and half years of teaching experience and the oldest was of a 71 years male teacher having 48 years of teaching experience. Total 14 classes were observed of grades 3rd to 8th and the subjects were English, Hindi, Sanskrit, Mathematics and Science.

Research Procedure

Researchers are of the opinion that the study of teaching behavior or classroom interaction can best be carried out through classroom observation-based study. Several different styles of classroom observation have been developed over the years because of diversity of purpose, practices, and locations of observation. The origin of the common approaches to classroom observation lies in the earlier part of the twentieth century (Wragg, 1999). Quantitative approach of classroom observation involves counting and recording individual events, whereas qualitative style focuses on looking behind and beneath the mere frequencies. For the present study a mixed approach was adopted in which not only teachers' time was measured quantitatively but a qualitative analysis of the teachers' responses was also done.

The present paper is based on classroom observation of seven teachers teaching in grades 3-8th selected through a snowball sampling method. A total of 14 classes, two classes per teacher were observed. Out of 14 classes only 4 classes were videotaped, and the rest were with observation schedule as only two teachers consented for videotaping.

Non participatory observation was done, and researcher sat at the back of the classroom and observed/recorded classroom proceedings. Classroom observation was followed by one-on-one interviews with the teachers.

Results and Discussion

Total 7 teachers' classroom teaching behavior was observed, details of which are given below:

Table 1: Teachers' time and attention given to students. Excluding the reading opportunity given to students

		BOYS	**GIRLS**
Teacher	**Classes**	**seconds**	**seconds**
T1	1st class	158	165
	2nd class	30	10
T2	1st class	149	166
	2nd class	299	275
T3	1st class	465	57
	2nd class	87	138
T4	1st class	116	218
	2nd class	315	143
T5	1st class	878	614
	2nd class	254	5
T6	1st class	130	32
	2nd class	153	25
T7	1st class	141	97
	2nd class	137	0
Total time in sec		**3312 sec**	**1945 sec**
TOTAL (after converting sec into min)		**55 min 12 sec**	**32 min 25 sec**

Table 1 shows Boys received 3312 seconds while girls received 1945 seconds. This means boys received 1367 seconds more time than girls i.e., boys received 22 minutes and 47 seconds more time and attention of teachers than the girls. In this less than 1 second time was not recorded.

Time and attention of teachers received by students include questioning by teachers, explaining, behavior correction by teachers, students getting a chance to solve questions on board, teacher calling on students, students calling out and receiving teacher's attention, scolding by teachers, students correcting teachers' incorrect statements. This table does not include reading opportunities given to students.

Table2: Reading opportunity given to students

		BOYS		**GIRLS**
Teachers		**seconds**		**seconds**
T1		264		114
T3		0		27
T5		232		36
T6		600		0
T6		600		0
Total time in sec		**1696 sec**		**177 sec**
TOTAL (after converting sec into min)		**28 min 16 sec**		**2 min 57 sec**
Difference in total time received by boys and girls = 1696-177=1519 seconds				

Table 2 shows that boys received reading opportunity for 1696 seconds and girls received reading opportunity for 177 seconds. Boys received approximately 9.5 times more time for reading aloud in the classroom than girls.

Reading opportunities were given only in the classes of Hindi, English, Sanskrit and one Mathematics class.

While analyzing the data it was found that one of the female English teachers gave extra support to the boys while reading aloud in the class and she spent 264 seconds (i.e., 4 min 24 seconds) time with boys while girls got only 114 seconds (i.e., 1 min and 54 seconds) to read in the classroom, which is not even half of the time spent on the boys by that teacher. When girls made mistakes while reading in the classroom, they (girls) were told that they were pronouncing words wrongly and told to sit while boys received continuous feedback from the teacher and were told to continue.

Teachers' responses

One-on-one interviews were conducted after the classroom observation with the help of an interview protocol. All the interviews were recorded. Recorded interview of all seven teachers was transcribed. The thematic analysis of the transcription reveals the following themes:

(a) Justification of boys' disruptive behavior

(b) Teachers' reinforcing the idea of compliant girls

(c) Rationalizing more time given to male students

(a) Justification of boys' disruptive behavior

In this study, it was found that all the teachers believed boys are more involved in disturbing classrooms. Though they provided several justifications ranging from biological, emotional to social factors. Two teachers readily accepted that boys were more responsible for disturbing the classroom. The rest of the teachers initially denied that any student can disturb the classroom but subsequently accepted that boys make more noise in the classroom and needs to be disciplined more than girls. Some teachers attributed the disturbing behavior of boys as the natural behavior of boys. As one of the females, a relatively aged teacher remarked,"ये उनका नैचुरल व्यवहार है" (this is their natural behavior).

Teachers said that boys are active, aggressive, rude, restless, have ego, naughty like, one of the female teachers who taught Mathematics remarked "…. लड़के क्योंकि स्वभाव से भी थोड़े चंचल होते है न" (… boys because they are little naughty by nature).

Another teacher who taught English stated "लड़के ज्यादा आक्रामक टाइप लगते है उन्मे जो होता है रुडनेस ज्यादा लगती है …." (boys appear more aggressive and ruder...).

(b) Teachers' reinforcing the idea of compliant/ responsible girls

The inactive behavior of girls in the classroom did not appear strange to teachers. They believed girls are soft, quiet, polite, sincere, scared, and ego-less by nature

A Mathematics teacher said: "…लड़कियां क्लास में थोड़ा सहमी सी रहेंगी डरी सी भी रहेंगी" (Girls are little scared and apprehensive in the class).

Another teacher said"…. लड़कियां थोड़ी पोलाइटली बात करती हैं" (girls talk little politely.) Teacher implied the idea that girls are more responsible, and they need less time. One of the teachers said "लड़केहोते है न वो लापरवाह होते है अब girls लापरवाह नहीं होती तो आप लड़कों को एनकरेज करिए लड़कियां अपने आप कर लेती है" (boys are careless while girls are not careless so encourage boys, girls can do of their own)

Unlike other teachers of the present sample who were of the opinion that boys need more attention and time, one of the male teachers said that girls need more time and reasoned that girls are

incapable of learning fast, they are slow learners and inefficient in understanding anything, so they need more attention of teachers, he remarked "..अधिक चाहिए ध्यान उनको (लड़कियों को) चीज़े समझ में कम आती है वो कैच नहीं कर पाती है, वो रट लेती है" (girls need more attention they are inefficient in understanding things they just memorize everything). It shows that this particular teacher is prejudiced and biased against the intellectual and academic capabilities of girl students.

(c) Rationalizing more time and support given to male students

While analyzing the data it was found that boys received approximately 9.5 times more time to read aloud in classrooms than girls. It was also found that boys received support from teachers while reading while girls were discouraged.

When girls made mistakes while reading in the classroom, they(girls) were told that they were pronouncing words wrongly and told to sit while boys received continuous feedback from the teacher and were told to continue. Girls got less time to read aloud in the class because whenever they were asked to read aloud, they were asked to sit by saying such things as "your voice is very soft", "can't you read a little louder", "your voice is inaudible", "you are pronouncing words wrongly" etc.

So when the researcher asked why girls were not given equal reading opportunity in the classroom one of the male teachers who taught Hindi rationalized his behavior and stated "देखिए ये जो क्लास का समय है 30 या 35 मिनट उसमे रीडिंग चेक करना है और ये भी देखना है कि जो वो पढ़ेंगे वो बाकी बच्चे भी रिपीट करेंगे तो उस समय मैंने उस बच्चे को ज्यादा खड़ा किया मैंने जो पढ़े औ रक्लास रूम लगातार चले" (look classroom time is limited to 30 or 35 minutes in that time I have to check reading and I also have to see that other students will repeat that so I did that so that classroom activity proceeds continuously). Due to such attitude of the teacher those who are weak in reading ability (who are mostly girls in the present study) may never get a chance to read aloud in the classroom.

When the researcher asked one of the female teachers who taught English about why she discouraged girls to read aloud in her class? The teacher replied "अगर वो लड़की रही होगी ऐशल्यामिश्रा तो ये मैंने जान बूझकर के किया होगा और अगर कोई और लड़की होगी तो वो मेरी

मिसटेक होगी" (if that girl was Aeshalya Mishra I have done it intentionally but if she was another girl it was my mistake). While analyzing the interview transcription researcher found that the girl was Anshika, not Aeshalya Mishra. This particular teacher encouraged boys and gave continuous feedback when boys made mistakes in reading. Girls in the class of this teacher received approximately half of the time of what boys received to read aloud.

When researcher asked one of the female teachers who taught Mathematics and English about why only a boy and no girl were called for reading in the classroom. Initially the teacher said she didn't do it on purpose, and she remarked, "हाँ, हाँ.....मैंने बुलाया होगा कि कोई आजाओ तो वो (लड़का) आ गया होगा क्योंकि वो मॉनिटर है तो जब वो बोलता है तो बच्चों को ज्यादा समझ में आता है" (yes, yes I would have said that anyone come, and he came because he is the monitor and when he speaks other students understand more clearly).

Conclusion

In the present study, it was found that boys received more teachers' time and attention and got more opportunities (reading aloud, and support) than girls. Though teachers didn't accept that they pay more attention to boys, quantitative data pertaining to reading aloud opportunities and reading support is itself evident that boys got 9.5 times more time than girls. Whenever girls got the chance to read aloud, they were interrupted and asked to sit, while boys got continuous feedback and support to read aloud.

It can also be concluded that boys were more involved in disrupting the classroom and teachers gave several justifications for boys' behavior. Initial interaction with the teachers brought out their hesitation in accepting that boys are more responsible for disruptive behavior in classrooms but finally all the teachers agreed that boys were more involved in disturbing the classrooms. Some of the teachers believed the disturbing behavior of boys is natural. Teachers said that boys are active, aggressive, rude, restless, have ego, naughty while girls are soft, quiet, polite, sincere, scared, and ego-less by nature. As boys were more responsible for disturbing the class eventually teachers' time and attention were more directed towards boys.

Studying teachers' classroom behavior from a gender lens helps in understanding gender relations, and dynamics inside classrooms. Studies based on Gender lens allows us to help teachers to

understand their own behavior and complicity in the perpetuation of gender bias and consequently, findings can be utilized to improve the pre-service teacher education program.

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Yoga: A Healing Therapy for Stress Management among Youth

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Abstract

The present study is designed to examine the effects of yogic practices on the physical (blood pressure & heart rate) and psychological (anxiety & satisfaction with life) health correlates of stress of adolescents age ranged 15-20 years. The physical health measure (i.e., Sphygmomanometer), anxiety and satisfaction with life scales were used to examine the participants by using pre and posttest design. In order to examine effects of yogic practices on the psychological well-being, a training program was introduced by yoga expert. Results revealed beneficial effects of yogic practices on physical (blood pressure and heart rate) and psychological (anxiety and satisfaction with life) health correlates of stress among adolescents.

Key words: *Yoga, physical health, anxiety, life satisfaction*

Introduction

Yoga is one of the oldest and most extraordinary spiritual sciences and recognized forms of exercise, stretching and meditation. It is very useful for maintaining the physical, mental, and spiritual health. It is like a gem of great proportions, containing many facets whose light can illumine the whole life with great meaning. Yoga has been practicing across the world to attain perfect equilibrium and harmony in life. Despite more than a century of research, it is very difficult to know much about the earliest beginnings of Yoga. It was originally developed in India over 5,000 years ago (Smith, Hancock, Blake-Mortimer & Eckert, 2006; Tripathi, 2018). Some historical researchers indicated that yoga was present during the time of Vedas. After the period of Vedas, the classical period was marked by the Yoga Sutra written by Patanjali around the second century, it was an attempt to define and standardize classical yoga. After the Patanjali, many sages contributed greatly to the field through their practices and literatures.

Concept of Yoga

The word "Yoga" means union of human being and universal energy. The definition of yoga is 'to yoke or join together' (Taylor, 2003, pp.116). It teaches how one can learn to communicate with the absolute or with universal energy (Patel, 1993). It integrates the mind and body focusing on balance, posture, deep breathing, stretching and relaxation (Rizzolo, 2008;

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Denniston, 2022). The body and the mind are in a state of constant interaction. The science of yoga does not dictate where the body ends and the mind begins, but approaches both as a single, integrated entity. Yoga is a practical aid, not a religion. The system of classical yoga was compiled by Patanjali in Yoga Sutra, he considered that yoga is the complete control of the operations of the mind (Frawley, 2008; Saraswati, 2006). These operations of the mind, called virittis, constitute all our mental activities from the deepest sub-conscious memories to the highest super-conscious insights. Patanjali was not referring to control of the mind in the ordinary sense but to a complete mastery of all levels of consciousness, including subliminal and cosmic layers not known to ordinary awareness or even to modern psychology.

The integral yoga deals with all aspects of the nature from body to soul and all possible healing methods from food to meditation (Frawley, 2008; Denniston, 2022). There are many different paths and styles of yoga related to different individual inclinations and the different aspects of the nature such as Gyan Yoga, Bhakti Yoga, Karma Yoga, Kriya Yoga and Hatha Yoga. The different paths for developing the mind are because the mind has three aspects: knowing (intellect), feeling (emotion) and willing (action). However, this does not mean that these aspects are exclusive to each other. There is no insistence that all individuals must follow one path or another. Yoga encourages to follow the path that most appeals to the one's heart. It is important to allow crosscurrents from other systems to intermingle. Raja Yoga covers the entire range of yogic practices from asana and pranayama to the many forms of meditation.

Stress

Stress has become a common catchword in our society to indicate a host of difficulties, both as cause and effect. Right from the time of birth till the last breath drawn, an individual is invariably exposed to various stressful situations (Pestonjee, 2000). Consistently increasing rate of psychosomatic and psychological disorders and feeling of frustration and dissatisfaction with life in general reflect the high stress being experienced by the people in the present era (Srivastava, 1999; Tripathi, 2018). Thus, it is not surprising that research interest in this area (stress, its causes, consequences, and management) has been rising with the advancement of the present century which has been called 'the age of anxiety and stress' (Srivastava, 1999; Pestonjee, 2000; Tripathi, 2018).

Stress is a dynamic condition in which an individual is confronted with an opportunity, demand, or resources related to what the individual desires and for which the outcome is perceived

to be both uncertain and important (Schuler, 1980, p. 189). Stress is not necessarily bad for us. Although stress is typically discussed in a negative context, it also has a positive value. Positive stressful events can have positive effects on our growth and well-being. Generally, positive stress is called eustress. It is an opportunity for personal growth, satisfaction and can improve health (Cavanaugh, Boswell, Roehling & Boudreau, 2000). In general, people perform at their best and live their lives to the fullest when they experience a moderate level of stress—just enough to keep them challenged and motivated—and deal with that stress in a productive manner. Therefore, too much stress can be detrimental to our health and too little stress caused of stagnation.

The concept of stress was first introduced in the life sciences by Hans Selye (1956). It has been derived from the Latin word 'stringere' which means "to draw tight'. It was generally referring to hardship, strain, adversity, and affliction. Stress typically describes a negative concept that can have an impact on one's mental and physical well-being, but it is unclear what exactly defines stress and whether stress is a cause, an effect, or the process connecting the two. It has become increasingly difficult to define. Despite its ubiquitous popularity, however, the word stress remains very difficult to define, at least to a scientist's satisfaction. Much of the confusion stems from the fact that stress means or represents something different for each one of us (Srivastava, 1999; Pestonjee, 2000; Tripathi, 2018). There are three perspectives to define the term stress as stimulus perspective, response perspective and transactional perspective.

Stress conceived as a stimulus has been used to describe environmental situations or conditions characterized as a new, intense, rapidly changing, demanding sudden or unexpected (Beehr, 1984; Beehr & Bhagat, 1985; Selye, 1956). The stimulus perspective of stress is an engineering one in which external stressor give rise to stress reaction or strain within the individual (Cox, 1978). The common features of stressful stimuli are undesirable, unpleasant, uncomfortable, threatening and demanding (Srivastava, 1999). Lazarus (1966) considered perceived threat as the central characteristic of stressful situation. Thus, stress is defined as physical or psychological stimulus which impinging upon an individual can produce a disruption in person's homeostatic processes.

According to response perspective, stress would be regarded as the demands placed upon the individual to respond adaptively to a stimulus appraised as noxious. The work of Selye (1956) first set the model for response theories of stress. Stress is defined as non-specific responses of the body to any demand made upon it (Selye, 1956). Organism makes a universal pattern of

response to all types of external and internal demands made upon the body. When stress levels are low, the body is often in a state of homeostasis. All body systems are operating smoothly to maintain equilibrium. Stressors trigger a “crisis-mode” physiological

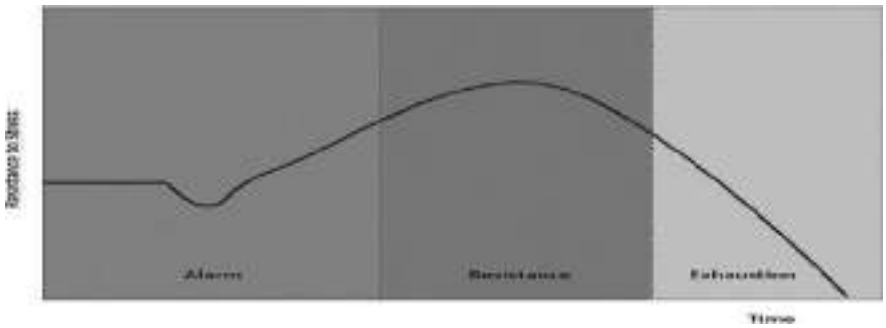


Figure 1 : General adaptation syndrome

response, after which the body attempts to return to homeostasis by means of an adaptive response. The internal fight to restore homeostasis in the face of a stressor is known as the general adaptation syndrome, or GAS (Figure: 1). The General Adaptation Syndrome (GAS) has three distinct stages: alarm, resistance, and exhaustion. A diagrammatic view of these stages is shown in Figure 1.

The model of GAS has been challenged as it does not give any significance to cognitive processes and individual differences in these physical responses to stressors. It was suggested that physiological response is directly determined by the actual presence of the stressor as well as its psychological impact on the person (Srivastava, 1999).

According to transactional perspective, stress itself is not a simple variable. It is a process that involves appraisal and subsequently coping with the situation. Researchers believed that how the individuals handle the stressful situation determine their psychological and somatic response to the stressors (Lazaras & Lunier, 1978; Lazaras & Folkman, 1984). Stress can be defined as part of a complex and dynamic system of transaction between the person and the environment. Thus, stress may be referred to as the psycho-physical state of the individual resulted from a situation cognitively appraised as excessively demanding or threatening, which impinging upon an individual can produce a disruption in person’s homeostatic processes and requiring the focal person to make some adaptive efforts to cope with it.

The intense or persistent stimulation of the stress response can result in a host of health complications. When faced with a situation people perceive as stressful, the nervous system responds by producing changes in the body that enable them to cope. This is commonly known as the "fight or flight" syndrome. The endocrine system releases stress hormones, the heart speeds

up, and breathe increases. In an emergency, when fast reactions are essential, these and other physical changes allow them to respond quickly. Once the emergency is over, they relax, and the body returns to its normal state.

The real problems arise with the effects of stress over a long period of time. The body remains in a state of alert, without the downtime it sorely needs. The sustained physical and mental tension weakens the body's resistance to disease, making them more susceptible to viruses and other illnesses. Digestive problems such as ulcers, constipation, and indigestion may arise. The blood vessels, constricted to enable us to respond to stress, can go into spasm. It affects mainly autonomic, cardiovascular, and immune systems (McEwen & Stellar, 1993). The link between stress and physiological symptoms is very complex. Research evidence indicated that stress could create changes in metabolism, increase heart rate, increase breathing rates, increase blood pressure, bring out headaches, and induce heart attacks, cerebral accident, peptic ulcer, arthritis, dermatitis, other skin afflictions, and diabetes (Srivastava, 1999; Robbins & Judge, 2009; Tripathi & Bano, 2014).The common psychological symptoms are tension, anxiety, boredom, low self-esteem, experienced conflict, alienation from social world, fatigue, low satisfaction with life, sexual maladjustment, and irritability. Further it was suggested that prolonged stress may be caused of mental illness as depression, neurotic symptoms, mass psychogenic illness, suicide, and emotional outburst (Srivastava, 1999: Czamara, 2003; Robbins & Judge, 2009).

However, the most dangerous and negative effect of stress is the way people choose to deal with it. They take serious drugs like nicotine, alcohol, drugs, etc. The abuse of these types of "cures" becomes a double-edged sword. The cure becomes worse than the cause. Research suggests that yoga is an effective possible stress management technique. It can positively alter a person’s mental state in a safe, acceptable, and healthy manner and can be performed alone or in group setting (Fry, 1994; Newman & Stone, 1996; Malathi & Damodaran, 1999; Martin, 2001; Smith, Hancock, Blake-Mortimer & Eckert, 2006). Yoga can serve as a “breather” from daily hassles and assist in attenuating the effect of chronic stress (Kanner, Coyne, Schaefer & Lazarus, 1981).

Yoga and Stress

Yoga provides the key to the physical, psychological, and spiritual developments, widely used as the technique of relief from stress and for improvement in physical and psychological health (Srivastava, 1999). However, unhealthy bodies tend to have inert, dull, and sluggish minds.

It is the practice of yoga which removes this sluggishness from the body and brings it to the level of the active mind. Ultimately, both the body and mind rise to the level of the illuminated self.

It teaches the ways of establishing harmony among various sides of life (Patel, 1993). Yoga practitioners view yoga as a holistic tool for self-improvement and self-healing as well as a method to help reduce stress (Michie & Sandhu, 1994). Yogic exercises cater to the needs of everyone according to his or her specific needs and physical condition. They involve vertical, horizontal, and cyclical movements, which provide energy to the system by directing the blood supply to the areas of the body which need it most. In yoga, each cell is observed, attended to, and provided with a fresh supply of blood, allowing it to function smoothly. Regular practice of the stretches, twists, bends, and inversions (the basic movements of yoga poses) restores strength and stamina to the body. Poses together with the control of breath, rectify physiological, and psychological disorders (Malathi & Damodaran, 1999).

The practice of yoga has a definite role in the promotion of positive health, including mental health, characterized by improved cardio-respiratory efficiency, autonomic responses to stressors, sleep, muscular endurance, and 'higher' brain functions. The practice of yoga reduces psycho-physiological signs of stress. Yoga has sound scientific basis and an ideal tool for improving positive physical and mental health of individuals regardless of their age. It gives the practitioner not only a healthy body but also a sound mind. The practice of yoga helps to eliminate these ailments, and disciplines the mind, emotions, intellect, and physical self. It alters stress responses and a person’s attitude towards stress along with improving self-confidence, increasing one’s sense of well-being, creating a feeling of relaxation and calmness (Malathi & Damodaran, 1999). The yogic practice enhances resilience and improves mind-body awareness, which can help people adjust their behaviors based on the feelings they were experiencing in their bodies. Yoga however realigns and rejuvenates the body inside and out; yoga frees the mind from the negative feelings caused by the fast pace of modern life.

Thus, the present study is designed to examine the effect of yogic practices on the physiological correlates (i.e., heart rate, blood pressure) and psychological correlates (i.e., anxiety and psychological well-being) of stress.

Methodology

Sample

The study was carried out with 100 male adolescents aged 15-20 years. Youth is a period of transition i.e., critical period and storming stage for youth development (from a child to an adult) when rapid physiological and psychological changes demand for new social roles to take place. It is the stage of tremendous growth and potential but also a period of potential risk of imposing strong influences by social settings (WHO, 2014). The basic process of youth development involves complex changing relations between the individual and the different layers of the environment within which a youth is embedded. Variation in these relations leads diversity in youth development and represents sources of risk factors across the period. The adolescents, due to these changes often face several crises, dilemmas, and stress. It involves substance use and abuse, alcohol, unsafe sex, school underachievement, failure, and dropout and delinquency, crime, and violence. Thus, adolescence is a very critical period for yoga intervention with respect to positive youth development by managing their stress in a constructive manner.

The participants, who had symptoms of higher level of stress for last 3 months, were selected from the colleges with the help of psychologists and counsellors. They were interested and willing to participate in the present study. To examine the effect of yoga on physiological correlates (i.e., heart rate, blood pressure) and psychological correlates (i.e., anxiety, satisfaction with life) of stress, participants were randomly assigned into experimental (n=50) and control (n=50) groups and exposed to pre and posttest. Yoga training program was introduced to experimental group only. Later, the participants of control group were also exposed to the yoga training program due to ethical concern and they had benefited from this like experimental group.

Exclusion Criteria : The following exclusion criteria were considered for selecting the participants in the present study :

- History of active sports training.
- Previous exposure of yoga training.
- History of major medical illness in the past such as tuberculosis, bronchial asthma, spinal problems etc.
- History of major surgery in the recent past.

Tools

Physical health measures

Blood pressure is the measurement of the force applied to the walls of the arteries as the heart pumps through the body. The pressure is determined by the force of blood pumped, as well

as the size and flexibility of the arteries. There are two types: systolic (normal range: 66-80) and diastolic (normal range: 112-120).The participants' blood pressure and was measured using a Sphygmomanometer.

Heart rate is the number of heartbeats per unit of time, usually expressed as beats per minute (normal range: 60-75).The resting heart rate was examined by manual counting with the help of a stopwatch.

Psychological health measures

Sinha Anxiety Scalewas designed to elicit self-ratings on items descriptive of anxiety reactions to the various areas as health, ambition, family anxieties, friendship and love, and social relations. It consisted of 100 items with 'Yes' and 'No' type responses, and the score range was 0 to 100. The reliability of the test was found to be 0.85 and inter-item correlation was ranged between 0.80 to 0.90. Higher scores were indicative of high levels of anxiety, and lower scores indicate a low level of anxiety.

Satisfaction with Life Scale (Diener, Emmons, Larsen &Griffin, 1985) was used to measure the life satisfaction of an individual. The scale contains 5 items that assess satisfaction with life. This scale was given to participants to know how satisfied they were with their life. All 5 items are keyed in positive direction. The average coefficient alpha obtained was .85. The participants were asked to rate their response on 7-point scale ranged from 7 = Strongly agree, to 1 = Strongly disagree. The score range was 5 to 35, and higher scores indicate more satisfaction with life, whereas lower scores indicate less satisfaction with life.

Yoga Training program

The training program was scheduled for 12 weeks and 5 days in a week. Yogic practices were introduced to the participants approximately over 1 hour in the morning. All the participants were encouraged to attain the session regularly. The yogic practices have been taught by the experts. To assess the effect of yogic practices on the physiological (blood pressure and heart rate) and psychological (anxiety and satisfaction with life) correlates were measured before and after the training program using appropriate tools. Training program consisted of the following steps:

- Warming up exercises (5 minutes)
- Suryanamaskar (15 minutes): It comprised a series of twelve postures. One round of Suryanamaskar has been completed by practicing the 12 postures twice as:

I. Pranamasana II. Hasta Uttanasana

III. Padahastasana
IV. AsvaSancalanasana
V. Parvatasana
VI. AstangaNamaskara
VII. Bhujangasana
VIII. Parvatasana
IX. AsvaSancalanasana
X. Padahastasana
XI. Hasta Uttanasana
XII. Pranamasana

❖ Asanas (20 minutes): The participants have been instructed to practice of some asanas for the relaxation of the body as:

- Tadasana
- Trikonasana
- Ugrasana
- Paschimottanasana
- Macaroons
- Shavasana

❖ Parnayam (15 minutes): Pranayams have been practiced at least 15 minutes after asanas as:

- Anulome-Viloma
- Bhramari

All five Pranas could be balanced and regulated through pranayams:

- Prana-Inhalation
- Samana-RetentionContraction
- Vyana-Retention/Expansion
- Udana-Exhalation/Expression
- Apana-Exhalation/Elimination

❖ Om Chanting (05 minutes)

The practices recommended for stress management ranged from intense to relax; warming up, suryanamaskar, asanas, pranayama, Om chanting/meditation.

Results

To assess the significance of mean difference between control and experimental groups (posttest), Analysis of Co-Variance (ANCOVA) was applied.

Table-1 Shows the Analysis of Co-Variance between the Means of Experimental and Control Groups on Blood Pressure (Systolic) measure.

Blood Pressure (Systolic)	**Control**	**Experimental**	F ratio
Pre test	122.33 (1.04)	123.54 (1.89)	3.57
Post test	123.86 (1.24)	120.06 (0.92)	98.26*

* Significant at 0.05 level of significance, df (1, 98) = 3.94, df (1, 97) = 3.94

Table 1 reported significant difference F(1, 98) = 98.26, p < 0.01between the mean scores of post-tests of experimental and control groups on Blood Pressure (Systolic)measure, whereas no significant difference F(1, 98)=3.57, p > 0.05between the mean scores of pre-tests of control and experimental groups was found.

Table-2 Shows the Analysis of Co-Variance between the Means of Experimental and Control Groups on Blood Pressure (Diastolic) measure.

Blood Pressure (Diastolic)	**Control**	**Experimental**	F ratio
Pre test	73.43 3.04)	74.37 (3.89)	1.47
Post test	74.54 (3.24)	80.1 (1.92)	86.12*

* Significant at 0.05 level of significance, df (1, 98) = 3.94, df (1, 97) = 3.94

Table 2 shows significant difference F(1, 98)=86.12, p < 0.01between the mean scores of post-tests of control and experimental groups on Blood Pressure (Diastolic)measure, whereas no significant difference F(1,98)=1.47, p>0.05between the mean scores of pre-tests of control and experimental groups found. Findings (Table 1 & 2) indicated normal level of blood pressure due to the exposure of yogic practices.

Table-3 Shows the Analysis of Co-Variance between the Means of Experimental and Control Groups on Resting heart rate measure.

Resting heart rate	**Control**	**Experimental**	F ratio
Pre test	77.04 (1.81)	76.12 (1.54)	2.61
Post test	77.74 (1.43)	71.72 (1.02)	42.13*

* Significant at 0.05 level of significance, df (1, 98) = 3.94, df (1, 97) = 3.94

Table 3 reported significant difference F(1, 98)=42.31, p < 0.01between the mean scores of post-tests of control and experimental groups on the measure of heart rate, whereas no significant difference F(1, 98)=2.61, p >0.05(2.316) between the mean scores of pre-tests of control and experimental groups was found. It was suggested that yogic practices have beneficial role in normalizing resting heart rate.

Table-4 Shows the Analysis of Co-Variance between the Means of Experimental and Control Groups on Anxiety measure.

Anxiety	Control	Experimental	F ratio
Pre test	51.54 (9.43)	44.54 (12.94)	2.78
Post test	55.40 (16.74)	16.22 (7.76)	58.31*

* Significant at 0.05 level of significance, df (1, 98) = 3.94, df (1, 97) = 3.94

Table 4 shows significant difference F(1, 98)=58.31, p < 0.01between the mean scores of post-tests of control and experimental groups on the measure of anxiety, whereas no significant difference F(1, 98)=2.78, p > 0.05(1.97) between the mean scores of pre-tests of control and experimental groups was found. It has been reported that yogic practices have a significant impact to reduce the level of anxiety.

Table-5 Shows the Analysis of Co-Variance between the Means of Experimental and Control Groups on Satisfaction of life.

Satisfaction of life	Control	Experimental	F ratio
Pre test	16.68 (1.72)	15.54 (1.58)	1.23
Post test	17.18 (1.76)	30.60 (2.63)	52.09*

* Significant at 0.05 level of significance, df (1, 98) = 3.94, df (1, 97) = 3.94

Table 5 revealed significant difference F(1, 98)=52.09, p < 0.01between the mean scores of post-tests of control and experimental groups on the measure of satisfaction with life, whereas no significant difference F(1, 98)=1.23, p < 0.05between the mean scores of pre-tests of control and experimental groups was found. It has been reported that yogic practices have a positive role in improving satisfaction with life.

Discussion

Findings of the present study suggest that yogic practices have the potential to reduce the level of anxiety as well as enhance the satisfaction with life among youth. Further, it indicated that yoga training program was an effective tool for promoting desirable changes with respect to physiological correlates (i.e., blood pressure and heart rate) psychological correlates (anxiety and life satisfaction) as well. This indicates a significant improvement in normalizing the blood pressure and the heart rate. Practicing yoga reduces the anxiety and increases satisfaction with life, which may have a beneficial role in maintaining optimal level of blood pressure and heart rates

among adolescents. Findings like those of the present study have been reported in other studies (Bhargava, Gogate & Mascarenhas, 1988; Arambula et al., 2001; Pawlow & Jones, 2002; Shenbagavalli & Divya, 2010). Researchers (Bhattacharya, Pandey & Verma, 2002) reported that yogic breathing exercises not only help in relieving the stresses of life but also improve the antioxidant status of the individual. An improvement in the antioxidant status is helpful in preventing many pathological processes that are known with impaired antioxidant system of body.

Another study (Tripathi, 2018) revealed a significant role of yogic practices in reducing occupational stress. This suggests that practicing yoga led to lower level of stress among the middle-aged employee. Other studies have been reported similar finding that stress and anxiety level decreased after the participation in yoga training (Joshi, Joshi & Gokhale, 1992; Sakai, 1997; Malathi & Damodaran, 1999; Arambula, Peper, Kawakami & Gibney 2001; Malhotra, Singh, Tandon, Madhu, Prasad & Sharma 2002; Steeter & Kupper, 2002; Rizzolo, 2008). Yogic science believes that the regular practice of asana and pranayama strengthens the nervous system and helps people face stressful situations positively. Yoga is highly recommended for people who are facing stressful environments (Johnson & Johnson, 1984; Shenbagavalli & Divya, 2010).

Implications

It implies that stress and anxiety-related issues affect teenagers and endanger and disturb their lives in the current environment. Yoga is a viable method of stress reduction since it takes a comprehensive approach of health. Yogic practises enable them in strengthening their body and mind, which promotes good health through regulating physiological responses to stress, boosting the psychological response to it, and effectively releasing the trapped emotions and dangers.

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Tribal Girls in Policy: A Case Study of Argo-pastoral Gaddi of the Himalayas

Kanika Sharan*

Abstract

Gaddis is commonly described as a tribe due to their early constitutional scheduling and concentrated territorialization in the sixth scheduled reserved areas of Bharmour. But within this tribal formation, the intersectionality of low-caste groups is embedded. Gaddis of the Himalayas is recognized for caste heterogeneity within scheduled Tribes that are unevenly accepted and have no legal protection. This complex 'Scheduled tribe Dalits' stratification system in Himachal gives rise to various social categories that often obscure women's and men's relative Status. This study focuses on Gaddi girls in scheduled castes and tribes, referred to as 'doubly marginalized' and granted special safeguards and concessions under the Indian constitution. Girls in these underprivileged groups are in a double bind. Their minority status interacts with India's patriarchal culture making the living condition worse. Based on nine months of extensive fieldwork among Gaddis, this article presents the Status of girls, their education and the significant policies, schemes/programs made by state and central government for this heterogeneous Scheduled tribe and scheduled Dalits (Scheduled tribe Dalits) of the Gaddi community. Qualitative methods were used for doing the research.

Keywords: *Scheduled Tribe Dalits, Girl's Education, education policy, welfare schemes/ Programs, Himalayan Gaddi.*

Introduction

Gaddi is a community that inhabits the western Himalayan ranges of Himachal Pradesh in the districts of Chamba and Kangra. In Himachal Pradesh, the community is recognized for caste heterogeneity within Scheduled Tribes. *Gaddi* is a generic term used for the community. Still, within the community, it is reserved for the community Brahmans (at the top of the caste and ritual hierarchy) and Kshatriya or Rajput castes. Other Gaddi castes include Sippi (weavers and local oracles), Halis (who practice agriculture), etc. Bharmour is constructed as Gaddi land through place-making practices and discursive tropes that link authentic tribal identity to pastoralism, mobility, and Shaivite beliefs. Another population of Gaddi inhabits the southern spurs and low-

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lying hills of the Dhauladhar Mountains in Kangra, stretching from Dharamshala to the west, Bir to the east, and extending south to Maharana Pratap Sagar and Gaehr. Kangra is conventionally referred to as Jhandhar among Gaddis. These two spatial orientations, highland Bharmour and lowland Kangra, represent the up and down extremities of traditional transhumant pastoral routes and two distinct Gaddi populations marked by different trajectories of cultural assimilation, development, and political classification by the Indian government (Christopher, 2020).

Girls' roles in Gaddi Family and society

The family defines gaddi female and their roles. Daughters are highly valued for their physical labor, and they start helping in household activities very early. They cook, clean, and wash, bring water, collect wood and fodder from the forest; take domesticated animals out for grazing during the agricultural season; help carry manure and seeds to the fields; and do weeding, pruning, and harvesting. The ritual of marriage brings significant changes in a girl's life. She enters a new lineage group but needs a better status with the new lineage membership. She is controlled by her mother- in law and dependent on her husband. But her status or position changes throughout her lifetime. As a young girl, she is expected to work hard, performing household chores. After married life, she spends more time at her in-laws' house. She must also work hard and look after her husband and his relatives. She expects to keep purdah in front of older males and must follow the orders of her mother-in-law. After the birth of her male child or first child, her Status improves. Her position reaches its peak after her first son is born or married. She, at this point, can give orders to both her son and his wife. Once she is a widow, the situation changes again, and she becomes dependent on her sons and their wives. Still, today the problem is unchanged.

Objective

As per the 2011 census, the literacy levels of the disadvantaged group are still behind the expected level even after the government has implemented various educational schemes and welfare programs for marginalized communities. Hence, there is a need to look for reasons behind their backwardness despite the availability of different schemes. This paper attempts to determine girls' positions in the Gaddi community, their educational Status, and the significant policies, schemes/programs made by the state and central government for this heterogeneous Scheduled tribe and scheduled Dalits (Scheduled tribe Dalits) of the community.

Review of Literature

UN, in the convention on the Rights of the children, talks about the participation in decisions that affect their lives is enshrined. To actualize the commitments made to gender parity in education by 2015, made firstly by the participants at the Dakar World Education Forum in April 2000 and reaffirmed as one of the UN Millennium Development Goals in September 2001, it is argued that it is essential that international, national and local stakeholders pay particular attention to the gendered nature of child participation and to how it can be a means of creating change in a specific gender issue, i.e., that of girls' education. Although the term' girl' can be used by and for females of different ages, this article describes children of legal school age. We are interested in how girlhood can be a transitory period between childhood and womanhood but, as indicated by various regional studies,' can also be a site and time of gender issues. The contradictions of agency and passivity may characterize girlhood, compliance, and resistance expressed differently in different moments and always intersect with other identity markers such as race and Class (Brown & Gilligan, 1992; Walkerdine et al., 2001). Dr. Weiner mentions in his book on the child and the state in India: Child Labour and Education Policy in Comparative Perspective that 'recommend investing more in education for poor children, and policies to help those poor children to reorganize education as a valuable investment. This is because poor people need help to bear the expenditure burden on their children's education. If the government takes this expenditure, it will make people rethink their children's education.

Looking forward to this, the state and the central government have introduced various programs and policies for children's education, especially for girls. Girls who belong to marginalized communities have special welfare programs by both the state and central government to stop the cases of female infanticide and uplift the living Status of a girl child. Special schemes also attract SC, ST, and OBC children (education research unit, 2006).

India has diverse people from different socio-cultures and linguistic backgrounds. Each state of India has its traditions and values; therefore, it is the duty of our education system to focus on the need for the education of children from all groups, especially those belonging to scheduled areas and marginalized communities (SC, ST, etc.) According to the census of India in 2011, the difference in literacy rate of the total population and SC and ST populations was 74.04 percent and 66.1 percent (SC), and 59 percent (ST). According to the 2011 census, ST's literacy rate improved from 47.1 percent in 2001 to 59 percent in 2011. Out of the total population, 89.97 percent live in Urban areas of Himachal Pradesh, and 10.03 percent lives in rural areas. There are 25.19 percent

Scheduled caste (SC) and 5.71 percent Scheduled Tribe (ST) of the total population in Himachal Pradesh, India. Kangra has the highest literacy rate (85.67 percent), while Chamba is the district with the least recorded literacy rate in Himachal Pradesh. The literacy rate of Himachal Pradesh is 82.80 percent, in the male literacy rate is 89. Fifty-three percent and female is 75.93 percent. The literacy rate of Scheduled Caste in Himachal Pradesh (2011 census) is 78. Ninety-two percent of which males are 86. Twenty-three percent literate, and women are 71.46 percent literate. The gender disparity index is 0.13. The literacy percentage among tribes has increased from 65.5 percent in 2001 to 73.64 percent in 2011; the male literacy rate was 83. Seventeen percent, while the female literacy rate stood at only 64. 20 percent. Looking at the disparity between SC and ST literacy rates, the state and central governments introduced various educational schemes. The policies introduced by the government ensure that they either lower the cost of education or increase the benefits households face when deciding to educate their children.

One common way is to offer cash rewards to parents for enrolling their children, especially girls, in the school. By providing little financial support to these low-income families upon fulfilling certain conditions, these conditional transfer schemes seek to provide short-term income support for education while simultaneously time expect long-term behavioral changes. For example, schemes for girl children like '*Beti Hai Anmol Yojana*' is for all families below the poverty line in the state of Himachal, and having one or two girls, a total sum of Rs. 5100 will be deposited in the name of girls at the time of their birth. Moreover, to help educate such girls, scholarships ranging from Rs 300 to Rs 1500 will be given to them from class 1 to Class XII. Other Scheme, '*Mukhaya, Mantri Bal Uddhar Yojana*,' where the Himachal government decided to provide free education, accommodation (housing), professional guidance, and other essential facilities to orphans, whether girl or boy. It is observed by Drezeet al. (1993) that from the fifth to the ninth five years, plan the government has increased the expenditure from 0.6 percent to 1. 97 percent on special educational schemes for the marginalized group. Out of different schemes like scholarships, mid-day meals, uniforms, stationery, and books, mid-day initiatives by the government are the most significant schemes to achieve the universalization of education (educational research unit, 2006). If the twelfth five-year plan is out of the total educational budget, 40.2 percent is spent on mid-day meals.

Methodology

Qualitative methods were used for doing the research. My study participants were 50 adolescent girls attending a government school in Dharamshala, Himachal Pradesh, ten government schoolteachers, two principals, and 30 parents. Data was collected from nine months of extensive fieldwork, including semi-structured interviews, questionnaires, focus group discussions, and participation observation approaches. Secondary data were collected from books, academic papers, and online reading platforms. Interviewees were given a consent form and were informed about the research. Interviews schedules were made to seek information related to schemes. Most parents interviewed were availing of governmental schemes for their children's education. All the parents and girls belonged to the Gaddi community.

Findings and Discussions

In our society, girls have been given a special place for ages. Nowadays, girls are progressing more and proving their mettle in every arena, whether education, politics, health, government jobs, agriculture, or household chores. The Gaddi household is incomplete without the presence of girls. The Himachal Pradesh government has been honoured nationally for its excellent steps and programs undertaken by girls and women empowerment. The Himachal government is seriously concerned about the upliftment of the girls and women in society, like education, funds for the widow and marginalized girls and women, strict punishments against female infanticide, etc. The result of all these initiatives by the Himachal government toward the growth of girls in society has made Himachal top the list among all the other states in terms of empowerment. Girl's education in 2010-2011 reveals that in the era of globalization and despite various constitutional provisions and by administration of multiple programs and schemes by the central and state government, the female members of SCs and STs are still behind as the educational indicators are concerned. Tribal sub-plan approaches emerged in the fifth five-year plan as the primary strategy for tribal development and have been emphasized for elementary education for tribal children. National Policy on Education (NPE) has recommended opening primary schools in tribal areas, initially developing curricula and instructional material in the tribal language, and establishing ashram/ residential schools for ST youth to teach in their areas. Education to bring tribals, particularly tribal women, into the mainstream has not succeeded. There was a relative asymmetry in the Status of tribal men and women. The latter came off to be in a much worse position after analyzing their situation in various social, religious, economic, and political spheres than has been portrayed. Tribal women, because of this, began to lose their

freedom and choice in social matters and economic independence without gaining much in the political and educational fields (Chauhan, 1990).

Problems Associated with the Education of Tribal Girls

A tribal girl is essential in her society's socio-economic and political structure. They are also affected by the impact of socioeconomic changes on her community. Develop and raise the level of aspiration, adequate educational opportunities are needed. Numerous socio-economic development programs undertaken in the tribal areas were not making much headway, mainly because of the ignorance and illiteracy of tribals. The fact remains that many tribal women in rural areas might have missed educational opportunities at different stages to empower them, varieties of skill training programs must be designed and organized (Rani, Rajani, and Neeraja, 2011). When literacy has been recognized as an essential empowerment tool, the tribal society has been significantly disadvantaged, and the tribal woman is enormously handicapped. Though there has been a five-fold increase in the literacy of tribal females, it is still much lower than the national average for females. The low educational Status of tribal girls is reflected in their lower literacy rate, lower enrolment rate, and higher dropouts. There are social, economic, and cultural factors are interrelated and are responsible for educational backwardness among tribal women.

Social Factors: Most parents in the tribal community are illiterate and not exposed to the outside world. The socio-culture factors affecting their educational backwardness are lack of exposure to the outside world, lack of interest in reading, and sticking to the traditional job. Government agencies and NGOs find it difficult to convince and persuade parents to send their daughters to school for a better future. Their indifference to education, lack of community involvement, and low aspiration and motivation are responsible for the apathy of parents toward education.

Economic Factors: The Gaddi community is primarily present in the scheduled area and participates in pastoral and agricultural work. Both occupations required physical labor and equal participation of males and females. Due to this, the workload on women increased, especially girls. Girls are required by their parents to do household chores, care for siblings, work in fields, etc. Most parents engage in agriculture, so their daughters are required for several agriculture operations. This leads to their irregular attendance in classes, finally leading to dropouts.

Cultural Factors: Geographical isolation, simple way of life, subject to customary law, own code of conduct, own dialect, beliefs and superstitions, women looked at as economic assets, and learning through imitation are the unique features of tribal culture. Superstitions, blind beliefs, and

prejudices negatively affect the education of tribal girls. Fear of losing tribal identity is a widespread feeling among the tribals. They believe that education makes their children disobedient and alienates them from their societies, especially girls of their community who encounter an 'outsider.'

Scheme For Girls Implemented by the government.

Beti Hai Anmol Yojna: This scheme is for the girls of BPL families with up to two girl children. After their birth, the department deposits rupees 10,000 per girl child in the post office/ Bank account. These girls get scholarships ranging from Rs. 300 to Rs.1200 from first to 12th Class for their books/dresses etc. Concerned Anganwadi worker/Supervisor/ Distt program officer/Child Development Project Officer in Himachal Pradesh is the people who manage this scheme.

Mukhya Mantri Kanyadan Yojna: In this scheme, girls who are orphans or whose father is physically/Mentally incapacitated or bedridden can get Rs 25,000 for their marriage if their parent's annual income is less than rupees 35,000 per annum. Concerned Aanganwadi workers/supervisors/ Distt program officers/Child Development Project officers in Himachal Pradesh are people who manage this scheme. 90% of the Himachal population lives in rural areas and must earn their livelihood from a small piece of land; some do not even possess that. For such low-income families, spending thousands on their daughters' weddings can be challenging. The Mukhyamantri Kanyadaan Yojana was not just a misnomer, but in 2008-09 around 1056 marriages were done with the sum provided by this scheme, and about 1.16 crore of total money was spent.

Mother Teresa Matri Sambal Yojana: It becomes challenging for widows and poor women to uplift their children and provide them food, shelter, education, etc. To provide financial relief to such poor mothers who are having difficulty in the upbringing of their children, Mother Teresa Matri Sambal Yojana, started by the Himachal government, benefitted them a lot. The Himachal government gave poor and weak mothers with children below 14 years of age a sum of Rs. 2000 under Mother Teresa Matri Sambal Yojana. Under Mother Teresa Matri Sambal Yojana, about 1.07 cores were given for the upbringing of about 13060 children.

Balika Samridhi Yojana: Under Balika Samridhi Yojana, for girls belonging to Below Poverty Line Families (BPL), a sum of Rs. 500 will be deposited in their name in the bank till they attain 18 years of age.

Indira Gandhi Balika Suraksha Yojana: Under Indira Gandhi Balika Suraksha Yojana, the families adopting family planning after the first girl's childbirth will be given the sum of Rs.

25,000. Those adopting family planning after the birth of two female children will be given cash of Rs. 20,000. The Himachal Pradesh government has always been industrious regarding women's empowerment or providing services to women. Yet moving a step ahead, the health department of Himachal Pradesh launched a free-of-cost transportation service for pregnant women to the hospital for delivery on 15th September 2010. The health department will provide either taxi or an ambulance to carry the giant woman to the nearest medical hospital.

Table 1: State-Sponsored Himachal Pradesh Scholarship Schemes Categories and the eligibility criteria

S. No.	Name of the scheme	Eligibility
1.	Dr Ambedkar Medhavi Chattervriti Yojana for SC Students Scheduled Caste (ST)	The student has been amongst the top 1250 meritorious students declared in the Matric examination conducted by the HP Board of School Education.
2.	Thakur Sen Negi Utkrisht Chattervriti Yojana Scheduled Tribe (ST)	The student should be either amongst the top hundred girls or boys belonging to the Tribal Community of Himachal Pradesh, declared in the result of the Matric examination conducted by the HP Board of School Education.
3.	Lahaul Spiti Pattern ST	The applicant must belong to the Tribal community living in a tribal area of Himachal Pradesh

Source: Data gathered from the fieldwork

Some Suggestions for Improvement of Girl's Education

Firstly, Parents sometimes feel insecure after girls reach puberty at the age of 11-12, and it is because of the maturity of the period. This can be avoided by constructing separate hostels/ schools for girls. Secondly, there is a hidden custom followed by many families to marry their daughters at an early age. It is necessary to make them aware of the risk of early marriages and the importance of education for girls through government agencies and NGOs. This will result in high enrolment rates and low dropout rates. Thirdly is the custom of dowry. There is an opinion that the more educated the girl, the higher the dowry. As a result, parents get discouraged from educating their daughters because of the evil practice of dowry. This required constant awareness

programs against dowry practices. Fourth, awareness about education among parents. Low parental education levels and lack of understanding result in discouragement from parents. This can be taken care of by providing education to parents by educational institutions. Fifth, many families are involved in pastoral and agricultural work, which requires lots of physical work. Hence, women and girls in the family are burdened with many responsibilities and household chores. Girls have mostly occupied with all this work, and their education is left behind. And this is due to a need for more modern facilities to help in the pastoral and agricultural tasks. The government must provide basic technical supplies for people involved in agriculture and pastoralism to give girls time to attend school instead of working in houses and fields. Fifth, providing free transportation service to all SC and ST and other backward students, especially females, to improve the number of socio-economically backward students in schools. Sixth, Parent Teacher Associations, and School Committees ensure that all girls in the village attend school with the help of Self-Help Groups and Mahila Mandals.

Conclusion

Among Gaddis, the effect of education in their daily life is very apparent. This is due to their cultural contact with other communities in Himachal Pradesh. The social change that education has brought in the various social institutions of the Gaddi community. Apart from this, Serious efforts are required to include tribal groups who are disadvantaged in the mainstream of development. The policies should be more focused on the inclusion of more community-based programs. The government can focus on specific policy interventions, especially for developing tribal communities. Monetary resources can be earmarked for the implementation of these policies adequately with proper governance having a monitoring feedback mechanism. First, the policy of providing homogenous education to highly diverse tribal communities must be relooked at. Keeping in view the specific needs of tribal communities and their culture and geographical situations where they are located, the schools are to be considered. Secondly, the language they practice differs from the language in which the textbooks are developed, and teaching is imparted; this demands bilingual/ multilingual provision in schools before bringing them to mainstream education. Thirdly, envisaging the provision of incentives and their utilization is a significant factor that has proved quite successful worldwide. The motivations helped overcome food and monetary scarcity and freed them from paying for school activities. For example, incentives such as free meals, free uniforms, free school fees, etc., to the families of girl child in India has proved

to be more effective in bringing the girl child regularly to schools. Fourthly, access to schooling with hostel facilities, as in the case of residential tribal schools in India, can be a significant policy intervention, which can take care of schooling, residence, and continuous interaction with the teachers residing in the residential schools. Forth, there can be integration between the adult literacy and unformal educational programs, health, and childcare programs of the women with other community development programs, which can bring greater awareness and participation of the community in the schooling programs. Some essential policy interventions proposed above can be formulated and transacted in the country. This will address issues not only related to education but also to critical problems of reducing gender inequality.

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(United Nations) Convention on the Rights of the children

Self-Discovery and Social Relationship Development through Theatre

Binod Mahakur*

Abstract

Early adolescence is a critical period for children because of their exposure to many conflicts, at individual and social levels; and progressive self-discovery of identity and the world around them. Supporting them through this journey and nudging them towards empowering purpose, values, and choices, are our social priorities. Doing this well, shape the future of the child and society. Life and theatre are closely interconnected. With this principle, we designed a workshop to influence the early adolescent's journey of self-discovery through the medium of theatre. Focused on self, family, and social relationships, the workshop revolved around twenty-one Class 6-8 children not familiar with one another, from diverse socioeconomic strata, for nine days in October 2022, at Klorofeel School. The workshop began with exploration of self–body, emotions, and conflicts; and moved on to inter-relationships with family. The children dealt with the presented problems together. The workshop was designed to be fun, exploratory, and intense; thus, attracting the participants to embrace it with their natural selves. It ended with a session with parents.

We noted interesting behavior changes, and positive attitude towards themselves, their families, and peers. The outcomes of the workshop are highly encouraging, in building better self-esteem, mutual understanding and deeper engagement with family. This paper is written so the knowledge is shared widely, and the experiences replicated – leading to enhanced emotional health and meaningful living for our youth.

Keywords: *Self-discovery, Social relationship development, Exploring early adolescence, Theatre workshop*

Introduction

Life and theatre are closely connected to one another. At times, life is compared with theatre, and theatre is compared with life as well. Understanding life is quite a big subject. Many researchers have undertaken studies to understand life. Great Personalities including Buddha, Vivekananda, and Sri Aurobindo have also pursued to understand life in their own ways. While many methods are used by researchers and philosophers, self-observation is often used as a method to understand

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the realities of life. In his book, "Games for Actors and Non-Actors", Augusto Boal (2005) defined theatre as the art of looking at ourselves. Similarly, Adler defined theatre as the means to tell people the truth of life and the social situation (Kissel, 2000).

For self-discovery, theatrical performance is a deep and enthralling art form. It can take us to unfamiliar locations, make us laugh and weep, and initiate crucial discussions. Through theatre, we can examine our evolving position in the world and attempt to make some sense of the often complex, and at times unpleasant, feelings that we experience today.

Jarrah (2019) stated that drama in education has an impact on life skills as it develops students' reading and numeracy skills, enables them to identify their strengths and weaknesses, and helps them to relate their educational knowledge and application in real-life situations. Integrating drama in education enhances learners' skills in reflective thinking of different topics.

According to Boland (2016), studying drama has the potential to make one a good actor, screenwriter, or director. Drama or theatre is not limited to performance, but it can help the individuals in developing their personality through life experiences. Researchers have suggested that drama can be used to navigate a learner's environment and develop life skills. Therefore, the integration of theatre into education must be taken as a teaching strategy for learners' academic and personal development.

Need of the study

The early adolescent period is when children are exposed to many conflicts, whether it is their own, their family, or society's. At this stage, they are very conscious about their choices, wishes, likes/dislikes, and emotions. Sometimes they feel alone, stressed, and overloaded so through the Théâtre workshop we can sensitize them about their self, family, and society. Once they are aware of their strength and weakness and the opportunities and threats in the environment in which they live, they will be in a better position to take a balanced view of life and face reality in a more effective manner. Ultimately, moderation and balance are the most important in life.

Objectives

1. Experiencing and learning the process of self-discovery by the participants
2. Understanding social relationships by the participants
3. Developing a context-specific process for the workshop

Methodology

Identifying students

- 20 students were selected. The number was limited for better one-to-one interaction.
- 3 extra students were initially taken assuming that some may drop out along the way. However, as the workshop went on, 2 students dropped out.
- The students were selected in such a way that they were not very familiar with one another. This was to ensure free expression, conveying feelings without constraint, and creating space for a prejudice-free ambiance.
- To increase diversity in the students' group, an effort was made to select students from government and private schools, from rural and urban areas, boys, and girls.
- Students were selected from classes 5–8 to ensure the early adolescent period, the stage when they are exposed to a large amount of conflict.

Duration of workshop

- Timing and duration were fixed considering the significant number of holidays students could get at a stretch. It was possible during Durga Puja.
- Workshop date was from 1st to 9th October 2022.
- To keep students' interest intact and not burden them, the duration of the workshop was from 9:00 AM to 1:30 PM, with half an hour break. This timing was chosen to make sure that the children could participate in the Durga Puja celebration, in the afternoon.

Location of workshop

- Considering the availability of physical and transportation facilities and human resources, Klorofeel School Brahmapur was selected as the venue.

Activities

The workshop was structured in two segments "self-exploration" and "family", each segment had several themes, with each theme executed through a series of activities.

Segment 1: Self-Exploration

a) Icebreaking

b) Connection with outer self (body parts)

c) Understanding the inner self

d) Resolving conflict

Segment 2: Family

a) Understanding family needs

b) Inter-relationship with family members

c) Resolving challenges in the family

d) Actions to make a family happy

e) Combined sessions of students and parents

These themes were executed with activities such as theatre games, improvisation, painting, presentation, and group discussion.

Use of language in the workshop

Odia was used as the medium of communication. Being the mother tongue of the participants, it was easily understood by them.

Food

Students brought their own food from home and at it during break time.

Dress up

It was flexible and comfortable for easy-to-do theatre activities.

Preparation

Preparation for sample collection

- Created a poster and posted it on Facebook to reach the larger audience
- Shared the poster on WhatsApp with many dance and music academies in Brahmapur
- Went to 8 government schools, closer to the location of this workshop, had a conversation with the Head Master, and interacted with the students, explaining the benefits of this workshop.
- Received 35 applications from different schools, while we were looking for 20 students, keeping it as diverse as possible.23 students were selected considering possibility of some dropouts. Finally, there were 21 students in the workshop.

Other Preparation

- Arranged all props like chat papers, paintingcolours,A4 size paper, pair of scissors, paper plates, footballs, sound speaker, blindfolds, water jar, etc. before the session started.
- Provision for snacks was made in case someone forgets to bring food.
- Kept fast aid box for any injury or emergency.
- Arranged soft drinks for parents' session.
- Arranged school bus facility for participants who were coming from Brahmapur town. Those who were coming from nearby, came by their own transportation, such as auto, bicycle, etc.
- Used to take care of the cleanliness of the place where the workshop was taking place, before and after the session started.

Day-By-Day session plan

The sessions were divided into self and family.

Self

Day 1–Ice breaking and mixing

First, we verified the identities of the participants, met parents, and talked about costumes, lunch, transportation, etc. of the child. After that, we did the following activities for achieving the first day's goal:

Activities

a) Nickname Game

b) 3, 2,1 -Haa

c) Walk, Eye Contact, Smile, Gibberish, Walk Stop the Statue

d) Expectations from the Workshop (written by participants)

e) 'Share with Your Partner' along with Your Likes/Dislikes, Hobbies, etc. followed by a presentation

f) 'Follow me'

g) Keywords of the Day

h) 'Bye……...'

Observation

At the end of the session, we observed them getting along with each other, and knowing each other's names. They were trying to be comfortable with each other. Still, some children from the village hesitated to mix with others, which became a challenge for us.

Day 2 - Connection with my body parts

Activities

a) 3, 2, 1, ha

b) Observe Things in Room

c) 'Look! I am being dragged…'(hand, head, eyebrow, etc.)

d) What do you like about _____? (Mango, cycling, reading, yourselves) (unique quality)

e) Discussion about 'Liking Myself or Not'

f) Painting of liked or disliked body parts- sharing

g) Now some of your body parts got stuck together one by one.

h) Discussion – What did you feel while losing your body parts?

Observation

At the end of this session, they developed a positive attitude toward their body structure, colour, height, weight, etc. They realized the struggle of children with disability and the challenges of life faced by them.

Day 3 - Understanding my inner self through emotions and feelings

Activities

a) Cha Cha, chachi
b) Celebrate Your Uniqueness
c) Introduce Your Object and How You Relate to It
d) Choose Another Object and Present What Do You Want to Be
e) Musical Chairs of Emotions
f) Share Your Happy and Sad Moments
g) Free Dance

Observation

At the end of the session, they measured their emotions, which emotions were heavy on them, and which were light. They realized how to balance it. Also, they got an overall view of both the positive and negative sides of emotion and why do we need to balance them.

Day 4 - Dealing with my challenges and suggestions to my future self

Activities

a) Dragon/Cat Mouse
b) Action Through Narration – How a Child faces Problems, Difficulties, Challenges, and Barriers (from fatal position to jump)
c) Improvisation – Showing 3 Pictures - Sadness, Anger, Loneliness ..Past Present Future)
d) Group Discussion
e) One Person Sits in the Middle, and Other came with different Emotions(fear, loneliness, insecurity, etc.…)
f) How to Overcome – One Child Sits, Other Comes with a Positive Emotion.
g) Imaginary Journey- Relaxation

h) Feedback / Discussion
i) Make a Face Mask Imagining Yourself.
j) One Step for Myself

Observation

Children related to their own challenges, difficulties, and barriers and invented their ways on how to deal with them. Individually, they learned the method of self-suggestion.

Family

Day 5- Understanding what family and its need is

a) Tom and Jerry
b) Discussion: Connection with the Game Towards Family, In Real Life Where do You Feel Safe/ Protected and Why
c) Imaginary Game -If it's not a pen then what is this?
d) What is Family for me? Write a Poem, Song, Rap, or Shagari on Family.
e) Change Hand Position, Then Leg Position, Make a Group of 5,and Create images of 2, 4, X, Z, Flower, Mountain, Home, Table, etc.
f) Discussion – Have You Ever Thought of all the Things You Have in Your Home as a Part of Your Family? Have you talked to Them?
g) Imagine Yourself as a Home Object, Share What Can You See About The Family Members.

Observation

Developed an understanding about the family that it is not just about the blood relation, but also the animate and inanimate objects with which one connects and gets emotionally attached to.

Day 6- Connection and relations with family members

a) Head to Toe- In Continuation of Relaxation, Wake Up Like Family Members' Pet Dialogues
b) Discussion – The Perspective of Parents
c) Narration – From 3:30 am to3:30 am (24 Hours)
d) Imagination Game – If it is not a Ball, Then What is This?
e) Draw Your Family Picture According to Their Nature.
f) Presentation

Observation

When they realized the perspective of the parents/family members, they had different feelings for their parents. They evaluated the nature of their family members as well as individuals and what they observed in them. They showed connectivity with family.

Day 7-Dealing with problems together

Investigation drama

a) Created an Atmosphere like a Real Situation
b) Showed3 Pictures and Asked Them 'What Happened in the Picture?'
c) Character Intro- (Mother, Sister, Helper) Divided Them Into 3 Groups, made a Statue of a Particular Image One By One (It Should Be Serially Image-Wise)
d) Created a Space Depicted in 3rd Image with Materials
e) Investigation Officers Came with a Special Ability
    1. Observe Better
    2. Can Hear Better
    3. Can Take Valuable Photographs
    4. Sharp Mind
f) Hotseat- Mother, Sister, Helper
g) Discussion- If you Met These Children, What Questions Would You Ask?
h) TIR (Teacher In Role) Zoom Meeting
i) Suggestion Ally

Observation

They solved a big problem together. Some assumed it was a personal problem and tried to solve it through critical thinking, observation, and consideration of different points of view. Decision-making ability was visible in their work. Examples of how to be in harmony with family and where they see themselves, were reflected in their activities. These were commendable.

Day 8 – Contribution towards family

a) My Unique Talent: Individual Performance (Dance, Song Music, Painting, Cycling, Etc.)
b) Statue Laughing
c) One Step for My Family
d) Music Collage

e) Oral Feedback About the Workshop

f) Decoration for Parents' Session

g) Composed Songs

Observation

Students became more confident about their inner qualities, skills, and potential. Creativity was visible in all these.

Day 9 - Parents' session

a) Welcome Song by Students
b) Blind Journey
c) Shoe Collage
d) Statue Laughing – Reverse
e) Lala Ji Ne Laddu Bante, Imaginary Journey (Hot, Cold, Winter, 50kg Rock, etc.)
f) Relaxation Childhood Journey
g) Feedback From Parents on their Childhood vs Their Child's Childhood
h) Role Reverse Drama - Comparison, Mobile, Carrier Choice ,Spending Time with Family
i) Mirror Reflection
j) Certificate Distribution

Observation

Parents lived their childhood once again through theatre activities. They realized how much freedom did they get in their childhood. They also felt about not being able to give that much freedom to children, at present.

According to the words of some parents:

"Whatever we wanted in our childhood, now as parents we didn't give that to our children."

"If we are telling our children to spend less time on mobile then first, we need to reduce using mobile usage."

Parents and children understood each other's perspective. Hence, the communication gap was reduced. The session created an environment where they could connect with each other once again.

Findings

This section provides qualitative data regarding the use of theatre as a tool for self-exploration and socialization. Three types of data are provided here: the observation of the facilitator, students' feedback, and parents' feedback on the impact of this workshop.

The effects of theatre in self-exploration and socialization

When asked if theatre could benefit students, all participants had positive responses.

Observation of the facilitator

- Observed some behavioral changes in the participants
- Participants showed positive attitude towards themselves

Student's feedback

At the end of the study, feedback was taken from participants. They acknowledged that theatre could help them in improving their confidence, critical thinking ability, communication skills, problem-solving ability, and decision-making skills, build up a positive attitude, and help in curbing stage fear, shyness, overthinking, negative attitude, etc. Examples of feedback are as below:

"I feel that I am mentally stronger than earlier, when my friends and others were teasing me with a girlish name, I felt bad but after the unique session, whenever they tease me for my name, I welcome them with no irritation, and they have stopped teasing."

(R.R, interview extract)

"I am very short in height, so whenever I see tall people, I used to feel bad about myself and I thought I am different, but I realized through theatre that I am not different, I am unique and this is not my weakness, it is my strength." (E.P., interview extract)

"I am a fickle-natured boy but now I have become patient and also realized that I work better in a team." (S.D. interview extract)

"I am happy to share I was shy earlier but now I feel my shyness is decreasing, also as I have worked here with participants from different classes of society, I met with different people and understood the way of interacting with them and how to deal with them. I experienced society in my own way." (A.S. interview extract)

"I used to be very shy and didn't like to initiate a conversation with anyone, I used to be short-tempered as well. But now I have started to take the lead and talk to people on my own."

(S., interview extract.)

*"I used to lie a lot, but I have stopped doing that now. I was also using the phone a lot for no good reason but now I try to stay away from it as I understood the misuse of the phone through activities and group discussions." (*K., interview extract)

"I feel like I can adjust well now and be a part of any community and society after this workshop. I would have wasted my time on the phone if I did not attend this workshop."

"Earlier I used to get angry over small things but now I know my limits and also learnt to control my anger." (S.W., interview extract)

"I have realized a new respect for people with disability after a session based on day-to-day struggle of people with disability." (S.D, interview extract)

"I didn't share anything with parents earlier and kept it bottled up inside. Now I have started opening to my family, sharing my concerns and joys with them which has made me happy." (K., interview extract)

Overall Expectations versus Outcomes

Overall, the outcomes met our expectations in a lot of spaces. Things were executed as planned. Sometimes the results exceeded our expectations and for some parts, more efforts were put to meet the same. However, the experience convinced us that the theatre is a powerful and joyful medium of self-exploration to develop a social relationship.

Challenges

- First, when the date of the workshop was fixed and an ad was put on the Facebook page, 10 replies came but no one matched our selection age criteria.
- Selecting participants from a pool of applicants.
- Resistance of rich parents regarding the participation of their ward with ward coming from a humble background.
- Initial resistance of urban children to mix with rural children and vice versa.
- As a pleasant surprise, on the 5th day of the workshop, while it was raining heavily and Durga Puja was being celebrated at home, all the students came and participated in the workshop, this indicated their intrinsic level of engagement in it.
- Girl students of the government school were very shy, and it was very difficult for them to open, but during the last 3 days of the workshop, they broke the barrier and expressed themselves in front of everyone.

- The last day's challenge was bringing together two diverse social groups of parents to jointly participate in the exercise. The process was very smooth for the joint exercise.

Areas for improvement

- It could be better to increase the duration of the workshop to cover additional themes, such as the relationship of the Self with respect to gender, caste, religion, etc.
- It could be better to have an equal number of boys and girls.

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Effectiveness of Universal Design of Learning at Different Levels of Education: A Meta-Analysis of Literature

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Abstract

There is a great need to pay attention to the needs of diverse learners, their participation in the teaching-learning process, diagnosis of learning difficulties and the learning outcomes to achieve practical outcomes of education. The Universal Design for Learning (UDL) presents a set of principles which ensure a positive environment for inclusive education. This framework aims to meet the needs of the learners and solve their problems and provide them with individualized learning. This paper focuses on the role and effectiveness of UDL at different levels of education. In this paper, a meta-analysis of both empirical and theoretical research papers related to the focus area has been done. Most of the findings underscore the utility of the objectives set out by the UDL principles. However, the findings also showed some barriers that block the implementation of the UDL. To achieve the objectives of UDL satisfactorily, there is still a long way to go, which can only be achieved if various stakeholders make efforts to achieve it. In this form, an attempt has been made to give conclusions by discussing all these points.

Keywords: *Universal Design for Learning, School Education, Higher Education*

Introduction

The term Universal Design for Learning (UDL) was taken from the architectural concept, Universal Design where the designs of the infrastructures were made to be accessible by all people including persons with physical conditions (CAST, 2011). This concept was put in the field of education by blending the knowledge of how the human brain works to frame the curriculum. To deal with diverse learners, the UDL framework is based on the 3 networks of the brain- recognition, strategic and effective. (Courey et al., 2013). It refers to the systematic application of learning systems to enhance various disciplines to fulfil their curriculum by application of diverse methods. It is an educational design which must be implemented through the curriculum in the teaching and learning process for meeting up the needs of all students.

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UDL is an umbrella term for assisting content learning by applying different principles; the principle of multiple means of engagement, multiple means of representation and multiple means of action and expression. It tries to represent lesson insight by using multiple learning tools in different mediums. According to CAST (Center for Applied Special Technology), the three principles of UDL are:-

Principle I: Provide multiple means of Engagement (the "why" of the learning) – This principle proposes the use of different methods to engage the learners in the classroom environment with diversified personalities. The three types of engagement- behavioral, cognitive, and emotional correlate with the learning of students. Some learners engage easily while others may not, rather often feeling nervous and frightened. According to Perry (2022), students who are emotionally in their learning can have longer concentration on a single task and tends to strengthen their comprehension by looking for opportunities. Engagement involves inculcating interest in the students and motivating them to learn through creative, hands-on, and meaningful instruction (Courey et al., 2013). This principle allows the instructional contents to be altered or adjusted by the students to meet their own learning styles, needs or challenges (Abell et al., 2011). There is not one means of engagement that will be optimal for all learners in all contexts **(**CAST, 2018).

Principle II: Provide Multiple Means of Representation (the "what" of the learning) – This principle proposes presenting information in different ways like using multiple media since students understand and comprehend in different ways according to their abilities and disabilities. This will lessen the barriers to making classroom teaching and learning for everyone. According to Courey et al. (2013), representation is the designing of instructional materials that make content accessible to many diverse learners. Also learning, and transfer of learning occurs when multiple representations are used because they allow students to make connections within, as well as between, concepts. "There are not one means of representation that will be optimal for all learners; providing options for representation is essential" (CAST, 2018).

Principle III: Provide Multiple Means of Action and Expression (the "why" of the learning) – This principle proposes affording opportunities for the students in showing what they understand in multiple ways, address different capabilities, allowing them to practice tasks with different levels of support and demonstrating their knowledge and skills in varied ways (Kelly et al., 2022). Although students might be able to express themselves and act in accordance with others, due to differences in individuality, each student will have their own best way of expressing what they are

being taught and what they learn. Offering and accepting different ways of action and expression will reflect their level of comprehension rather than using one assessment. If students can freely express themselves, it can increase their confidence and expose the best of them. It gives the learners alternatives to demonstrate what they learn (Abel et al., 2011). "There are not one means of action and expression that will be optimal for all learners; providing options for action and expression is essential" (CAST, 2018).

Through the three principles, UDL aims at reaching the demand of students with diverse needs by offering varied and flexible ways. Learners differ widely in their age, culture, background, language, culture, gender, physical and mental abilities etc. and therefore giving them instructions in traditional ways does not bridge the gaps faced by diverse learners. Using the word average and treating the students in such a way should be avoided in a teaching and learning environment. It is a tool to make the teaching and learning process more flexible and its focus is to make the learning process more accessible to everyone through the curriculum (CAST, 2018).

For education to have practical implications in the present and the future, it must ensure that every child is learning to his or her best abilities. UDL focuses on removing and reducing the possible barriers so that diverse students can all fit in the general classroom settings. "Universal Design for Learning (UDL) is a framework that addresses the primary barrier to fostering expert learners within instructional environments: inflexible, "one-size-fits-all" curricula" (CAST, 2011, pp. 4). Through UDL, students will have better access to the content being taught with maximum participation and express themselves in the best way. Students have their own abilities and so their needs in education, how they prefer to be taught etc. are different as well and the UDL framework focuses on minimizing the obstacles (Wehmeyer, 2006). Planning in alignment with UDL leads the curriculum to be in accordance with learner diversification instead of expecting the learners to adjust according to the curriculum (Meo, 2008). UDL is a design that is not unique but universal and inclusive which concentrates on minimizing problems while planning curriculum instead of letting them adapt to it (Rose et al., 2006).

Purpose: Universal Design learning is the call of an hour for attaining quality education for different sections and backgrounds of learners. The purpose of this review is to understand and find out the role and effectiveness of Universal Design for Learning in catering for the needs of students at different levels of education. This research is to analyze keenly how UDL is beneficial for different levels of studies, its usefulness, and its applicability in contemporary education.

Methodology: For the present research, ERIC databases, Google Scholar, Jstor, M library, journals and search engines were used to search the relevant papers using the keywords Universal Design for Learning. Using the above-mentioned keywords, papers which were accessible were collected. In alignment with the aim of the review, papers that deal with higher education and school level were selected.

Effectiveness of UDL at the School Level

Through the interventions of UDL principles and technologies, certain improvements were found in various areas. Assistive technologies in the light of UDL resulted in an increase in the availability of certain information, allowing the students to be actively involved and consider an evaluation process that accounts for all kinds of learners (Hitchcock & Stahl, 2003). In the study conducted by Proctor et al. (2011), it was found that the UDL framework with the network-based treatment has strengthened the deepness of the learner's vocabularies in comparison to those without treatment. Digital play game elements incorporated with the UDL framework have increased the student's involvement and interest in the class (Stylianidou et al. 2020).

UDL framework is also proved to be effective for students with certain kinds of disabilities. Dolan et al. (2005) also found that computer-based assistive technologies with the application of UDL have increased the accessibility of students with learning disorders in contrast to the old method. Browder et al. (2009) found that involvement and the ability to cope with others have greatly upgraded among learners with multiple disabilities. Coyne et al. (2012) in their research found that when three UDL principles were blended, the ability to interpret the text among students with remarkable cognitive disabilities was elevated. Grenier et al. (2017) stated that the employment of several UDL principles leads educators in promoting the acquisition of knowledge for learners. Students with high cases of disabilities can be more connected to the class and even promote access for them. Al-Hazmi& Ahmed (2018) in their article expressed that training on UDL is crucial for the proper administering of the learning design. This helps students with cognitive disabilities to enjoy the general classroom settings with the help of their teachers. When adapted stories were fused with UDL used in the classroom, Mackey (2019) in her research realized that the understanding level, engagement, and expression of students with disabilities, at-risk learners etc. were greatly improved. Markou and Noguera (2022) proved that teachers were satisfied with the interest and engagement level of the learners as compared to the old ways of teaching after the execution of UDL. Stylianidou et al. (2020) also proved that when real-life and

computerized games were combined in the teaching-learning process, students with learning disabilities were found to play more parts and be attached

UDL blended teaching-learning strategies also brought positive results in the outcomes of the different subjects being studied. Rappolt-Schlichtmann et al. (2013) uncovered that when science subject was taught and learnt with the use of the UDL and internet, there is positive learning outcomes. For students who were learning the English language, Eichhorn et al., (2019) argued that the utilization of UDL step-by-step helped the learners rather than directly testing their ability to study language. The knowledge and learning of social science were found significantly better when UDL principles were used for teaching in the classroom (Morale, 2019) . In the research conducted by Yavuzarslan and Arslan (2020), it was found that the framework greatly impacts the learning outcomes in mathematics courses. Their viewpoint on arithmetic and the overall engagement of the students in the subject was elevated as well and suggested to be applied. Positive outcomes were also found with students who studied language besides their mother tongue Markou and Noguera (2022).

Research allied with teachers' perceptions is crucial as they have a direct association with their students. Katz (2015) found that UDL is serviceable for both learners and educators. The teacher's perception result showed that it boost the learner's confidence, minimised certain problematic behavior, enhance cooperation, and interactions and leads to contentment of their job. The empirical studies on teachers' perceptions also clear that this learning design resulted in the growth of apprenticeships and stronger bonds between educators and pupils (Murphy 2021).When research was done based on the faculty's perception, it was also come across that majority of the findings draw positive results with aspects to different principles of UDL. In the study conducted by Bedir (2022), it was revealed that executing the design increases the chance of diverse students, building the competence of displaying themselves, developing the adaptations to various fields, allowing them to get various information etc. When teachers' reflections were taken, Markou and Noguera (2022) discovered that teachers were satisfied with UDL as they found productive results regarding the performance and participation of their students.

Effective of UDL in Higher Education

Several studies conducted in colleges and universities have established the advantages of UDL.

Educational technologies are necessary to cope with the teaching-learning of modern students and teachers. Morra & Reynolds (2010) stated that assistive technologies infused with UDL guidelines are a functional way of giving flexible learning settings. A good learning environment can enhance the learning abilities of the students in many ways. Technologies have made everyday lives easier and better. When technology and UDL are integrated with undergraduate settings, it resulted in undeniable progress for all types of students (Izzo, 2012). Likewise, integrating modern technologies in the field of education escalated and boost the individualism of students with disabilities (Alnahdi, 2014). When the model framed with the use of technology and UDL principles were used in online learning, several learning hurdles can be reduced, and it improved the viewpoint of the pupils (Al-Azawei, 2017). The utilization of technological assistance with UDL at their own age and class level upgrades the learners by opening the gate to be in pace with others without the need for hard adjustment (Areekkuzhiyil 2022). Studies done on the perceptions of the students give concrete answers since they are the receiver of the knowledge. In studies conducted on the learner's perception, Schelly et al. (2011) uncovered that the framework strengthens the learning of all students even those with disabilities. Both teachers and students were experiencing the benefits of employing UDL in the course. The learners appeared to be more connected and attentive to the learning (Smith, 2012). After training was given to the teachers regarding UDL, students rate the effects. It was found that training improved the teaching methods and the engagement of themselves was also uplifted (Davies et al. 2013). When the perception of the students was taken regarding UDL implementation, it was uncovered that UDL has a positive impact on their learning. The students reported that they value having options on how to communicate and show what they learnt (Boothe et al. 2020). Students' perception on the utilization of components related to UDL principles like feedback, flexibility, cooperation, real-life issue content etc. leads them to upgrade their learning. It also helped them in using time precisely (Will, 2022).

UDL gives educators a convenient scheme for progressing adjustments for diverse learners. Post-training on UDL results showed that the lesson plan system allowed more choice and freedom. Even the teaching procedure was shifted as well (Courey et al. 2012). The planning of lessons also changed in the orientation of UDL principles after it was introduced to them (Richmond & Sung, 2013). When training was offered to the students who were in the teacher-training program, Lanterman & Applequist (2018) validated that remarkable change was observed

regarding their beliefs on disability and even the teaching-learning strategies. Spencer (2021) argued that UDL is a structure which is essential for the present inclusive system of education. It minimised certain troubles related to actions or manners, boost self-awareness and build access to the curriculum for vulnerable students. Evmenova (2018) unwrapped that all teachers who participated in the research claimed the worthiness of UDL. They expressed that this learning design maximizes the potentiality of students as well as hold up their shortcoming. Kohler-Evans, Rutledge & Barnes (2019) in their article mentioned that training on UDL to educators is required as it gives structure to achieve certain educational goals in the classroom.

The advantages of UDL have also been found in language learning and several other subjects. Kasch (2019) proved that using the framework is profitable for learning and understanding language and stated that in the class of English learning, teachers can fairly evaluate students by assessing them with the use of UDL principles. This will avoid the complicated task of the educators. With the introduction and use of UDL, participating students in mathematics courses magnified their conceptualization, changing their perception from passive to active (Lambert,2021). Concerning science programs, it has been found that students who were given UDL training showed a preferable degree of self-perception than those without training. It has resulted in approachable and accommodative surroundings as per the student's needs (Pena et al. 2021).

Vulnerable students such as students with learning disabilities, intellectual disabilities, other forms of disabilities etc. were found to enjoy the framework of UDL as well. The use of the UDL system intensified the learning of students with disabilities from STEM backgrounds (Izzo,2012). Students with and without disabilities revealed that the use of UDL by faculties was worthy and helped them in their learning (Black et al. 2015). Dell et al. (2015) stated that UDL can bear a substantial level of support for learners with special needs and others, particularly in virtual classes. In the study done by Kurtts (2015), it was found that with the application of the learning design, the involvement and access of the learners with little and average disabilities (studying in general classrooms) were increased. Lohmann (2018) disclosed that even in online learning, student-teachers enrolled in special education programs felt more engaged, and better connected to their peers and faculties after the practice of the UDL framework. The structure of UDL is a distinguished development for students with several disabilities (Lambert, 2021).

Conclusion

By embracing all possibilities and removing barriers, the current research paper draws the conclusion that Universal Design for Learning supports learning for all students at all levels. The outcomes of papers show that UDL has numerous intrinsic advantages since it boosts students' participation, motivation and finally the academic performance. It was conclusively proven through the analysis of numerous works that UDL enhances learning. UDL is viewed favorably by both students and teachers. Better learning results are directly correlated with positive perception. UDLs itself also involve the use of technology and multimedia. Time management, barriers-busting, better learning, and cognitive development are all made easier by technologies and multimedia.

UDL has far-reaching implications at the school level, as there are large differences between students at this level. The research papers contained in this document provide vivid research on the use of UDL at the school level as it serves to bridge the gap in learning levels due to diverse student backgrounds. In addition, it increases efficiency and leads to a positive effect that benefits learning. It enriches the learning of complex topics and subjects and helps students to deal with new and foreign languages. The introduction of UDL leads to accomplishment of the curriculum. For slow learners and students with different abilities, the UDL provides a framework for learning for diverse learners, making it an essential tool for achieving the objectives of inclusive education. UDL can also be used as a guide to verify that certain systems, programs, or materials etc. meet the needs of different learners. Additionally, UDL can be used as a benchmark to determine whether specific tools, programs, or other resources are serving the needs of various learners. Both school education and higher education have discovered the value of utilising UDLs in conjunction with assistive technology. Studies have also found that UDL is helpful in learning complex topics, different languages, and school subjects such as science, mathematics for students with and without disabilities, at-risk learners at school or higher level, different abilities and for students in general, both at school and higher education levels. The results also make it clear that training on UDLs produces undeniable positive results. Studies conducted on the perception of students and teachers about UDL presents a favourable attitude regarding use of it in the classroom.

Researchers have also identified several obstacles that prevent the use of UDLs, most notably a dearth of resources. This evaluation of the literature leads us to the conclusion that, even though UDL has not yet been fully adopted in all the educational settings, the contribution of it in teaching-learning process is remarkable. The UDL's objectives are not simple to achieve; it might take some

time, however for the proper accomplishment of the objectives, numerous steps can be taken such as awareness of stakeholders regarding use of UDL, a positive mind set, access to resources, proper training to the teachers and freedom to use it in the classroom during teaching-learning process. The contribution of all the stakeholders is prerequisite for the smooth implementation.

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Impact Assessment of the Health Care Education Programs run by Ekal Vidyalaya Foundation in Tribal Areas of Sundargarh and Keonjhar for the Social Inclusion

Prashant Kumar Dubey*, Sanjay Sonkar**

Abstract

This paper throws light on the educational and Training programs run by Ekal Vidyalaya Foundation in tribal area of Sundargarh and Keonjhar in Odisha. The EVF plays an important role to empower the tribal community through its educational and training programs in the remote areas of the country. These training programs are bridging the gap between the social backwardness and social inclusion of tribal and villager. Ekal Vidyalaya foundation running fivefold educational and training programs for social inclusion. This research paper will highlight the health education and its impact on the health of tribal community and awareness about the health and hygiene. The health education in enables the tribal community to live healthy life. Hygienic and healthy life enables to the participate fully in the main stream society.

Keywords: *Tribal, Social inclusion, Ekal Vidyalaya Foundation Program, Health Education.*

Introduction: This research Paper is the part of the Research Project (PDF) Project entitled "Impact Assessment of Ekal Vidyalaya Foundation Program in Tribal Districts of Sundargarh and Keonjhar : Practicing Social inclusion through education ", which is funded by Dr. Ambedkar International Center, New Delhi, a part of Ministry of Social Justice & Empowerment GOI. The educational and Training programs run by Ekal Vidyalaya Foundation in tribal area of Sundargarh and Keonjhar in Odisha. The EVF plays an important role to empower the tribal community through its educational and training programs in the remote areas of the country. These training programs are bridging the gap between the social backwardness and social inclusion of tribal and villager. Ekal Vidyalaya foundation running fivefold educational and training programs for social inclusion.

Tribes

According to D.N. Mazumdar (1952) "A tribe is a social group with territorial afflation, endogamous with no specialization of functions, rule by tribal officers, hereditary or otherwise

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united in language and dialect recognizing social distance with others tribes or caste without any social obloquy attaching to them, as it does in the caste structure, following tribal traditions, beliefs and customs, illiberal of naturalization of idea, from allies source, above all conscious homogeneity of ethnic and territorial integration.

Social Inclusion

According to Smith (2010) "Social inclusion is the process of bringing in' disadvantaged groups to major social institutions for the materialization of citizenship rights, with the goal of improving both the quality of life of individuals and the equity and cohesion of society. Definitions of social inclusion `commonly include concepts like respect, diversity, shared goals and meanings and a feeling of belonging to a community". Social inclusion involves people:-

- To experience belongingness;
- To be accepted by the members of community;
- To have important role in the community;
- To participate actively in the community;
- To be involved in the activities of their interest;
- To build up social relationships with other; and
- To make friends

If a person experience all these situations in their life, he or she will be healthier and happier. So, to keep people healthier and happier, social inclusion is needed**(Source: New Brunswick Association for Community Living (https://nbacl/socialinclusi on).**

Ekal Vidyalaya Foundation

Ekal Vidyalaya Foundation of India is one of the seven national level organizations of Ekal India. Ekal Vidyalaya is a movement for bringing all round development of tribal and rural India. The major activity which is being carried out in this movement is one teacher schools. Popularly known as Ekal Vidyalaya as across the country. As mentioned on the official website of Ekal Vidyalaya Foundation, the vision and Missions are following:

Vision: To facilitate the progress of empowering rural and tribal communities based on the concept of social, economic and gender equalities.

Mission : Holistic development of villages through empowerment of tribal (Vanvasi) and rural communities in India with basic education, digital literacy, Skill development, health awareness, learning modern and productive agricultural practices and rural entrepreneurship.

To satisfy the vision and mission Ekal Vidyalaya Foundation is running single teacher schools, which is popularly known as Ekal Vidyalaya. Formally the idea of one teacher school came into existence in Gumla (Jharkhand) in June 1986. It is the result of seminar organized to search the remedy to the issue of illiteracy in tribal villages. Sri Babu Rao Devras had sketched the idea of one teacher school. The concept was later refined by Dr. Rakesh Popli. Further first 60 Ekal Vidyalayas were established by late Sri Madan Lal Agarwal, who was a great industrialist of that time. It was the real commencement of Ekal Vidyalaya. At present it has a strong foundation, which is the result of the contributions of so many contemporary leaders and volunteers.

Ekal Vidyalaya ensures five folds education in a village for children and whole village community including rural women, rural youth, farmer & panchayat. These fivefold of education are -

- Functional Literacy
- Health Care Education
- Development Education
- Empowerment Education
- Ethics & Value Education

Health Care Education –In this segment of five folds educational program of Ekal Vidyalaya foundation, important objective is to create awareness among children and village community towards health & hygiene through demo and providing examples and narrating importance of cleanness in the village so that they are sensitized to take care of their basic health needs. Village community is also sensitized about the importance of healthy and balanced diet during weekly Vidyalaya.

Review of Literature

a) Studies Related to Tribal education

Sachchidananda (1967) concluded based on his study that the irregularity of attendance and dropout rate is much lower in the case of better acculturated tribes. Naik, T.B. (1969) conducted a research work and found that the children of upper class of Bhil society were availing the opportunity to go to school and take advantage of the scholarships and hostel facilities made available to the tribal by the government more than the lower and the middle socio-economic class. Ambasht, N.K. (1970) found social distance between the teacher and the students in the tribal areas. The non-tribal teachers were not found satisfied with their job in the tribal areas. He also found that an education designed for mainstream tends to change the way of life. It also tends to

change the social aspirations of the members of tribal society, thereby leading to the destruction of tribal norms.

b) Studies Related to Ekal Vidyalaya Foundation

Aspiring Minds (nd.) conducted a study entitled "Impact of Ekal's Model of education". It concluded that it is the greatest education movement in the country. The study was aimed to establish the effect of Ekal's model of education. Ekal students' performance is at par of the student of government school. Tata Dhan Academy & Seshadri (2011) conducted a study entitled "Social impact study of Ekal Vidyalaya Movement". Sample of the study was 508 villages where Ekal Vidyalaya works. They concluded that Ekal Vidyalaya had a strong choice of selecting socially and economically backward districts to work for the welfare across India. They also concluded that effort of EVF for the enrollment in children in EVs as well as in formal schools is significant. It increases the enrollment and so the access to education among village children. Economic education is not satisfactory. Thus, much more effort is needed in this area.

c) Studies Related to social inclusion

Robo, Marselea (2015) spotted light over role of education in social inclusion in their article "Social inclusion and inclusive education". She suggested that education, training & employment are the major dimension of social exclusion. These three are related to each-other and with social inclusion. Limited access of education and training services decreases the opportunity of employment. Unemployment is accountable for the poor living conditions and decrease in people's capability to fully participate in society. It also affects the social network of an individual. Skill development or vocational education increases economic competency social inclusion and cohesion. So, an inclusive education setting can enhance the quality of education because it caters the diversity of learners and help them to participate fully in the society. Thus, education play a vital role in promoting social inclusion. It is a greatest education movement in India.

Research Gap

The review of related literature has been presented in three sections based on the three different themes. The first one is the study related to the status of education of tribal community. A lot of research works have been conducted in this field. Some research works have been reviewed by the researcher which made him to concluded that a lot of effort have been taken by the government and other non-government agencies for improving the educational status of tribal community and effect of these efforts can also be seen still a lot has to be done in this area.

Research problem

Impact Assessment of Ekal Vidyalaya Foundation PROGRAMs in Tribal Districts of Sundargarh and Keonjhar: practising social inclusion through Education

Aim of the study

The study is aimed to assess the impact of programs run by Ekal Vidyalaya Foundation in tribal areas of Sundargarh and Keonjhar in Odisha for the social inclusion.

Research Question

The study has been conducted in the light of the following research question:

What is the role of Programs run by Ekal Vidyalaya Foundation in the social inclusion of tribal areas of Sundargarh and Keonjhar Districts of Odisha?

Objective of the study

To assess the impact of Health Care Education PROGRAMs run by Ekal Vidyalaya Foundation in tribal areas of Sundargarh and Keonjhar for the social inclusion.

Research Methodology

The researcher used Interview method and content analysis method.

Population

Population of this study are all such villagers of Sundargarh and Keonjhar districts who have taken education or training from Ekal Vidyalaya Foundation.

Sample

130 such persons who have taken education or training from Ekal Vidyalaya Foundation were the sample of the present study. Out of which 65 were of Sundargarh district and 65 were of Keonjhar district. Sample of the study were selected by using purposive sampling technique.

Tool for Data Collection

A self-made semi structured interview schedule has been used for the collection of data. The title of the interview schedule is Impact Assessment of Ekal Vidyalaya Foundation Program (IAEVFP). It is trilingual interview schedule i.e., English, Hindi, and Odia to achieve maximum accuracy.

Method of Data Collection

Interview method was used to collect the data. The researcher met to the selected sample, explained them the purpose of interview and interviewed them.

Data Analysis

Content Analysis method was used for the analysis of data. Frequency of the occurrence of a particular concept has been counted and its percentage was calculated. Thus, data were analyzed. The researcher made a frequency distribution based on the responses of items on health education. Table exhibits the frequency distribution.

Table: Frequency Distribution

Item No.	Items	Responses	Frequency
1	Have health related education been given in the Ekal Vidyalaya training Program?	Yes	125
		No	05
2	What have you learnt during the health education training given by Ekal Vidyalaya?	Cleanliness	120
		Use of Toilet	123
		Domestic Treatment	95
		Discipline	98
		First Aid	65
3	Up to what extent Ekal Vidyalaya is responsible for such cleanliness habits which you practice daily?	Completely	125
		More than Satisfactory	11
4	Has information of 'Swachchhataa Abhiyan' been given to you in the training program?	Yes	130
5	Where do you go for toilet?	Toilet	124
		Open Field	06
6(i)	Since how many days have you been using toilet (If you use)?	From 5 years	101
		From 10 years	18
		Since Childhood	11
6(ii)	Who motivated you use toilet (If you use)?	EVF	115
		Prime Minister	15
7	Have you been participated in training for leaving a healthy life given by 'Telemedicine Enhanced Arogya Program'?	Yes	114
		No	16

8	Do you use the resources given by 'Telemedicine Enhanced Arogya Program' for living a healthy life?	Yes	115
		No	15
9	How did Telemedicine Enhanced Aarogya program affect to your life?	Less Illness	130
		Increase in awareness of Health	130
10	What will you do to resolve the problem of dirty and stagnant water in your neighbourhood?	Construction of soak pit	128
		Disposal of stagnant water	115
		Formulation of policy	15
11	How did you come to know the steps to be taken for resolving the problem of dirty and stagnant water?	Through EVF	75
		Through other means	45

The table reveals that there are 12 items on health education aspect because item no. 6 was analysed in two parts (i) and (ii). More than one category of responses was found for all items. Their frequencies were given in the table. Among these 12 items 3 are related to the presence and information of training program. Two categories of responses have been found, i.e., 'yes' and 'no' It is clear from the 96%, 100% and 88% responses for those three items, which asks for the presence of training program are in favour. It refers that approx. 94.62% participants were aware of health education-based training programs of Ekal Vidyalaya Foundation and they have participated in the same.

3 items are related to the use of toilet. Two to three categories of responses have been found. Percentage of the frequency of each category of responses for each item have been gven.

95% of the sample use toilet. Out of these 94% sample, 81.45% started to use toilet after attaining the heath care education program run by Ekal Vidyalaya Foundation. 88 % of the sample reported that they were motivated to use toilet by EVF and 12% said that they were motivated by Pradhan Mantri Swachhata Abhiyan about which they came to know in Ekal Vidyalaya Foundation Program. So, directly, or indirectly Ekal Vidyalaya is responsible for the inculcation of the habit of using toilet. More than 90% responses are favourable for all other remaining items. For instance, in against of the question "What have you learnt during the health education training given by Ekal Vidyalaya?" 92.30% respondents said cleanliness, 73.07% respondents said domestic treatment

and 94.6% respondents said use of toilet. In against of the question "Up to what extent Ekal Vidyalaya is responsible for such cleanliness habits which you practice daily?", 96.15% respondents reported that Ekal Vidyalaya is "completely" responsible for the cleanliness habits practised by them and 8.46% respondents reported that they are satisfied with Ekal Vidyalaya Health Education Program in relation to cleanliness habits practice by them.

Major Findings of the Study

Findings of the study are presented below with objective wise followed by item wise:

To Assess the Impact of Health care Education programs run by Ekal Vidyalaya Foundation in tribal areas of Sundargarh and Keonjhar for the social inclusion.

The researcher included 12 items in the interview schedule to meet this objective. Item wise findings are given below:

Item No.1 "Have health related education been given in the Ekal Vidyalaya training Program?"

Response: 96.15% reported that health related education has been given in the Ekal Vidyalaya training Program.

Item No. 2 "What have you learnt during the health education training given by Ekal Vidyalaya?"

Response: Percentage of respondents who learnt cleanliness, use of toilet, domestic treatment, discipline, first aid ranges from 50% to 95%.

Item No. 3 "Up to what extent Ekal Vidyalaya is responsible for such cleanliness habits which you practice daily?"

Response:96.15% respondents reported that Ekal Vidyalaya is completely responsible for such cleanliness habits which we practice daily.

Item No. 4 "Have information of 'Swachchhataa Abhiyan' been given to you in the training program?"

Response: 100% respondents said that information of 'Swachchhataa Abhiyan' have been given to them in the training program.

Item No. 5 "Where do you go for toilet?"

Response: 95.38% respondents reported that they use toilet.

Item No. 6 (i) "From how many days you are using toilet (If you use)?" **:** 76.69% respondents reported that they use toilet for 5 years.

Item No. 6 (ii) "Who motivated you to use toilet?"

Response: 46% reported that EVF motivated them to use the toilet.

Item No. 7 "Have you been participated in training for leaving a healthy life given by 'Telemedicine Enhanced Arogya Program'?"

Response: 87.69% respondents said that they have been participated in training for leaving a healthy life given by 'Telemedicine Enhanced Arogya Program'.

Item No. 8 "Do you use the resources given by 'Telemedicine Enhanced Arogya Program' for living a healthy life?"

Response: 88.46% said that they use the resources given by 'Telemedicine Enhanced Arogya Program' for living a healthy life.

Item No. 9 "How did Telemedicine Enhanced Aarogya program affect to your life?"

Response: 100% respondents reported that Telemedicine Enhanced Arogya Program made them to experience less illness.

Item No. 10 "What will you do to resolve the problem of dirty and stagnant water in your neighborhood?"

Response: Almost 100% respondents said that they are aware of the different way of the disposal of stagnant water. 98.46% respondents said they will use soak pit to dispose the stagnant water.

Item No. 11 "How did you come to know the steps to be taken for resolve the problem of dirty and stagnant water?"

Response: 57.69% respondents said that they came to know the steps to be taken for resolve the problem of dirty and stagnant water

Conclusion

It is evitable to conclude that the health education program run by Ekal Vidyalaya Foundation has vital impact in the tribal area of Sundargarh and Keonjhar Districts of Odisha. It inculcates the healthy habits like cleanliness, use of toilet, disposal of stagnant water, etc. among tribal community of above mentioned two districts, aware them of health and hygiene and spread the knowledge several common diseases, their treatment, first aid and domestic treatment.

It enables the tribal community to live a healthy life. Hygienic and healthy life enables them to participate fully in the mainstream society. It is the indicator of social inclusion. So, it can be concluded that Health Education Program of Ekal Vidyalaya Foundation has a great impact over the social inclusion of tribal community.

Health care education programs run by Ekal Vidyalaya Foundation in tribal areas of Sundargarh and Keonjhar have a great impact over the tribal community of above mentioned two districts of Odisha in increasing their social inclusion;

Recommendations

Educational and training programs run by Ekal Vidyalaya Foundations are quite significant. It increases the standard of living of the tribal people by increasing their work competency, income, and self-confidence. In this regard the researcher recommends that

1. Ekal Vidyalaya should run such educational and training programs very frequently;
2. Ekal Vidyalaya should also expand its reach so that more and more tribal people can be benefited by these programs;

Delimitations of the study

Following are the delimitations of the study:

1. The present study has been conducted in only two districts of Odisha state, i.e., Sundargarh and Keonjhar. The area of study may be widened. So, this is the one of the limitations of the study.
2. The sample of study is only adults. Children were not included in this study. This is the other delimitations of the study.

Limitations of the Study

The researcher faced language problem at the time of data collection. This is one of the limitations of the study.

Suggestions for further research

Following suggestions have been given for further research:

1. Only two districts of Odisha have been included in the study. Ekal Vidyalaya also works in other parts of India. Therefore, a study may be conducted including other parts of India.
2. Ekal Vidyalaya provides five folds education. Present study deals with only four folds. So, a study based on all five folds may be conducted.
3. Sample of the study includes only adults. Children may also be included as sample in future study.

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Influence of Internet Addiction on Depression, Anxiety, Stress of College Students: A Descriptive Survey Study

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Abstract

These days, the emerging growth of new technology is the main concern. Specifically, due to this pandemic situation the dependence on new technology is increased drastically. The main aims of this study was1) to find out the correlation between internet addiction and mental health 2) influence of gender, class, and area of residence on students' internet addiction 3) influence of depression, anxiety, stress on students' level of internet addiction. Total 128 students from various college of west Bengal were selected as sample and for the data collection 3 standardized tool were used. Result of this study indicated that internet addiction and mental health are not significantly correlated, and internet addiction is influenced by the level of students, depression, stress, and anxiety.

Keywords: *Internet addiction, Mental health, Depression, Anxiety, Stress, college students.*

Background of the study

Nowadays, people are leading a life with advanced technology and leaving in a consumer society. Likewise, Internet which is a crucial part of modern technology has become integral part of the people of young generation and we can witness the burgeoning growth of internet and modern technology gradually. It goes without argument that internet has provided a new method of communication or made easy to gather information or knowledge globally. On the contrary, excessive use of internet or misuse of social media is also of paramount important issue in which we should concentrate. *Further, Addiction is* a compulsive, chronic, physiological, or psychological need for a habit-forming substance, behavior, or activity having harmful physical, psychological, or social effects and typically causing well-defined symptoms (such as anxiety, irritability, tremors, or nausea) upon withdrawal or abstinence (merriam-webster, 2021). The term "internet addiction" was first proposed by DR. Ivan Goldberg in 1995 for hoax to parody the

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Diagnostic and Statistical Manual, 4th Edition (DSM-IV). Furthermore, Report of "Internet World Statistics (2020)" (internet world statistics , 2020)presented that around 4.5 billion people use the internet worldwide now. Internet addiction is characterized by excessive or unchecked cravings, behaviors, or preoccupations with computers and the internet that cause impairment or suffering. (shaw m, 2020). Technology, and most especially, computers and the Internet, seem to be at best easily overused/abused, and at worst, addictive. The combination of available stimulating content, ease of access, convenience, low cost, visual stimulation, autonomy, and anonymity—all contribute to a highly psychoactive experience (grrenfield, 1999). The Internet can and does produce clear alterations in mood; nearly 30 percent of Internet users admit to using the Net to alter their mood to relieve a negative mood state. In other words, they use the Internet like a drug (greenfield, 1999c). Academic problems caused by Internet addiction include decline in study habits, significant drop in grades, missing classes, increased risk of being placed on academic probation, and poor integration in extracurricular activities. Besides, adolescent Internet addicts often suffer from severe psychological distress, such as depression; anxiety; compulsivity; feeling of self-effacement; fear that life would be dull, empty, and joyless without the internet(shek, 2013).

Review of related literature

1. Study related to internet addiction and depression, anxiety, stress

Krishna, Swathi in 2017 conducted a co-relational study to investigate the relationship between internet addiction and emotional disturbance as depression, stress and anxiety of medical graduation students and found out positive relationship between them. Following, Lodha in 2018 conducted another study on the Indian youth to see the relationship between internet addiction and depression, stress and found that internet addiction has significant effect on depression and stress but did not find out any effect of interaction between internet addiction and gender. Further, in 2021 Srivastava, Pradhan and Sharma conducted a descriptive survey study to find out the prevalence of internet addiction and psychosocial impact on urban adolescents in Kanpur and result suggested that internet addiction is a silent problem and parents, stakeholders should take part tom prevent this problem. Following, Sharma and Ashok in 2018 conducted another study to investigate the prevalence of internet addiction and its associate factors. Result of this study indicated that internet technology is a popular and effective way of teaching and entertainment, but one should know when it starting to overrule one life.

In 2011 Akin, Iskender conducted another study in turkey on university students to check at the connection between internet addiction and stress, anxiety, and depression and found that positive association between them. Moving ahead, in 2018 Haand and Shuwang conducted another study in Afghanistan to investigate the relationship between social media addiction and depression and found the positive association between them. Furthermore, Ithnain and Ghazali in 2018 conducted a study on the undergraduate students of Malaysia to find out the relationship between Smartphone addiction with anxiety, depression and stress and found the positive result. Also, this study suggested that, implement mental health education program and interventions that are appropriate to deal with addiction and improve mental health and well-being. Moving ahead, Yoo, Cho in 2014 conducted a descriptive survey study in Korea to investigate the association between internet addiction and mental health of adolescents and result suggested the need for measure to prevent and manage internet addiction in adolescents. Further, suggested that excessive use of internet can harm the mental health of students.

2. Study related to internet addiction and mental health

Cartle in 2018 an Lebni, Toghroli et. Al. (2020) conducted two studies to investigate the relationship between internet addiction and mental health both founded the positive result. The main purpose of two study was to give insight on the problem related to internet addiction, so that we can overcome and reduce the negative consequences of this. One study also showed Faculty, sadness, the primary location for accessing the Internet, and bodily symptoms are five significant markers of students' susceptibility to internet addiction. Further, Kawabo and Horiuchi in 2016 conducted another study to investigate the prevalence of internet addiction and its relation with mental states. Result showed that general health score is high for the students who are not addicted towards to internet and opposite for the others. Also, suggested that accessibility to smart phones was significantly associated with internet addiction. Moving ahead, a therapeutic suggestion was given by Tripathi in 2017 to reduce the negative effect of intern addiction. Yoga and meditation were suggested for overcoming these issues.

Objectives

The main objectives of this study are-

1) To study the co-relation between internet addiction and mental health of college students.
2) To study the influence of gender, class, and academic stream on student’s level of internet addiction.

3) To study the influences of depression, anxiety, and stress of students on their internet addiction level.

Hypothesis

1) There is no significant relationship between the internet addiction and mental health of college students.
2) There is no significant influence of gender, class, and academic stream on the student's level of internet addiction.
3) There is no significance influence of depression, anxiety, and stress of students on their level of internet addiction.

Research methodology

The design of this study is quantitative research design and method is the descriptive survey method. Further, Simple random sampling was selected as a data collection technique and Sample included total 128 students from various college of west Bengal and Questionnaire are circulated through online for the data collection purpose. Tools used for the data collection are-1) ghq-12 general health question for mental health measurement2) young's internet addiction test (YIAT) for measuring internet addiction 3) DASS 21 for measuring depression, anxiety, and stress level-dass-21 originally developed by **Syd Lovibond and Peter Lovibond**.

Data analysis and interpretation

Table no: 1 descriptive statistic

Gender	class	academic stream	Mean	Std. Deviation	N
male	1st year	arts	25.143	6.0352	28
		Total	25.143	6.0352	28
	2nd year	arts	22.333	3.2287	12
		commerce	13.500	1.7321	4
		Total	20.125	4.8836	16
	3rd year	arts	22.667	3.6148	6
		science	31.000	.0000	2
		Total	24.750	4.9208	8
	Total	arts	24.087	5.2571	46
		commerce	13.500	1.7321	4

		science	31.000	.0000	2
		Total	23.538	5.9093	52
female	1st year	arts	22.667	6.0047	48
		Total	22.667	6.0047	48
	2nd year	arts	23.500	7.5978	12
		Total	23.500	7.5978	12
	3rd year	arts	20.800	6.0148	10
		commerce	43.000	.0000	2
		science	17.000	3.4641	4
		Total	22.625	9.4930	16
	Total	arts	22.543	6.2524	70
		commerce	43.000	.0000	2
		science	17.000	3.4641	4
		Total	22.789	7.0130	76
Total	1st year	arts	23.579	6.0954	76
		Total	23.579	6.0954	76
	2nd year	arts	22.917	5.7401	24
		commerce	13.500	1.7321	4
		Total	21.571	6.2977	28
	3rd year	arts	21.500	5.1897	16
		commerce	43.000	.0000	2
		science	21.667	7.7115	6
		Total	23.333	8.1969	24
	Total	arts	23.155	5.9030	116
		commerce	23.333	15.2927	6
		science	21.667	7.7115	6
		Total	23.094	6.5730	128

From the table no 2 the following information can be stated that – the mean score of male 1st year arts students and female 1st year arts is 25.143 and 22.667. Afterwards, the mean score of male 2nd year arts students and female 2nd year arts students is 22.333 and 23.500. furthermore, mean score

of male 3rd year arts students and female 3rd year arts students is 22.667 and 20.800. it reveals that, 1st year and 3rd year male are students are comparatively more addictive and faced depression, stress, and anxiety whereas in 2nd year students' female mean score is high than male.

Moving ahead, the mean score of male total arts and female total arts are 24.087 and 22.543. further, male total commerce and female total commerce score are 13.500 and 43.000. in addition, Male total science and female total science mean score is 23.538 and 17.000. From the above discussion it can be stated that, in commerce total female students are significantly highly addictive and vulnerable to mental health whereas for the total arts and science male students mean score is high compared to female. Furthermore, 1st year, 2nd year and 3rd year total arts students mean score are 23.579, 22.917 and 21.500, which indicates that in total 1st year students' more vulnerable to mental health and addiction and then 2nd year and 1st year in sequence.

Sequentially, Total arts science and commerce students mean score are 23.155, 23.333,21.667 and total arts, science and commerce mean score is 23.094 which reveals that individually commerce students are more addictive. Finally, Male total students and female total students mean score is 23.538 and 22.789 which revealed that in total male students are more in risk and they are significantly high in internet addiction and mental health and stress, depression, anxiety, stress. In addition, male female total mean score is 23.094.

Table no: 2 Correlations between internet addiction and mental health

	Mean	Std. Deviation	N
HT-mental health	4.656	2.3759	128
IT- internet addiction	7.859	3.9837	128

Table no: 3 Product Moment Correlation

		HT-mental health	IT- internet addiction
HT-mental health	Pearson Correlation	1	-.088
	Sig. (2-tailed)		.321
	N	128	128
IT- internet addiction	Pearson Correlation	-.088	1
	Sig. (2-tailed)	.321	
	N	128	128

The first objective was to study the correlation between the internet addiction and mental health. The data were analyzed with the help of product moment correlation and the results are given in table no 3.

From table no 3 the co relation co-efficient is -.088 which is not significant at 0.05 level. It indicates that there is no significant correlation between internet addiction and mental health of students. Thus, the null hypothesis that there is no significant correlation between internet addiction and mental health is not rejected. It may be said that internet addiction and mental health of students were not found significantly correlated.

Table no: 4Influences of gender, class, and academic stream on level of internet addiction.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1623.180[a]	9	180.353	5.508	.000
Intercept	19351.162	1	19351.162	590.998	.000
Gender (A)	267.495	1	267.495	8.169	.005
Class9(B)	65.289	2	32.644	.997	.372
Academic stream(C)	317.200	2	158.600	4.844	.010
Gender * class	59.769	2	29.885	.913	.404
Gender * academic stream	144.804	1	144.804	4.422	.038
class * academic stream	.000	0	.	.	.
Gender * class * academic stream	.000	0	.	.	.
Error	3863.695	118	32.743		
Total	73752.000	128			
Corrected Total	5486.875	127			

From the table no 4, the f value for gender is 8.169 which is significant at 0.05 level with df 1/28. It reflects that there is significant difference in mean score of male and female student's internet addiction Thus, the null hypothesis there is no significant influence of gender on student's level of internet addiction is rejected. Further, the mean score of male students is 25.14 which is significantly higher than female students which mean score is 22.67, that male students are significantly high in internet addiction, compared to the female students. Afterwards, the f value

for class is 0.997 which is not significant at 0.05 level with df 2. It reflects that there is no significant difference in mean score of internet addiction, of male and female students. Thus, the null hypothesis that, there is no significant influence of gender on student's level of internet addiction is not rejected. Moving ahead, the f value for academic stream is 4.844 which is significant at 0.05 level with df 2/28. It reflects that there is significant difference in mean score of arts, science, commerce student's internet addiction. Thus, the null hypothesis there is no significant influence of academic stream on student's level of internet addiction is rejected. Further, the f value for gender and class is 0.913 which is not significant at 0.05 level. It reflects that there is no significant difference in mean score male and female student studying in 1st year, 2nd year and 3rd year on internet addiction. Thus, the null hypothesis there is no significant influence of interaction between gender and class on student's level of internet addiction is not rejected. Moving ahead, the f value for interaction between gender and academic stream is 4.422 which is significant at 0.05 level with df 1/28. It reflects that there is significant difference in mean score of male and female students belonging to arts, science, commerce stream for internet addiction. Thus, the null hypothesis there is no significant influence of interaction between gender and academic stream on student's level of internet addiction.

Table no: 5Influence of depression, anxiety, stress level of students, on internet addiction

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1759.469[a]	58	30.336	8.176	.000
Intercept	4628.958	1	4628.958	1247.65	.000
Anxiety A	204.037	7	29.148	7.856	.000
Depression D	96.394	5	19.279	5.196	.000
Stress S	293.019	7	41.860	11.283	.000
A * D	148.865	5	29.773	8.025	.000
A * s	59.143	2	29.571	7.970	.001
* St	262.440	4	65.610	17.684	.000
A * D* S	.000	0	.	.	.
Error	256.000	69	3.710		
Total	9922.000	128			
Corrected Total	2015.469	127			

From the table no 5, the f value of anxiety is 7.856, 5.196 for depression, 11.283 for stress, 8.025 for the interaction between anxiety and depression, 7.970 for the interaction between anxiety and stress, 17.684 for interaction between stress and depression which are significant at 0.05 level with different df. so, there is significant influence of anxiety, depression, and stress on student's level of internet addiction. Thus, the null hypothesis is rejected.

Discussion and critically result analyzing

In some previous study, researcher found out that internet addiction and mental health have positive correlation like, carte in 2018, Karacic in 2017 and Gorgich in 2017 found out that internet addiction and mental health of adolescents have very strong correlation. Following, in this study research found the opposite result. Research found that internet addiction and mental health have a strong negative correlation. Further, research do not find any influence of class on student's level of internet addiction but found out positive influence of gender and academic stream. In addition, research found that interaction between gender and academic stream have a significant influence on student's level of internet.

Next, result also indicated that depression anxiety and stress level of students individually and jointly have influence on the levels of students, internet addiction. In another word, this result stating that students who are suffering from depression or feeling stressed, they are more likely to get addictive towards internet to get relieve from their immediate pain. Similarly, few previous studies also found out that people try to cope up with their stress level by creating a new identity in virtual mode where they can create their brand-new image and make new friends.

Conclusion

As this study found out that internet addiction and mental health of students do not have any positive relationship which is opposite of previously founded result, the reason behind this different result may be the prevalence of advance technology and the technology enabled education system. Now a days, students are habituated with the new technology and able to use the technology in a productive way and for that reason they are not manipulated by the darker side of technology which may be influence their state of mental health. Further, research have found that, there have a significant difference between the male and female students mean score for the internet addiction and reason behind this may be the less access of mobile phone and digital devices which may leads them towards addiction. Girls do not have prevalence towards using digital technology compared to boys.

Educational implication

Many studies stated that Internet addiction is a silent problem for this tech-savvy world. On the one hand, this new technology helping us to become knowledgeable globally on the other hand, trapping one generation towards the cyber world. This study is the need of this hour and in various way it will contribute for solving educational problem related to new technology –

1) Parents and teachers will be aware about the consequence of excessive use of internet and can stop their child to become addictive towards it.

2) Students can reflect on their own position and find out the ways to recover them self from the trap of darker side of internet.

3) Administration can take new initiative to remove the darker side of internet use and launce new program to teach students how to use this new technology efficiently in a productive way

4) As the result indicated that, internet addiction and mental health do not have any positive relationship, it will help to break the myth of society that internet use always harmful for a child and education system should not be depended on technology. Further, it will encourage more to increase digital literacy and remove the digital divide.

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Accessing the Inclusive Education: Availability of Facilities for Students with Special Needs in Regular School

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Abstract

Inclusive education ensures equal opportunities for all children to attend school, acquire an education, and succeed. Barrier-free environments provide equitable access to resources, regardless of special needs. Specific infrastructure, like barrier-free facilities and wheelchair access, must be considered for effective teaching and learning. Students with disabilities benefit from supportive surroundings, tools, and assistance from teachers, administrators, and classmates. A study explored facility availability for students with special needs, using a survey and purposive sampling. Findings showed ample availability of basic facilities (ramps, wide doors, etc.) for orthopedically, visually, and hearing-impaired students.

Keywords*: Barrier free environment, Inclusive Education, Infrastructural Facilities, Normal Schools, Students with special needs.*

Introduction

All children must the accurate towards become formal then superiority education. There are no disparities in providing opportunities to learn among children, especially those with disabilities. The perception of education given to totally children with or without disabilities in a single classroom is called as inclusive. Inclusiveness refers to providing education to all learners without any disparities such as gender, age, location, poverty, disability, ethnicity, language, religion, and immigration or refugees in the same ordinary school and the same classroom (UNESCO, 2009).

Now the previous three periods, around is a rapid program toward inclusion in learning. All the countries made many policies and implemented to achieve inclusive education worldwide (Hassanein, Alshaboul, & Ibrahim, 2021). Among the developing countries, India also has taken various efforts to promote inclusive education. For instance, the first official scheme Integrated Education for Disabled Children (IEDC) was implemented in 1974 by the Government of India to provide equal opportunities to children with disabilities in normal schools. In various initiatives of the Government of India regarding inclusive education can be traced back to its independence in

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1947. The Kothari commission first stressed the importance of a common school system to provide education to all in 1964. Founded arranged the references of the education commission, National Policy on Education (NPE) suggested the development of integrated programs for disabled children to study in a normal school in 1968 (Mohanty, 2018). The Government of India launched the scheme of 'Integrated Education for the Disabled' in 1987 to make provisions in NPE 1986. District primary education program (DPEP) was launched in 1994 to ensure the enrolment of children with special needs in regular schools. Thereafter, Sarva Shiksha Abhiyan (SSA) scheme remained introduced near achieves the objective of universalization of elementary education in 2001 (Singh, 2016). The important feature in this scheme is a zero-rejection policy which ensures that every child through special needs must have important and quality education. National Curriculum Framework (NCF) was framed in 2005 which stressed as schools should become centers to prepare children for social life, especially differently abled children, and ensure their participation (Patra, 2017).

In addition, the Right of Children to Free and Compulsory Education Act (2009) insisted equally an essential responsibility of parents towards afford education for their children aged among 6 and 14. After that, the Inclusive Education for Disabled at Secondary Stage (IEDSS) system was launched in 2009-10 to assist with providing education to children with one or more disabilities (Sharma, 2018). Samagra Shiksha scheme was implemented in 2018-19 to increase the superiority of learning for all children including special needs. It addresses various activities such as identification and assessment of special needs, increase of teaching-learning resources, assistive devices, barrier free environment, Braille then large print books (Sundeep, 2016).

The major milestone of the Government of India regarding all-encompassing education is the proposal of the National Education Policy (NEP) in 2020. It aims to create an equitable and inclusive education system by 2030. Also, it emphasizes the importance of inclusive education after initial childhood to upper teaching with the providing of assistive devices and teaching learning materials. Further, it highlights the assessment system for early identification of special needs and provides the option for homeschooling (Grimes, et al. 2021; Kumar, 2021).

Even though the Government of India initiates many policies and schemes, the availability of infrastructural and instructional facilities in regular schools plays a key role to complete the objective of inclusive education. The schools should provide easily accessible physical resources such as ramps, wheelchairs, resource rooms, special toilets, braille books, technological devices,

and human resources such as trained teachers and special professionals to students with special needs. Particularly, the spacious and well-ventilated classrooms afford a comfortable, safe, and controlled learning environment for students with special needs (Goldsmith &Goldsmith, 1998).

Now addition, the schools should give prioritize established on the special requirements of the children in the availability of infrastructural and instructional facilities. For instance, visually impaired students may need a specific sign board to indicate classrooms and walking aids. Likewise, students with hearing impairment may need visible or graphic signs. Similarly, orthopedically impaired students may need spacious rooms to move freely and specially designed desks (Chumo, & Kosgei, 2019; Degenhardt, & Schroeder, 2016; Azizah).

Ultimately, the Government of India passed the Persons with Disability Act, in 1995 emphasizing the schools to ensure that they provide facilities such as access ramp, disabled-friendly special toilets, special teaching learning resources and explained teachers for disabled children (Sanjeev, & Kumar, 2007).

As a result, progress is noticed then development in facilities aimed at children with special needs in schools. For instance, the Unified District Information System for Education (U-DISE) statistics for the year 2015-16 showed that 23.08% of schools have disabled-friendly toilets, and 61.83% of elementary schools have ramp facilities in all states of India. As per U-DISE (2017-18) data, 24.12% of schools have disabled-friendly toilets, and 66.92% of schools have ramp facilities.

Meanwhile, the Government of India introduced the Samagra Shiksha scheme now the year 2018-19 for the application of the Right to Free and Compulsory Education (RTE) act, 2009 for children with special needs. The scheme covers all the special needs students from classes I to XII and insists to provide assistive devices, supplying appropriate teaching and learning materials, removal of architectural barriers such as accessibility of classrooms, laboratories, libraries, play areas, and toilets, and establishment of resource rooms in the schools (Samagra Shiksha,).

The outcome of the Samagra Shiksha scheme might be reflected in the development of the availability of infrastructural and instructional facilities among the schools. For instance, a recent Unified District Information System for Education Plus (U-DISE+) report on behalf of the year 2020-21 indicates that 25.25% of schools have disabled-friendly toilets, 70.75% of schools have ramps, and 48.31% of schools have a ramp with handrails facility. Though there is a slight increase in the percentage of available facilities, it is not a hundred percent fulfilment. Also, no studies evidenced the availability of instructional facilities provided to special needs students.

Additional, various key barriers were observed by the researchers aimed at the successful application of this education. They are absence of training aimed at the teachers who handle the special needs students in the regular classroom, an absence of resources, a lack of awareness and attitude between parents, an absence of funds for appropriate instructional materials, a lack of adaptive instruction by the teachers, inadequate infrastructure, and insufficient administrative support (Ghosh, 2017; Sharma, 2018; Das, & Sharma, 2015; Bhatnagar, & Das, 2014; Simorangkir, 2021)

Teachers' views and perceptions about the level of availability of infrastructural resources and instructional facilities should be considered aimed at the effective application of inclusive education. The absence of facilities and support might influence the willingness and confidence of the teachers which leads to poor instruction to the special needs students in their classroom (Bhatnagar, 2006). Hence, keeping these points in mind, the researchers intended to explore the availability of infrastructural and instructional facilities for s special needs students in regular schools.

Objectives of the study

1. To identify the availability of infrastructural facilities for students with special needs in regular schools.
2. To analyze the views of teachers about the availability of infrastructural facilities for students with special needs in regular schools.

Methodology

The researchers have adopted the survey research method for the present study. Also, the study used a comprehensive questionnaire to gather information about the availability of infrastructural facilities for students with special needs. In addition, a semi-structured interview was using to explore the views of the regular teachers regarding the availability of infrastructural facilities. Additionally, a purposive sampling technique was adopted to acquire data from the sample of 946 (Boys-485 and Girls-461) high school students with special needs who are studying VIII, IX and X standards. The sample consists of 297 orthopedically impaired students, 303 visually impaired students and 346 hearing-impaired students, from 226 schools (including Government, Government aided, and Private) in six educational districts of Tamil Nadu, India, namely Namakkal, Sankari, Salem, Dharmapuri, Krishnagiri, and Hosur. Also, the investigators

adopted a convenience sampling method to interview the sample of 458 teachers who are handling special needs students in those schools.

Research tool

The researchers used self-made questionnaires to collect data on the availability of infrastructural facilities for special needs students with the help of experts. The availability of infrastructural facilities for hearing impaired students questionnaire consists of 12 items. Likewise, the availability of infrastructural facilities for visually impaired students questionnaire consists of 12 items. Similarly, the availability of infrastructural facilities for orthopedically impaired students questionnaire consists of 16 items. In addition, the questionnaire has two responses namely 'Yes' or 'No' with the weightage of '1' or '0'. Further, the investigators asked the views and perceptions of teachers about the facilities using a semi-structured interview tool and their responses were recorded as transcripts.

Data analysis

The data gathered from the participants through a questionnaire were analyzed to identify the availability of infrastructural facilities for students with orthopedic impairment in regular schools. The percentage analysis was performed and presented in Table 1. It revealed that among 297 orthopedically impaired students, 245 (82.5%) said that the ramp facility is available in their schools. 215(72.3%) participants acknowledged that their school arranged wheelchairs for them.

Table 1: Availability of Infrastructural Facilities for Orthopedically Impaired Students

S. No.	Items	Responses in percentage	
		Yes	No
1.	Does your classroom have a wide door?	201 (67.7%)	96 (32.3%)
2.	Does a ramp facility available in your school?	245 (82.5%)	52 (17.5%)
3.	Are the wheelchairs arranged in your school?	215 (72.3%)	82 (27.7%
4.	Does your school have parking spaces or drop-off points?	73 (24.5%)	224 (75.5%
5.	Does your school have a separate resource room?	85 (28.6%)	212 (71.9%)
6.	Does your classroom have good light and ventilation facilities?	109 (36.7%)	188 (63.3%

7.	Does your classroom place on the ground floor?	152 (56.7%)	145 (43.3%)
8.	Does your school have a toilet facility specifically for you?	115 (38.7%)	182 (61.3%)
9.	Does your school provide a drinking water facility?	179 (60.2%)	118 (39.8%)
10.	Is there any special furniture available in your classroom?	91 (30.6%)	206 (69.4%)
11.	Is there any play hall available in your classroom?	99 (33.3%)	198 (66.7%)
12.	Is your classroom fitted with a single door?	97 (32.6%)	200 (67.3%)
13.	Does your classroom have adequate learning space?	65 (21.8%)	232 (78.3%)
14.	Does the school arrange any physical therapist or special Medical check-up facilities?	108 (36.3%)	189 (63.7%)
15.	Is the door handle and switches reachable to you?	95 (31.9%)	202 (68.1%)
16.	Does your school arrange a transport facility?	79 (26.6%)	218 (73.4%)

In addition, 201(67.7%) of them accepted that their classroom has wide doors. 179(60.2%) of the participants said that their school provide drinking water facility. 152(56.7%) of the participants accepted that their classrooms are placed in the ground floor. Meanwhile, toilet facility 115(38.7%), good light and ventilation facility 109(36.7%), physical therapist or special Medical check-up facilities 108(36.3%), play hall 99(33.3%), single door classroom 97(32.6%), door handle and switches at reachable height 95(31.9%), availability of special furniture 91(30.6%), separate resource room 85(28.6%), transport facility 79(26.6%), parking spaces or drop-off points 73(24.5%), adequate learning space, 65(21.8%) are received an as low percentage of 'yes' responses from the respondents.

The data gathered from the participants through a questionnaire were analyzed to identify the availability of infrastructural facilities for students with the visually impaired in regular schools. The percentage analysis was performed and presented in Table 2.

Table 2: Availability of Infrastructural Facilities for Visually Impaired Students

S. No.	**Items**	**Responses in percentage**	
		Yes	**No**

1.	Is your classroom situated on the ground floor?	163 (53.7%)	140 (46.3%)
2.	Does your school have a separate resource room?	86 (28.3%)	217 (71.7%)
3.	Is your classroom having adequate learning space?	69 (22.7%)	234 (76.3%)
4.	Does a ramp facility available in your school?	249 (82.1%)	54 (17.9%)
5.	Is your classroom having adequate air circulation and lighting?	110 (36.3%)	193 (63.8%)
6.	Are the toilet facility arranged in your school?	215 (70.9%)	88 (29.1%)
7.	Does your school arrange a transport facility?	82 (27.0%)	221 (73.0%)
8.	Does your school have a music facility specifically for you?	117 (38.6%)	186 (61.4%)
9.	Does your school have a play Hall?	96 (31.6%)	201 (68.4%)
10.	Does your school provide a drinking water facility?	177 (58.4%)	126 (41.6%)
11.	Is there any special furniture available in your classroom?	101 (33.3%)	202 (66.9%)
12.	Does the school arrange any special medical check-up facilities?	98 (32.3%)	205 (67.7%)

Table 2 revealed that among 303 visually impaired students, 249 (82.1%) said that the ramp facility is available in their schools. 215(70.9%) participants acknowledged that their school arranged toilet facility for them. In addition, 177(58.4%) of the participants said that their school provide a drinking water facility. 163(53.7%) of the participants accepted that their classrooms are placed on the ground floor. Meanwhile, music facility 117(38.6%), good light and ventilation facility 110(36.3%), availability of special furniture 101(33.3%), special medical check-up facilities 98(32.3%), play hall 96(31.6%), separate resource room 86(28.3%), transport facility 82(27.0%), adequate learning space, 69(22.7%) are received an as low percentage of 'yes' responses from the respondents.

The data gathered from the participants through a questionnaire were analyzed to identify the availability of infrastructural facilities for students with hearing impaired in regular schools. The percentage analysis was performed and presented in Table 3.

Table 3: Availability of Infrastructural Facilities for Hearing-Impaired Students

S. No.	Items	Responses in percentage	
		Yes	No
1.	Does your school have a classroom with a sound amplification system facility?	118 (34.1%)	228 (65.9%)
2.	Does your school have a separate resource room?	98 (28.3%)	248 (71.7%)
3.	Does assistive listening or hearing device available in your classroom?	6 (1.8%)	340 (98.2%)
4.	Does your classroom have any special equipment such as an audiometer, or hearing aid analyzer?	102 (29.4%)	244 (70.6%)
5.	Does your classroom have good light and ventilation facilities?	125 (36.1%)	221 (63.9%)
6.	Does your classroom situate on the ground floor?	185 (53.4%)	161 (46.6%)
7.	Does a music facility available in your school?	285 (82.3%)	61 (17.7%)
8.	Does your school have a toilet facility specifically for you?	126 (36.4%)	220 (63.6%)
9.	Does your school provide a drinking water facility?	203 (58.6%)	143 (41.4%)
10.	Does your school have a play hall?	105 (30.3%)	241 (69.7%)
11.	Does your school arrange any special medical check-ups or speech therapist facilities?	117 (33.8%)	229 (66.2%)
12.	Does your classroom have adequate learning space?	78 (22.5%)	268 (77.5%)

Table 3 revealed that among 346 hearing-impaired students, 285 (82.3%) said that the ramp facility is available in their schools. 203(58.6%) of the participants said that their school provide a drinking water facility. 185(53.4%) of the participants accepted that their classrooms are placed on the ground floor. Meanwhile, toilet facility 126(36.4%), good light and ventilation facility 125(36.1%), classroom with sound amplification system facility 118 (34.1%), special medical check-up or speech therapist facilities 117(33.8%), availability of special furniture 115(33.2%),play hall 105(30.3%),special equipment such as an audiometer, or hearing aid 102(29.44%), separate resource room 98(28.3%), adequate learning space, 78(22.5%) and music facility availability 6(1.8%)are received a low percentage of 'yes' responses from the respondents.

The documents and transcripts remained organized through the researchers from the responses of the participants during the interview session. The interview transcripts were analyzed using document analysis to gather relevant information on the research objectives. It remains found that the supreme number of teachers 384(84.2%) felt that their schools provide essential infrastructure facilities such as a ramp, wheelchairs, and drinking water to the special needs students. For instance, a participant worded that, "Ramp has been established in our school building. Orthopedically impaired students are using it very much". Another participant told that, "My school management arranged wheelchairs through Government officials to the disabled students who don't have".

In addition, many respondents agreed that there are a smaller number of facilities such as special toilets, furniture, special equipment, and transport available in their school. Additionally, nearly half of the participants 207(45.3%) said that they have two years of experience in attending the special course, but it is not enough to handle the students with special needs in the regular classroom. Likewise, most of the participants 390(85.5%) mentioned that there is a lack of availability of specialist teachers to help special needs students. For instance, a participant said that "Special teachers have fewer visiting hours to the school. So, I felt difficult when the students with special needs particularly visual and hearing-impaired students raised doubts".

Further, almost all the participants 418(91.2%) responded that the learning space is very less for learners with special needs. Especially, orthopedically impaired students find it hard to accommodate themselves with their wheelchairs in the classroom. For instance, a participant replied that, "It is difficult to provide enough space for orthopedically impaired students because of overcrowding in the classroom".

Discussion

The present study aimed to analyze the availability of infrastructural facilities used for special needs students to access inclusive education. The findings indicated that ramp facility, wheelchair, wide door, drinking water facility, and ground floor classrooms are highly available to students with special needs particularly orthopedically, visually, and hearing-impaired students. This is because the management of the school might strictly follow the policies and acts of the Government. Also, it consumes less expensive to set up these facilities in the schools.

Also, the present study reported that disabled-friendly toilets, special equipment, special furniture, special medical check-up facility, good light and ventilation facility, separate resource

rooms, parking spaces or drop-off points, transport facilities, and play hall (Chakraborty, 2018), adequate learning space, and assistive devices are less available to the students with special needs particularly orthopedically, visually, and hearing-impaired students. The reason for this may the concept of 'inclusive' now only accelerated to widespread in regular schools. Before this, there is separate special schools are made with all the facilities to address the special needs students. Also, the situation remains realized by the researchers through their observation during data collection that the regular schools might struggle to establish the facilities in their old buildings. New buildings with facilities are appearing on the school premises recently with the help of Government schemes and funds.

Further, the outcomes of the study revealed that the regular teachers who handle the students with special needs face obstacles to imparting inclusive education due to less availability of facilities such as infrastructure and instruction. Though there are unfavorable circumstances, teachers' attitudes and readiness may cause less accessibility to inclusion. It is witnessed by the researchers from the field experience of the school that the teachers concentrated more on normal students and provided instructional materials than the students with special needs.

Conclusion

Inclusive education ensures access to education for all individuals regardless of their strengths, weaknesses, race, gender, caste, religion, or disability. It is our responsibility to provide necessary facilities for special needs students to enable inclusive education. However, the present study found limited facilities such as disabled-friendly toilets, special furniture, resource rooms, and assistive devices in schools of Namakkal, Sankari, Salem, Dharmapuri, Krishnagiri, and Hosur educational districts in Tamil Nadu, India.

Teachers' attitudes play a crucial role in effectively implementing inclusive education and utilizing available facilities. Teacher training and collaboration with co-teachers or special educators can enhance inclusive classroom practices. Furthermore, promoting inclusive education programs in teacher preparation can improve the quality of inclusive teachers.

Studies have shown that inclusive classrooms positively impact the academic performance of students with and without special needs. By providing appropriate facilities and intervention programs, students with special needs can reach their full potential. This study emphasizes the need for policymakers and government officials to address these facility gaps and take necessary steps to enhance accessibility for inclusive education. This study highlights the areas for

improvement in facilitating inclusive education for students with special needs and calls for action from policymakers and government authorities.

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Exploring Gender Differences in Teachers' Morale: A Comparative Study of Elementary and Secondary Schools.

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Abstract

This study investigates the relationship between gender and school types with the morale of school teachers in Purnea district of Bihar, India. A quantitative survey research design was used, and a sample of 180 teachers from government elementary and secondary schools was selected using two-stage stratified random sampling techniques. The teachers' morale scale of Dr. Sajid Jamal and Dr. Abdur Raheem was used to assess the morale of the teachers. Data were analyzed using t-test and percentage. The results show that female teachers and secondary school teachers exhibited higher levels of morale compared to their male and elementary school counterparts. Most of the teachers fell into the average morality level, regardless of gender or school types. The findings of this study have important implications for policymakers and administrators in improving the morale of teachers, which is essential for enhancing the quality of education.

Keywords: *Teachers' Morale, Elementary School, Secondary School, Professional Ethics, Professional Development, Teacher Education*

Introduction

Teachers play a vital role in shaping the future of the country by providing quality education to students. The morale of teachers is an essential aspect of their job satisfaction, productivity, and commitment to their profession. In general, teachers' morale refers to their level of enthusiasm, satisfaction, and motivation towards their teaching job and the education system. It reflects how teachers feel about their work environment, their colleagues, their students, and the support they receive from administrators and the community. High teacher morale is important for creating a positive school culture and improving student outcomes, as happy and motivated teachers are more likely to be effective in their roles and create a positive learning environment for their students. Low teacher morale, on the other hand, can lead to teacher burnout, high turnover rates, and negatively impact student achievement. Several studies have explored the various factors that influence teachers' morale in various contexts.

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Singh and Srivastava (2018) carried out research on teachers' morale, found that teachers in government schools face inadequate infrastructure, lack of resource, and teacher shortage, which affect their job satisfaction and commitment to their teaching profession. Another study by Patnaik and Swain (2020) found that poor working conditions, low salaries, and lack of recognition were significant factors that negatively impacted teachers more in government schools. However, a study by Singh et al. (2019) found that teachers in rural areas faced unique challenges, such as inadequate infrastructure, lack of transportation, and social isolation, which negatively impacted their morale. The study also found that teachers' engagement in extracurricular activities and community involvement positively impacted their morale. Studies have also explored the relationship between teachers' morale and the quality of education provided to students. A study carried out by Adeyemo and Adeyemo (2019) revealed that teachers' morale was positively associated with their commitment to providing quality education to students. The study also found that the quality of education provided to students improved when teachers' morale was high.

Another study also revealed that teachers' morale is significantly associated with determining the quality of education in school (Day & Gu, 2014). Research has shown that teachers' morale is influenced by a variety of factors, including working conditions, pay and benefits, job security, opportunities for professional development, and relationships with colleagues and administrators (Ingersoll & Strong, 2011; Muijs & Harris, 2003).Working conditions have been found to be a significant predictor of teacher morale. In a study by Lee and Choi (2019), it was found that teachers who perceived their working conditions to be favorable reported higher morale. Similarly, Adeyemo and Adeyemo (2019) found that teachers who had a positive perception of their work environment reported higher levels of job satisfaction and commitment. Pay and benefits are also important factors that influence teachers' morale. Research has shown that teachers who are paid adequately and receive benefits such as health insurance and retirement benefits are more satisfied with their jobs (Muijs & Harris, 2003). In a study by Patnaik and Swain (2020), it was found that teachers who were satisfied with their salary and benefits reported higher job satisfaction. Opportunities for professional development are also crucial for maintaining teachers' morale. While Singh et al. (2019) found on his study that teachers who had access to professional development opportunities reported higher levels of job satisfaction. Similarly, a study by Singh and Srivastava (2018) found that government school teachers who had received training and development reported higher morale. In addition, relationships with colleagues and administrators

have been found to be important predictors of teacher morale. In a study by Ingersoll and Strong (2011), it was found that teachers who had positive relationships with their colleagues and administrators reported higher levels of job satisfaction and were less likely to leave their jobs.

The role of leadership in maintaining teachers' morale has been widely studied. Research has shown that effective leadership can positively impact teacher morale and job satisfaction (Day & Gu, 2014; Giallonardo, Wong, & Iwasiw, 2010). Whereas the study of Giallonardo et al. (2010), revealed that supportive leadership and clear communication from administrators were key factors in maintaining teacher morale. Teacher autonomy has also been found to be a predictor of teacher morale. In a study of Ingersoll and Strong (2011), it was found that teachers who had more control over their work environment reported higher job satisfaction and were less likely to leave their jobs. Similarly, Lee and Choi (2019) found that teachers who had greater autonomy in their work reported higher morale. The impact of student behavior on teacher morale has also been studied. Research has shown that teachers who experience high levels of disruptive behavior from students are more likely to experience lower morale (Muijs & Harris, 2003; Singh et al., 2019). In a study by Singh et al. (2019), it was found that teachers who reported higher levels of student misbehavior also reported lower job satisfaction.

In summary, the literature suggests that teachers' morale is a critical factor in ensuring the quality of education provided to students but in the context of school, teachers face many challenges that negatively impact their morale. While the literature reviewed highlights many factors that can influence teachers' morale, it does not provide insight into how demographic variables such as gender or types of school may affect teacher morale in the context of government schools of Purnea district. The present research could explore whether demographic factors such as gender and types of school play a role in shaping teacher morale, as this could help to better understand, and address issues related to teacher job satisfaction and commitment.

Research questions

1. How do demographic factors- such as gender and types of school impact the teachers' morale?

Research Objectives

To examine the relationship between gender and teachers' morale in government elementary and secondary schools in the Purnea district of Bihar and explore whether there are any significant

variations in morale between male and female teachers, as well as between elementary and secondary school teachers.

Methodology

The investigators employed a quantitative survey research design to investigate the morale of school teachers in the Purnea district. Two-stage stratified random sampling techniques were used to select schools and teachers from government elementary and secondary schools. In the first stage, a total of 30 schools, including 15 elementary and 15 secondary schools, were selected. In the second stage, 45 male and 45 female teachers, for a total of 90 teachers, were selected from both elementary and secondary schools. The researchers used Dr. Sajid Jamal and Dr. Abdur Raheem's (2013) teachers' morale scale, which consists of 30 Likert-type items and has a reliability coefficient of 0.91 in the Cronbach Alpha test, to assess teachers' morale. The data were analyzed using percentages and t-tests.

Result and Discussion

Table 1 provides the range of z-scores corresponding to each level of teachers' morale. The z-scores are a standardized measure of how far a teacher's morale score deviates from the average or mean score of the group.

Table No. 1. Teachers' Morality Level

Responses		Range of z-Scores
Degree of Teachers' Morality Level		
Extremely Low Morale		≤ 2.01
Low Morale		$-2.00 \leq z \leq -0.51$
Average Morale		$-0.50 \leq z \leq 0.50$
High Morale		$0.51 \leq z \leq 2.00$
Extremely High Morale		≥ 2.01

The above table shows that the teachers whose z-scores fall within the range of -2.01 to -0.51 are considered to have low morale, while those whose z-scores fall within the range of -0.50 to 0.50 are considered to have average morale. Teachers whose z-scores fall within the range of 0.51 to 2.00 are considered to have high morale, while those whose z-scores are either less than or equal to -2.01 or greater than or equal to 2.01 are considered to have extremely low or extremely high morale, respectively.

This table has been used to categorize teachers into different levels of morale and to compare the distribution of teachers across these levels. It provides a useful tool for analyzing and interpreting the results of studies that measure teachers' morale using standardized measures.

Table No. 2: Frequency distribution of gender and school types wise teachers' morale

Teachers' Morality Level	Gender				Types of Schools				*Overall*	
	Male		*Female*		*El. School*		*Sec. Schools*			
	N	%	N	%	N	%	N	%	N	%
Low Morale	28	31.1	12	13.3	27	30	13	14.4	40	22.2
Average Morale	62	68.9	39	43.3	54	60	47	52.2	101	56.1
High Morale	0	0	33	36.7	9	10	24	26.7	33	18.3
Extremely High Morale	0	0	6	6.7	0	0	6	6.7	6	3.3
Overall	90	100	90	100	90	100	90	100	180	100

The above table 2 presents the frequency distribution of teachers' morality level, categorized by gender and school types. The data is based on a sample of 180 teachers from both elementary and secondary schools. In terms of gender, 68.9% of male teachers exhibited an average level of morality, while 43.3% of female teachers also fell into the average morality range. On the other hand, 36.7% of female teachers displayed high morality, while none of the male teachers fell into this category. Additionally, 6.7% of female teachers demonstrated an extremely high level of morality, compared to none of the male teachers.

In terms of school types, 60% of elementary school teachers had an average level of morality, while 52.2% of secondary school teachers also exhibited average morality. Meanwhile, 30% of elementary school teachers showed low morality, compared to 14.4% of secondary school teachers. Interestingly, none of the elementary school teachers fell into the extremely high morality category, whereas 6.7% of secondary school teachers demonstrated extremely high morality.

Overall, most of the teachers fell into the average morality level, regardless of gender or school types. However, the distribution varies slightly among different categories. Female teachers and secondary school teachers seem to exhibit higher levels of morality compared to their male and elementary school counterparts.

Table No. 3: Comparison of Teachers' Morale Scores by Gender and School Types.

S. No.	Variables	N	Mean	Sd.	t-value	df	p-value
1.	Male *(Overall)*	90	2.68	4.65	6.950	178	0.021
	Female *(Overall)*	90	3.36	0.99			
2.	Elementary School *(Male)*	45	2.66	4.76	0.451	88	0.653
	Secondary School *(Male)*	45	2.71	4.58			
3.	Elementary School *(Female)*	45	2.93	0.68	6.098	88	0.037
	Secondary School *(Female)*	45	3.80	0.66			
4.	Elementary School *(Overall)*	90	2.80	0.60	4.35	178	0.011
	Secondary School *(Overall)*	90	3.25	0.78			

1. **Gender-wise Comparison:**

The average value of the variable being measured is 2.68 for males and 3.36 for females. The higher mean value for females suggests that, on average, they exhibit more of the behavior or characteristic being measured than males.

The t-value of 6.950 and p-value of 0.021 indicate that this difference in means is statistically significant. In other words, it is unlikely to have occurred by chance, and there is evidence to support the conclusion that there is a true difference between males and females with respect to the variable being measured.

2. **School Level Comparison (Males):**

The average value of the variable being measured is 2.66 for males in elementary school and 2.71 for males in secondary school.

The t-value of 0.451 and p-value of 0.653 suggest that there is no statistically significant difference between the means of these two groups. Therefore, we cannot conclude that there is a true difference between male students in elementary and secondary schools with respect to the variable being measured.

3. **School Level Comparison (Females):**

The average value of the variable being measured is 2.93 for females in elementary school and 3.80 for females in secondary school.

The t-value of 6.098 and p-value of 0.037 suggest that there is a statistically significant difference between the means of these two groups. Therefore, we can conclude that there is a true difference between female students in elementary and secondary schools with respect to the variable being

measured, and that female students in secondary schools exhibit more of the behavior or characteristic being measured on average.

4. School Level Comparison (Overall):

The average value of the variable being measured is 2.80 for students in elementary schools and 3.25 for students in secondary schools. The t-value of 4.35 and p-value of 0.011 suggest that there is a statistically significant difference between the means of these two groups. Therefore, we can conclude that there is a true difference between students in elementary and secondary schools with respect to the variable being measured, and that students in secondary schools exhibit more of the behavior or characteristic being measured on average.

Result and Discussion

Based on the findings of this study, it can be concluded that there is a significant difference in teachers' morale between male and female teachers, as well as between elementary and secondary schools in the Purnea district of Bihar. These findings are consistent with previous research that has also found gender and school level to be important factors affecting teachers' morale (Smith & Hoy, 2007; Liu & Ramsey, 2008).The higher average morale scores observed among female teachers is consistent with previous research suggesting that female teachers tend to exhibit higher levels of job satisfaction and commitment compared to their male counterparts (Klassen & Chiu, 2010; Wang & Guo, 2015). The female teachers in secondary schools have significantly higher morale scores compared to those in elementary schools, which is consistent with previous research suggesting that secondary school teachers experience higher levels of job satisfaction and motivation compared to elementary school teachers (Cheng & Chou, 2011; Kyriacou & Kunc, 2007).The finding that there is no significant difference in morale scores between male teachers in elementary and secondary schools is not consistent with previous research, which has suggested that secondary school teachers may experience higher levels of stress and burnout compared to their elementary school counterparts (Cheng & Chou, 2011; Kyriacou & Kunc, 2007). It is possible that the sample size in this study was not large enough to detect this difference, or that other factors such as teaching experience or subject area may play a larger role in affecting morale for male teachers.

These findings have important implications for policymakers and school administrators seeking to improve teacher morale in the Purnea district and similar contexts. By addressing factors such as

gender and school level, interventions can be designed to support teacher well-being and improve retention rates, which are essential for promoting quality education and positive student outcomes.

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The Application of Technology enabled Teaching and Its Effect of Learning Mathematics among Secondary School Students

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Abstract

Mathematics Education is to be satisfied by the traditional methods of teaching and learning. Mathematics will always keep playing an important role in our day-to-day life. Computer technology is a mathematics teaching that enables students to invent many opportunities for investigating mathematical relationships, imagining, and generalizing. Aim of the Study: The learning process to teach mathematics at the primary and secondary levels should include many opportunities for teachers to learn how to use technology to understand mathematics better and promote students learning of mathematical concepts with technology-enabled teaching. This study investigated technology-enabled teaching in learning mathematics. Method: The experimental method was the investigator used in this study. The study is confined to seventy (N=70) ninth Grade Students from Government Aided higher secondary schools in Salem district, Tamil Nadu, India. (n=35 control group & n=35 experimental groups). The investigators made an effective Technology-enabled teaching (multimedia package) and measure the effectiveness of it's through achievement test with the questionnaire in this study that questionnaire contained 30 items of collected data. Results and conclusions: Findings revealed that developed Technology-enabled teaching for learning mathematics for secondary-level students is a highly effective tool for learning mathematics.

Keywords: *Mathematics education, computer-based learning, computer technology. Mathematical concepts, technology-enabled teaching.*

Introduction

Mathematics is a Queen of all science. It took four crucial operations: addition, subtraction, multiplication, and division. Usually, mathematics teaching is very useful to develop the attention thinking and self-confident habit of students and more over supports to develop the problem-solving habit. Mathematics is related to additional subjects to like physics, chemistry, biology, history, economics, and psychology also. Mathematics with it's through different structures and

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looks as wider applications in daily life and fields of study. Mathematics teaching is a cognitive development has led to an understanding of basic processes involved in academic kills, like reading and mathematics problem-solving. Mathematics had been great cultural values; it is taken helped in transmitting and enriching our culture (James& Reddy,2011;Rajkumar & Hema ,2019b). It is mostly responsible to the progress of our civilization, and it has been rightly saying, "Mathematics is the mirror of civilization". It has helped the man in bringing him to the advanced stage of development (Rajkumar & Hema, 2018).

Teaching and learning process with the new technologies is currently a very dynamic and relevant area of the educational system. The development of information systems and internet technology creates a lot of progress in multi-media and the internet industry, however, affects the innovations in the educational learning style. So, the researcher tries to merge technology and mathematics concepts through multimedia. It's creating and gaining interest in mathematics subjects (Liu ,2011; Khirwadkar & Pushpanadham ,2005).

Need and Significance of the Study

Mathematics is an ideal subject for people who enjoy intellectual thinking. Mathematics occurred as a subject of study along with evolution. In the present scenario, mathematics is essential to the subject of living. A subject like mathematics, having a cumulative nature cannot be taught without relevant prior knowledge. Mathematics is a one of the subjects in schools. At the same time, the learners feel that mathematics is a difficult subject, and it can be understood by the intelligent students (Vinayak Malhotra, 2006).Multimedia brings learning to life. Student interest learning multimedia package using videos, animations, intriguing movies, and other media into the learning process benefit to our students to develop their skills and understandings of mathematics and to motivate and to excite our students about their learning. Multimedia package is a student's interest increasing and participation in the learning process (Rajkumar & Hema, 2017).Multimedia is a variety of digital media kinds, including text, graphics, sound, and video, which combines to shape an integrated multi-sensory interactive application by increasing learning performance effectiveness (Raina, 2009). Hence, the investigator intends to develop and measure the effect of technology-enabled teaching on learning mathematics in deflect topic Scientific Notations of Real Number and Logarithms in the Ninth Standard syllabus.

Review of Related Literature

Pilli and Aksu (2013) studied the effects of computer-assisted instruction on the achievement, attitudes, and retention of fourth-grade mathematics students in North Cyprus. The purpose of this study was to examine the effects of the educational software Frizbi Mathematics on 4th-grade students' mathematics achievement, retention, attitudes toward mathematics, and attitude toward computer-assisted learning. Students from the public elementary school in Gazimagusa, North Cyprus, were divided into two groups for this study (experimental and control).The control group was taught using lecture-based traditional instruction and the experimental group was taught using educational software, namely Frizbi Mathematics. The groups were compared on achievement of mathematics, retention, and attitude toward mathematics and computer-assisted learning. A series of ANOVAs for repeated measures revealed a significant difference between the groups on the post-achievement tests and attitude scales in favor of the experimental group. However, statistically significant differences in favor of the treatment group, on the retention tests were attained on the multiplication and division units but not on fraction mathematics for learning and teaching mathematics at the primary school level in North Cyprus is an effective tool.

Hossain and Tarmizi (2013) analyzed the effects of cooperative learning on students' achievement and attitudes in secondary mathematics. The main purpose of this study was to identify the effects of cooperative learning on students' mathematics achievement and attitudes toward mathematics in selected secondary schools in Bangladesh. A total of 80 students (40 from the Boys' school and the other 40 from the Girls' school) of grade nine participated in this study where a quasi-experimental design was administered. Data were analyzed using the independent-sample test. The results showed that cooperative learning had significant effects on mathematics achievement and attitudes toward mathematics. It was found that students' performance in mathematics and attitudes towards mathematics were affected by exposure to cooperative learning. The findings of this study have shown a great improvement in mathematics achievement and attitudes toward mathematics. Hence, Bangladeshi secondary schools, cooperative learning can be working to effectively improve students' math ability.

Objectives of the Study

General objective of the study

1. To find out the Application of technology enabled Teaching and its effect of learning mathematics among secondary school students.

Specific objectives of the study

1 To find out the significant difference in the Pre-test, Post-test, and Retention test score of Control group in learning mathematics.
2 To find out the significant difference in the Pre-test, Post-test, and Retention test score of the Experimental group in learning mathematics.
3 To find out the significant difference of Gain score of control group and Experimental group in learning mathematics.
4 To find out the significant difference in the Retention test score of control group and Experimental group in learning mathematics.

Hypotheses of the study

1. There will be a significant difference in the Pre-test, Post-test, and Retention test score of Control group in learning mathematics.
2. There will be a significant difference in the Pre-test, Post-test, and Retention test score of Experimental group in learning mathematics.
3. There will be a significant difference in the Gain score of Control group and Experimental group in learning mathematics.
4. There will be a significant difference in the Retention test score of Control group and Experimental group in learning mathematics.

Materials and Methods

The design of the study explains overall draw of this research. This design provides information about population and sample, research method, variables namely independent & dependent, structure of research tools and statistical techniques. The population for the study was Government aided higher secondary students in Salem District, Tamil Nadu, India. But sample for this study researcher select only one Government aided higher secondary school namely Bharathi Vidyalaya Higher Secondary School, Maravaneri, Salem district, Tamil Nadu, India. In this school, the researcher adopts 70 numbers of ninth-grade students for this study. In that 35 were considered as a control group and another 35 were considered an Experimental group. The sample was selected by the method of stratified random sampling techniques. The investigators adopted the experimental method which was found suitable together with the essential and relevant data. The quasi-experimental method with a Parallel group was adopted in this study. In this study, the independent variable is technology-enabled teaching in mathematics subjects. The dependent variables effect and its application through achievement score of the control group and

experimental group students. The investigator's made an effective of Technology-enabled Teaching (multimedia package)content development after using measure the effect of it's through achievement test on mathematics topic Scientific Notations of Real Number and Logarithms questionnaire developed was used as a tool for the study. A tool was contained 30 items of collected data. In this statistical technique researchers using Descriptive Statistics like mean, the standard deviation for mathematical evaluation in the present study. Also using the Inferential Statistics like 't' - test (for equivalent variable) in this study. The collected data have been analyzed using Excel and SPSS Package.

Analysis of Data

Hypotheses-1

Are the Ninth standard student's in learning mathematics difference in the Pre-test, Post-test, and Retention test score of Control group students?

Table-1: Mean score difference in learning mathematics between the Pre-test, Post-test, and Retention test of control group students.

Variable	Group	N	Mean	Standard deviation	"t"	P
Control Group	Pre-test	35	8.34	3.71	1.076	0.682**
	Post-test		8.48	3.50		
	Pre-test	35	8.34	3.710	1.44	0.750**
	Retention test		8.06	3.067		

**- Not Significant at the 0.05 level *-Significant at the 0.05 level

It is concluded that from the calculated 'p' value 0.682 is greater than the tabulated value is 1.980 at the 0.05 level of significance. Hence, Table-1 is rejected. It can be there is no significant difference in the Pre-test and Post-test score of Control group in mathematics. It is the calculated 'p' value 0.750 is greater than the tabulated value is 1.980 at the 0.05 level of significance. Hence, this Table-1is rejected. There is no significant difference in the Pre-test and Retention-test score of Control group in mathematics.

Hypotheses-2

Will the Ninth standard students in learning mathematics in the Pre-test, Post-test, and Retention test score of Experimental group students?

Table-2: Mean score difference in learning mathematics between the Pre-test, Post-test, and Retention test of Experimental group students.

Variable	Group	N	Mean	Standard deviation	"t"	P
Experimental Group	Pre-test	35	10.80	5.034	11.999	0.000*
	Post-test		21.29	1.979		
	Pre-test	35	10.80	5.034	3.428	0.002*
	Retention test		14.20	2.506		

**- Not Significant at the 0.05 level *-Significant at the 0.05 level

It is above the calculated 'p' value 0.000 is less than the tabulated value is 1.980 at the 0.05 level of significance. Hence, this Table- 2 is accepted. The Experimental group Pre-test and Post-test scores in mathematics on that topic will differ significantly. Further, concluded that the learning outcome of technology-enabled teaching through learning mathematics for the experimental group is more effective. It is statistically significant at the 0.05 level of significance, the calculated 'p' value 0.002 is less than the tabulated value is 1.980. Hence the Table-2 is accepted. Hence, there is a significant mean score difference in learning mathematics between pre-test and retention-test of Experimental group students.

Hypotheses-3

Are the Ninth standard students in learning mathematics of Gain score Control group and Experimental group students?

Table-3: Mean score difference in learning mathematics between Gain score of Control group and Experimental group in students.

Variable	Group	N	Mean	Standard deviation	"t"	P
Gain Score	Control	35	11.23	5.314	2.059	0.043*
	Experimental		11.17	3.382		

**- Not Significant at the 0.05 level *-Significant at the 0.05 level

It is concluded that from the calculated 'p' value 0.043 is less than the tabulated value is 1.980 at the 0.05 level of significance. Hence, this Table -3 is accepted. There will be a significant difference in Gain score in mathematics between the Experimental group and control group. It can be said that the adaptable of learning the gain score of experimental group students in the performance of students more effective.

Hypotheses- 4

Will the Ninth standard students in learning mathematics difference in the Retention test score of Control group and Experimental group students?

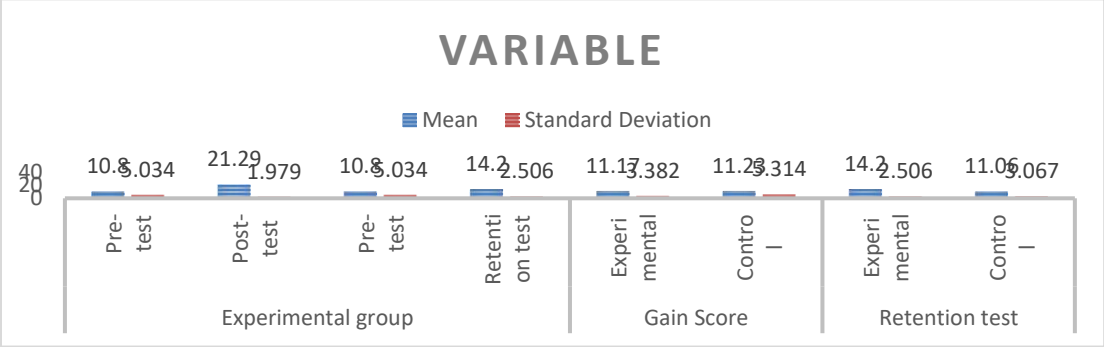
Table- 4: Mean score difference in learning mathematics between the Pre-test, Post-test, and Retention test of control group students.

Variable	Group	N	Mean	Standard deviation	"t"	P
Retention test	Control	35	11.06	3.067	2.196	0.046*
	Experimental		14.20	2.506		

**- Not Significant at the 0.05 level *-Significant at the 0.05 level

It is found that from the calculated 'p' value 0.046 is less than the tabulated value is 1.980 at the 0.05 level of significance. Hence, this Table- 4 is accepted. Further, Fig-2it can be concluded that the learning outcome of the retention test score for the experimental group and control group student's outcome of the students. There will be a significant difference in the retention test in mathematics between the experimental and control group.

Figure – 1: The Bar Diagram showing significant difference in the Pre-test, Post-test and Retention test and Gain score of Control group and Experimental group in mathematics.



Results and Discussion

Information Communication Technology (ICT) helps to teach mathematical particulars, skills, knowledge, concepts and recover their mathematical thoughtful more effectively besides it helps to improve the capability of students and teachers. Technology is required in the teaching and learning of mathematics because it affects the mathematics that is taught and improves students' learning (NCTM, 2009).It is concluded that from the calculated 'p' value 0.682 is greater than the tabulated value is 1.980 at the 0.05 level of significance. Hence, Table-1 is rejected. It can be there is no significant difference in the Pre-test and Post-test score of Control group in mathematics. It is the calculated 'p' value 0.750 is greater than the tabulated value is 1.980 at the 0.05 level of significance. Hence, this Table-1is rejected. There is no significant difference in the Pre-test and Retention-test score of Control group in mathematics. Further, it can be concluded

that the learning outcome of the retention test score for learning mathematics is less the poor performance through conventional teaching. It is above the calculated 'p' value 0.000 is less than the tabulated value is 1.980 at the 0.05 level of significance. Hence, this Table- 2 is accepted. The Experimental group Pre-test and Post-test scores in mathematics on that topic will differ significantly. Further, concluded that the learning outcome of technology-enabled teaching through learning mathematics for the experimental group is more effective. It is statistically significant at the 0.05 level of significance, the calculated 'p' value 0.002 is less than the tabulated value is 1.980. Hence the Table-2 is accepted. Hence, there is a significant mean score difference in learning mathematics between pre-test and retention-test of Experimental group students. It is due to the manipulation of the content unit of technology-enabled teaching as individualized instruction. It can be concluded that technology-enabled teaching aided the learners to learn the content in mathematics. It is concluded that from the calculated 'p' value 0.043 is less than the tabulated value is 1.980 at the 0.05 level of significance. Hence, this Table -3 is accepted. There will be a significant difference in Gain score in mathematics between the Experimental group and control group. It can be said that the adaptable of learning the gain score of experimental group students in the performance of students more effective. It is found that from the calculated 'p' value 0.046 is less than the tabulated value is 1.980 at the 0.05 level of significance. Hence, this Table-4 is accepted. Further, it can be concluded that the learning outcome of the retention test score for the experimental group and control group student's outcome of the students. There will be a significant difference in the retention test in mathematics between the experimental and control group. The process of instructional technology in class improves learning so that students can learning more effectively. In technology-enabled teaching, interactive student involvement in the learning process (Wiske & Franz & Breit, 2005).The educational technology is used to people are study to change from the traditional method of teaching. For the first time, these pupils were taught utilizing educational technology, and they preferred this method of instruction. Therefore, a longer time period should be given for technology use in order to make pupils who response that they are unsure about using technology comfortable at the course of this time (Eyyam &Yaratan, 2014).The investigator study is a successful in using this form of instruction, and the investigator believes that most of the students, and even some of the students who are extremely interested in the use of technology in our study, would be in favor of the use of educational technology in mathematics lessons.

Conclusion

The major finding of the study reveals that the treatment through Technology-enabled teaching (Multimedia package) in terms of reactions of the students found that is very effective. The realities of practice, though, that for Mathematics teachers fostering in depth learning and the spirit of the aims and objectives of the National Curriculum is a task easier. The objective of in-depth students learning is combined with the principles that school education in general and teacher education (focus on higher secondary school teachers) in particular. The investigator has the effect of technology-enabled teaching of (multimedia Package) in mathematics at the secondary level which will help the students to learn the concept of mathematics (Scientific Notations of Real Number and Logarithms). The Technology-enabled Teaching (multimedia package) was very useful for learning development easy way to teaching method in the different levels of students. The teacher too will find the package very helpful for their performance in the faculty (Rajkumar & Hema, 2019a).Based on the result and findings, it is concluded that technology-enabled teaching is more effective than the conventional method for learning mathematics. Hence, it will be more supportive to learn mathematics at the ninth standard level. This research concluded that make more effective Technology enabled teaching (multimedia package) on mathematics subject is a more difficult topic for furthermore and any future research.

Educational Implications

Technology offers self-driven learning opportunities in learning mathematics classes. We can enhance learning and give ideas life through interesting and interactive media. With access to technology that make it simple for them to record their mathematical work, students in future mathematics classes may not even use paper. Technology gives students quick access to knowledge as well as enhanced learning chances to mathematics into practice.

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Novel Approach of Problem based Learning in Mathematics through Modelling – Some Dominant Instructional Facts

Seema Lathkar*, Sneh Sharma**

Abstract

The recent research talks and proves the importance of problem-based learning in life and sustainable learning of students. In this paper we have discussed the importance of mathematical and cognitive modelling for effective learning of students. We also have focused on the importance of teachers' training on interdisciplinary areas for correct methodology of implementation of real-life problem situations and its problem statement formulation in the schools by students. The general notion about Mathematical modelling in Indian schools is confined to usage of high-level Mathematics at the senior school level which causes a hiccup in inculcating the attitude of modelling at primary and middle school level. It is the need of the time to overcome this inhibition and to imbibe modelling into the curriculum. We have given few modelling elicited activities (MEAs) that can be taken at different levels in school curriculum. We also have highlighted some gaps in assessment system and expectations by education system to induce the problem-solving skill as one of the important 21st century skills. The implementation of MEAs that imitates valid, real-world situations that small groups of students working together can collectively bring an expected dynamic change in the systems thinking. We as teachers and researchers are trying to take steps in this initiative. While these baseline elements are common to a large swath of the problem-based learning With NEP 2020 implementation, trying to bring sensible changes in the system, we can address these challenging areas and contribute some positive inputs in the curriculum and assessment to bring mathematical connect with the real world. To bring the vanishing research culture back in our education system, this kind of change is required. This may seem to be difficult initially, but we believe this change will introduce some effective research strategies for future. Our students will turn into capable human resource for sustainable future of India.

Keywords: *Modelling, Eliciting, Activities, problem-based learning, 21st century skills*

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Introduction

Mathematical modelling is the conversion of any problem situation into a mathematical structure. The concept is used for the process of mathematization. The problem situation may belong to real life situation. There are word problems in school mathematics books. Using mathematics to solve problems that are encountered in real life is called as application of mathematics.

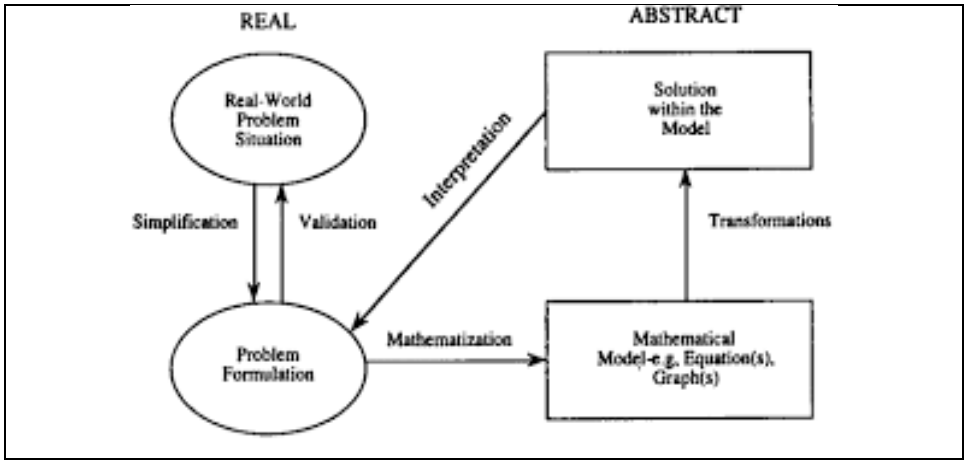
Thus modelling aims at enabling the students to develop the skill [2] to generalize and to anticipate about overall view of the problem and its probable ways of solution. Mathematical modelling is a link between practical life and mathematics **which needs to be established consciously in the educational institute[4].** But very less focus and attention are given to modelling. The prime cause is, we are in a routine of regular syllabus completion and traditional methods of assessments. So there is a gap between the learning goals and school procedures [8]. Mathematics is a subject which is taken as tough to understand due to its abstract nature of presentation, traditional methods of teaching and assessment [9]. Students many times are found running away from this subject choice in higher schools. Hence it is very important to connect the mathematics concepts to applications in our surroundings. But to bring this connect is difficult task. As the normative nature of mathematics remains there as integral part of learning which is derogatory. Due these difficulties Mathematics subject remains a subject option.

Mathematical Modelling

Much of the research work happening in the field of science, technology, education, mathematics and many more fields needs the perspective of modelling. The IT and software field also demands the logical background of mathematical modelling of problems they want to provide solution with. Fields like Business, investment, forecasting, all streams of engineering need the reasoning capability of human resource to see the problem as model, so that the probable approaches to handle them and to solve them become feasible. This suffices to say that the real worlds connect to our mathematical background and knowledge is necessary.

Mathematical modelling is the terminology which needs to be understood to its deeper extent [3]. The world doesn't just stop to its verbal meaning but it defines the capability of a person to visualize the situation in various orientations, to comprehend the issues associated, to analyse the parameters within control, to do certain assumptions, to synthesize the approaches, to critically understand the sensitivity of components involved and to provide rational, feasible and optimal solution. This kind of perspective needs to be generated in young minds right from the beginning

of schooling [7]. To see the problem in holistic way, the understanding of question and its interdisplinary component, students need to be groomed in design thinking approach. The desirable skills and competencies among the students can be developed by using the mathematical modelling approach. Though every student does not aim at becoming researching Mathematician or scientist, but the mind map for every work they do in their social and professional life can become better with the mathematical modelling as it trains the minds to think scientifically and organise the things in structured manner.



Flow diagram indicating the Mathematical Modelling Process

Obstacles in the effective implementation of Mathematical modelling

There are few reasons due to which the effective implementation is not possible because of following reasons:

a) Lack of appropriate mathematics teachers training in interdisciplinary fields.
b) Schools are tied in routine of completion of syllabus and regular activities.
c) Gaps in the curriculum
d) Traditional methods of assessment
e) Fear for accepting change.

Teacher's role in Mathematical modelling

Teacher's role is very crucial while developing this scientific temperament among the students. Modern education system has called it as facilitator. Teacher needs to help guide and mentor the students for mathematical model development process. Teacher can influence the way of thinking for a specific problem to be solved. Teachers need to be potential researchers having temperament of studying and exploring a concept in every dimension. Teacher should explore the content in all dimensions and should present it to students by connecting it to the real-world application. A good

enquiry which will take the concept to students using the best questionnaire. The role of facilitator will make the teacher to explain the students about expectations and will make student to explore the problem with respect to the parameters involved.

Teachers need to take the problems from practical field, industry or surroundings and society to age-appropriate levels of students which will allow students to understand the core concepts in curriculum. While doing so teacher needs to present the problem situation related to various mathematics concepts by stating the assumptions and controlled variables and help students to choose appropriate approach to solve the problem. The training in specific core areas will make teachers extrovert, think out of textbook, and satisfy the queries of curious students. Hence Mathematics teacher's training in specific domains on continuous basis is the solution for efficient implementation of real world connects through interdisciplinary approach and mathematical modelling.

Syllabus Completion

This is one of the struggling points for all the schools and teachers. The defined curriculum needs to be completed within the stipulated time. This many a times becomes feasible if the syllabus is completed in traditional way and assessments can be conducted accordingly in the stipulated time. This fact though genuine, still limits the best pedagogy implementation. Real world situation and problems cannot be always handled in the available time.

Gaps in the Curriculum

The curriculum specified by statuary bodies many times have gaps in the curriculum. These gaps create bigger learning gaps among the children. These gaps create big difference for students as the subject has abstract nature, and if the learning methods do not have real world connect it ends up into noninterest for the subject among the learners. The creative and innovations in such situations is altogether a difficult task. These gaps need to be identified and bridged. The books referred for teaching should not overpower the genuine journey of learning of subject. The vertical progression of content and widened scope of the circles forming the cone of progression should keep on expanding. Some measures need to be taken by teachers in a team and plan activities which will help in bridging the gaps.

Traditional methods of assessment

The fact that our teachers are having the flow of book-oriented journey of teaching the content, with the same the method of assessments acts as another strong hurdle while assessing the student

learning. The time bound list of questions judging the talent of child has its own flaws. This traditional method rewards merit to those who can solve the numerical in the question paper. Whereas the students who already have fear for the subject as they are not able to comprehend the content are declared failure. Some of the students are very strong in practical life.

Fear for accepting change.

There is always hesitation among teachers for accepting some changes in their set trends of teaching. They find themselves very comfortable. Also, the institute is always putting more focus on completion of syllabus and conducting examinations. The students and parents are also tuned to the similar patterns. One needs to do different things to bring good changes in the system. The system needs a mental set up to bring dynamism in the system This kind of development requires revisiting the set trends in organization. But it offers more insight into how or why students followed approaches to solve the problem and thinking about the strategies or problem-structure i.e., modelling .

Model Eliciting Activities @ RFSKK

After analyzing this entire situation, we thought of brining that dynamics into our system. The solution we tried was implementing MEAs. Model-Eliciting Activities are prototype genuine, practical problems which need solutions which can be made available to teams of students in actual classrooms to work on and to solve in time bound structure using their previous knowledge and available resources, with the help of their mentors. This method of learning is not just catering to problem solving skills but also connects the education and knowledge base to actual world. This makes it more relevant, authentic, enjoyable, engaging, sustainable and holistic journey of learning. This method ensures the learning outcomes, skills, and competencies to be induced achievable and simplifies the target for all stakeholders.

A reasonable amount of collection of MEAs which are age appropriate and supporting the curriculum needs to generate/collect with proper research by teachers. These collections need to be validated and systematically planned and woven into the curriculum. The teachers need to be good researchers and facilitators while implementing MEAs in the regular classroom. A time bound smart structure of well-organized MEAs and resources can help teachers to efficiently embed this structure into their lesson plans. We at our school are trying to implement such MEAs at two different levels, senior secondary and middle school level. Some of the examples of MEA,s at different levels and the approach of Mathematical modelling process are as follows:

Banking system at secondary school level

The MEA includes lots of mathematical modelling and critical thinking. The model is implemented in a mock currency mode or actual currency. This activity connects the students with actual real practical life. The bank model where students do actual savings (with smaller amounts). The roles in actual bank system are allocated to students and their role and responsibilities are also explained to them. Students are briefed about the entire system and the way of running of the bank system. With age-appropriate levels the difficulty level of terms and terminologies can be included. Starting with simple and compound interest and maintaining he passbooks, adding money to accounts, debiting money from accounts, create passbook design , transaction forms, account details updating system, the fix deposits, recurring deposits, their rate of interests, loan systems, sanctioning authorities, EMI, interest calculations are introduced gradually and slowly. This kind of scenario if implemented in a controlled manner, the students have lots of learning. The teachers can help students as facilitator and guide them through and through for proper implementation. The account maintenance, audits and specific rules for maintenance could be prepared by students. The pleasure of playing these roles and learning through the practical approach is simply life enriching. The understanding of financial mathematics becomes so strong, and students get connected with things. This experience makes them think critically and logically, express professionally, collaborate with team, employ design and creative skills, and even innovate the systems as design thinker. This MEA and the mathematical modelling included in the process are true examples of problem base learning.

Rate of traffic flow on highways

This activity aims at class 11 and 12 students to learn the concepts of differential equation and probability distributions. Students are provided with the primary data from the traffic governing agencies, or they are guided for getting the data by conducting actual survey and questionnaire. The data is analyzed by the students, and they generate frequency distribution. They calculate the probabilities for each observation and time zone. The students understand and interpret the concept of mean mode and median of traffic frequency they can also understand the concepts of deviations in the frequency of traffic. The students can find correlation coefficient between two different time zones. They can also infer about the consistency of the traffic on the road in different days and time zones. The best probability distribution fit is judged by students. The same data is used for generating a rate of traffic movement on selected road. The Differential equation formulation

involves mathematical modelling and decision of parameters like dependent and independent variables. The factors affecting the traffic movement are studied by students. The time dependent equations are then solved by students analytically and numerically. The general solution and its understanding gives a big picture to students and this most engaging and practical method gives a big exposure to students. The case study makes students to critically think on probable ways of handling the critical issues faced by us many times.

Activity 3: Surprise Party! (For Primary school students)

Planning A Surprise Party For Parents' Wedding Anniversary.

Your parents are working, and they have their wedding anniversary next week. Due to pandemic and lockdown for the last few months, they had been working from home. Like many other children, during the lockdown, you also have learnt to bake the cake and cook a few new recipes. Since last month your parents have started going to the office and they come back by 8 PM and hardly get any time to relax and rejuvenate. Even for their anniversary, they could not plan anything. You want to give a surprise anniversary party to your parents. You want to decorate the house, bake a cake, prepare a few dishes, and get ready for the party before 8 PM. You want one of your friends to come up to your place and help you to organize the party. Your friend suggests that you need a proper schedule to do things if you want all your work to be over before they come back home. At what time you should start doing work if your parents leave home at 9 AM in the morning. Prepare a schedule for all the activities and tasks that you need to do on that day. Few suggestions are as follows:

- Make a list of activities,
- Make a list of dishes to be cooked,
- write time required for each dish,
- time required to clean up the kitchen,
- time required to clean the home,
- time required for decoration,
- time required for setting up the dinner table,
- time required for you to get ready and any other work as per your idea.

It is a very interesting activity for students of classes 4 and 5 as they are learning concepts related to time. This activity will help them to understand "time management" which is an extremely important skill that everyone should possess. This activity also involves a lot of thinking processes

on part of students. They may start with one set of dishes but may after working out with the schedule they may have to make some changes. When given this activity in groups, they will have a lot of brainstorming and discussion which will develop their communication skill.

ACTIVITY2: Everyone likes shopping!

(Suitable for primary and middle school students)

COST COMPARISON

Students are asked to enlist 10 items that are commonly used by their families. They then must compare the prices of those items on different apps /stores. And finally, they will conclude which app/store is most profitable for them.

The activity can be scaled up and explored further by adding more items to the list, and/or categorizing items under different categories and then comparing the prices and reason out which store/app is more profitable for a particular category of products.

For students of classes 7 and 8, this activity can further be scaled up by asking students to calculate the final amount by calculating GST and CGST components.

While doing this activity, the students learn new terms that are used by apps/ stores. From a broader perspective, this activity will help students to get an idea of how the market works and the fact that before purchasing the things they should always do a market survey, or even if they are shopping online or offline, they should try to get full information first and make informed choices.

ACTIVITY 3: My dream bicycle! Family budget: suitable for classes 7 and 8 (middle school)

You want your dream bicycle which costs INR 10,000. You demanded it from your parents. Your parents agreed to fulfill your demand, but they said ''We will not give you money for the bicycle but you can still have it by saving money by reducing expenses for non-necessary items over a few months and from those savings you can buy your bicycle." Discuss in groups and find out a way to save such a big amount of money!

This is an open-ended question that may have multiple solutions. How do they know which expenses are unnecessary? With the guidance of the teacher and discussion about how money can be spent and saved, the students concluded that to achieve their target they first need to study their family's budget for the last few months and suggest a few changes in the budget for the upcoming months.

They will start with collecting the expenses made on various products and services, categories their expenses, making pictorial representations like bar graphs, pie- charts, etc. analyzing any

trends being seen through these representations and hence they will identify the areas where they can reduce a few expenses. But only after discussion and mutual agreement with their family members, will they be able to finalize the areas where they can reduce a few expenses.

The problem further requires students to be vigilant about the expenditures of their families every month and make necessary changes in the plan as required to reach the goal.

This is one of the most interesting and engaging ways to teach financial mathematics to students. It includes a good degree of data study, research work, problem-solving skills, mathematical aptitude, analysis, interpretation, and planning. From a broader perspective, this will make students value the money and the efforts of their parents to earn it.

ACTIVITY 5: This cake cutting is awesome!

(Suitable for secondary and senior secondary students)

Topic: Relating Sequences and Quadratics

A circular cake is to be cut in such a way that with each cut you get a maximum number of pieces with the following requisites:

a) Every cut should pass through the whole circle

b) Each cut should pass through all the previous cuts

c) With each cut you should get the maximum number of pieces of a circle.

d) Identify the relationship between the number of cuts and the number of pieces.

The activity can either be given as an individual or a group activity.

The students must first think and do some trial and errors to conclude that the cuts should not be passing through the center as that would not give the maximum number of pieces.

The student can then tabulate their findings as follows:

The teacher will provide some guiding questions to the students which they can answer after analyzing the table. Few questions that can be posed are:

- What do you observe from the values?
- Is there any pattern?
- What type of pattern/sequence is it?
- Can you find the maximum number of pieces for 20^{th} such cut on the circle?

This activity involves a good level of discussion, brainstorming, trials and errors, rectification, reviewing of peer work. This activity also includes scaffolding by the teacher with a recapitulation of arithmetic sequence as a linear sequence, derivation of the nth term of an A.P. In the

intermediate stage of the activity the students will learn about a new concept i.e., Quadratic sequences and in the final stage of the activity, students can be made to find out a formula for the general term of the sequence. Grade 11 students can also understand sequences as functions of natural number, the Arithmetic sequence being linear functions and quadratic inequalities being Quadratic function.

This activity can make the senior secondary students understand what mathematical modelling is and why it is so important. Though reaching the result may require some more research on part of students and scaffolding on part of the teacher.

Discussions and conclusion

If the teachers are taking efforts to really think of concepts in mathematics and connect them with real life examples, the learning will become fun, and Mathematics will become a subject of interest. The method of employing thoughtful, time bound MEAs in the lesson plans the subject of mathematics will be liked by students and lots of innovations will start from the end of students. The effective lesson plans including the MEA's researched and planned by teachers will generate the cross curricular mapping and modelling in mathematics through this effort will bring the concepts in mathematics relevant to the real life. Teachers will be able to think and research the topic in all dimensions and bring the connect with proper training and orientations in specific domains. The improvement in assessment process is also much needed for assessing the skills and competencies adapted by students in the Problem based learning. Rather skills will be evident and will not remain on paper. This is the expectation in NEP 2020 also. We wish here that such trainings for teachers happen in more frequency and teachers will be able to drive the students in the direction of research and bring the change in pedagogy and curriculum. We have initiated this process with our school. We wish the same happens with many more schools also and Mathematics and modelling brings 180^0 shift in the orientation.

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A Guide for Students to overcome their Negative Emotions by using the PERMA Theory of Happiness

Jooli Sonker*, Alok Gardia**, R.P. Shukla***

Abstract

Happiness is the goal of life, yet in this era of information explosions, technological advancement, cultural revolutions, and many human endeavors, there are demands for not only balance among them but also for individuals to march and readjust themselves. So how can one establish a harmonious balance between them and be happy? This type of challenging environment becomes harsh for adolescents since it is an age of emotional turmoil. As a result, they indulge in hurricanes of negative thoughts such as exam fear, failure, and career uncertainty, which leads to serious mental illness. Some state government policies have launched happiness or well-being intervention programs for dealing with negative thoughts and emotions in an effective manner, so that students might be able to face life challenges and convert them into opportunities. Hence, in this article, the researcher attempts to address some scenarios that are the primary cause of the emergence of negative thoughts and emotions. Further, the happiness PERMA theory is discussed for dealing with negative thoughts and emotions.

Key terms: *PERMA theory, Flow (concentration)*

Introduction

If we ask anyone, "Do you want to be happy?" The universal response is, yes i.e., happiness is required. It makes no difference to what religion, caste, class, nation, gender, or age group that person belongs. Everyone merely seeks happiness. Whether people realise it or not, they work arduously to do this by engaging their bodies, minds, and resources in it. Now, if our primary goal is to achieve happiness, then why is India at number 136 in the global list of happiest countries (as per a UN survey) and why is the rate of mental illness among students on the rise? (WHO, 2017). According to the most recent National Mental Health Survey (NMHS) (2015), every sixth individual in the nation needs mental health assistance in India (Ranjan, 2018). A report by the National Crime Records Bureau (NCRB) indicates that in India, at least one student committed suicide per hour in 2019 (Business Standard, 2017).

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The World Health Organization indicates that, depression affects one in every four Indian children between the ages of 13 and 15. India has the highest rate of suicide out of the 10 South-East Asian countries (WHO, 2017). Poonam Khetrapal Singh, WHO's South-East Asia Regional Director, said that depression may result in suicide, which is the second leading cause of death in the area for persons between the ages of 15 and 29 (Business Standard, 2017). Based on the research, seven percent of teenagers reported feeling upset as a result of comments made by classmates, family members, or teachers,25% of teenagers were "depressed" and "sad or gloomy," while 11% were "distracted" and found it difficult to keep focused on their schoolwork most of the time or continuously, 8% of teenagers had "anxiety" or had trouble sleeping due to worry, and a comparable number felt lonely sometimes or constantly and 10% of teenagers in India lacked close companions (Mental disorder, 2022).

Unrest in sleep, lack of appetite, guilt emotions, poor self-worth, fatigue, and lethargy are all indications of depression. According to Singh, it may also show itself as stress or physical discomfort, drug usage, poor attentiveness, and suicidal ideas (WHO, 2017). On the discussion of Pariksha Pe Charcha 2.0, Prime minister Narendra Modi, who views depression as a major problem, "Youth depression in a nation such as India is quite troubling" (Hindustan Times, 2020). The reports of the NIMHANS's mental health study, according to the president Ram Nath Kovind, were worrying because 10% of Indians had one or more mental health issues. He said that there were more Indians with mental health issues than there were people in Japan as a whole (India facing possible mental health epidemic, 2017)

Worldwide report of mental health issues (WHO) as follows, anxiety and depressive disorders were the most prevalent mental illnesses, affecting 1 in 8 persons means approx. 970 million people worldwide, in 2019 (Mental Disorder, 2022).

These statistics present a big challenge to society and families regarding how to raise and prepare children. As Poonam Khetrapal Singh, WHO's South-East Asia Regional Director, emphasized the need for increased accessibility to depression-related health services (WHO, 2017). Our president Ram Nath Kovind, declared, "We need to have a conversation about mental health concerns and approach conditions like stress and depression as curable diseases (India facing possible mental health epidemic, 2017).

On the discussion of Pariksha Pe Charcha 2.0, Prime minister Narendra Modi, indicates that, the basic structure of Indian society offers a relatively easy strategy for reducing depression, but this

structure has shifted. Previously, in a joint family, a child who couldn't talk about an issue with his father may talk to his grandmother or grandfather. Certain things that a teenager could not share with his mother could be discussed with his grandparents, for example. As a result, a child has numerous options for expressing himself. However, in today's environment, there are fewer opportunities for expression and more opportunities for suppression. A child tries not to talk about specific challenges he or she is struggling with and suppresses his or her feelings. This influences a learner's mind, as a mental pressure cooker. He asserted that the cooker may burst if the pressure of thoughts, feelings, and expression is severely restrained and not released (Hindustan's Times, 2020).

The Sociologists and Psychologists who spoke with Times of India noted that drug addiction, depression and stress were frequently cited as the main causes for this. According to Dr. MS Dharmendra, a consultant psychiatrist at Mansa Neuropsychiatric Hospital, resilience processes and support networks are crucial for reducing data of mental health issues. The role of other biological elements, such as hereditary predisposition to mental diseases, and other factors is also important (Times of India, 2020). However, an individual's tendency for these issues will ultimately depend on their capacity for stress management.

As, research conducted by Hashim (2003), indicates that academic stress is one of the main causes of mental illness for many students. It includes exams as well as other academically related stressors including the anxiety of falling behind on assignments, writing them, working on both solo and group projects, time constraints, a lack of financial assistance, worries about academic competence, arranging classes, and the need for study motivation (Tyrrel, 1992).

Adolescent people frequently have emotional and cognitive symptoms because of school-related pressures. Headaches, stomachaches, trouble breathing, sweating, nausea, and irregular heartbeat are typical physiological signs. Common cognitive symptoms include frightening fears of losing control, going insane, experiencing hurt or humiliation, getting a bad reputation, coming out as dumb, having a small circle of friends, having difficulties concentrating, and being incompetent in a variety of fields (Fink, 2010).

The combination of academic demands that outweigh a person's capacity for adaptation results in academic stress. A student's mental and emotional health may suffer if they are unable to manage their academic stress (Scott, 2008).It's common for students to experience some academic stress, but new stressors can appear as a consequence of being exposed to new educational notions for

the first time in their lives (through the news, world wide web, electronics, etc.), adjusting to a new social setting (such as switching to a new medium of instruction, moving, or dealing with peer pressure or switching from one school to another), and taking on a tougher schedule.

Anxiety, sadness, and physical illnesses, such as stomach problems and headaches, can all be caused by too much academic stress, which can then have a poor impact on academic performance (Dedeyn, 2008). To eliminate these severe symptoms, some adolescent individuals may choose not to attend school if school-related stress becomes severe (Fink, 2010).

Moreover, a student allegedly killed his junior to postpone his exams, a group of boys beat a classmate to death over a minor disagreement, and a student stabbed his teacher to death after alerting him to his inappropriate behavior are just a few examples of recent headlines that pose a threat to the next generation of students and college students. Students in the twenty-first century require a positive learning environment. We all naturally experience happiness, but in the fast-paced world of today, few people do. We progressively lose our natural condition because of the constant hustle and bustle of daily life and become entangled with other emotions, particularly in challenging circumstances. Most of the teenagers are worried and unsure of how to handle it.

The Delhi government has launched the Happiness Curriculum from Nursery to VIII as an additional step to address these long-term societal issues of mental health and welfare among students. According Mahatma Gandhi, we should commence educating youngsters if we desire to bring about genuine peace in this world. The Happiness Curriculum is being implemented in schools with the purpose of increasing students' levels of awareness, mindfulness, and learning to help them live happier, more meaningful lives that ensure harmony with their inner selves and help them discover who they are while learning. If we teach children to be happy from an early age, they will blossom into stress-free, cheerful adults. This curriculum is a first step towards establishing a healthier, happier society that is energetic and optimistic.

Happiness is strong positive feeling that all humans have in contrast to negative emotions such as depression, grief, and despair. Happy people are successful in multiple areas such as social, work and family domains. They tend to be physically healthier as they have stronger immune system and longer lifespan than depressed and unhappy people. They are better in coping with negatives situations and are more helpful and prosocial (Lyubomirsky 2005).

Happy people show some positive traits confidence, optimism, likeability, friendliness, liveliness, flexibility. They handle stress better. Therefore, happiness is not only good for mental health but

is effective in physical health as well as high subjective well-being (such as life satisfaction, absence of negative emotions, optimism, and positive emotions) cause better and longevity (Diener & Chan, 2011).

The educational system in India must implement a curriculum that focuses on not only the development of cognition, linguistic, literature, and mathematical abilities but also on happiness or well-being, so that students will learn how to establish a harmonious state of mind without being disturbed by any adverse environmental pressure. Thus, in this article, the researcher attempts to address some scenarios that are the primary causes of emergence for negative thoughts and emotions, and for dealing with causes, the happiness PERMA theory is discussed.

Happiness

"Happiness is not something readymade, it comes from your own actions."-Dalai Lama

According to Gita for achieving happiness first thing is to meet the basic needs i.e., food, shelter, clothing, health, and education. In Bhagavat Gita, Lord Krishna says that one whose mind is not fastened to outward objects, enjoys the bliss of inner soul; self-realization is the utmost truth through the science of connecting individual consciousness with the Supreme consciousness and this is the way through which one gains infinite bliss.

"सुखंत्विदानींत्रिविधंशृणुमेभरतर्षभ|

अभ्यासाद्रमतेयत्रदु: खान्तंचनिगच्छति ||18.36||"

As, in Bhagavad Gita, Chapter 18, verse 36, Arjun asks, "How can one realize their own Atma, get rid of their agony and suffering, and find happiness?" **The Lord says, "Practice, and you shall enter that state."** Talking and reading books alone won't get you very far. Only by churning the curd can butter be produced. The only way to obtain sweet juice is through crushing sugar cane. The only way to obtain oil is through crushing the seeds. Man can therefore transcend sorrow and find happiness through practice alone (Happiness in the Bhagavad Gita, 2018).

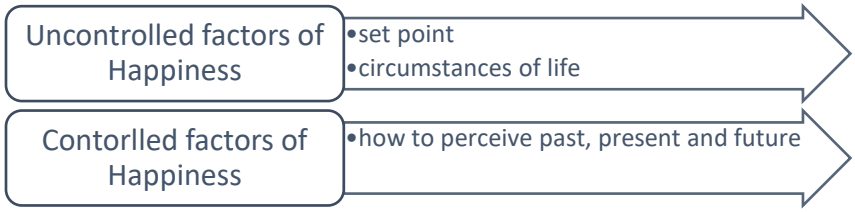
Osho (1931-1990), a prominent Indian philosopher and radical thinker, discussed all the world's puzzles, including happiness. Happiness, according to Osho, has nothing to do with riches, power, achievement, or position and reputation. He stated in his book that happiness has nothing to do with success, nothing to do with desire, and nothing to do with money, power, and status. Happiness is related to one's consciousness. Happiness is a state of awareness (Osho, 2009).

In other words, our own actions can make us happy or miserable. Merely a fully awakened person experiences genuine happiness via his/her consciousness, but a sleeping or not awakened person

experiences only pleasure, and that pleasure is happiness for him. True happiness comes from inside, when there is no darkness, no ego, no tensions, and no anxiety, i.e. when one is completely satisfied. When there is no concern for the past or the future; just the now is relevant. True happiness can only be found in the moment. According to Osho, "Now is the only time and here is the only place." Then, suddenly, the entire sky falls on you. This is genuine happiness. This is true bliss (Osho, 2009).

The discipline of 'positive psychology' Martin Seligman (2002) suggested a "happiness equation": H=S+C+V. Happiness = (set individual range + circumstances of life+ voluntary controllable factors).

- Set point of happiness determined by our genes and contributes around 50% of happiness.
- circumstances of life contribute around 10% of happiness.
- Voluntary controllable factors – the way how to perceive past, present, and future contributes around 40% of happiness.



Thus, it is based on a person how he or she perceive past, present, and future i.e., learn from past, live in present and hope for future.

Happiness theory (Seligman's PERMA Model): Seligman (2011) developed the PERMA model of well-being, which offers five components of happiness (The acronym PERMA is created from the initial letters of each domain listed by Seligman as a variable that determine wellbeing.). Positive Emotions, Engagement, Relationships, Meaning, and Accomplishment—or any combination of these—are what it needs to be happy, according to Seligman's latest idea. Thus, Happiness is operationally defined in the present study as a state of inner harmony that arises when one's mind becomes aware of one's self, becomes resilient, tries to find satisfaction with oneself, and maintains healthy relationships with others as well.

How negative thoughts or emotions emerge.

Emotions play important in determining and directing behavior. They frequently give the impression that they have complete control over us, leaving us with no choice but to follow their instructions. On the other hand, a person is crippled in terms of being able to live a regular life if

they lack any emotions. In this sense, emotions are crucial in giving our actions a specific orientation and so molding our personalities in accordance with their growth.

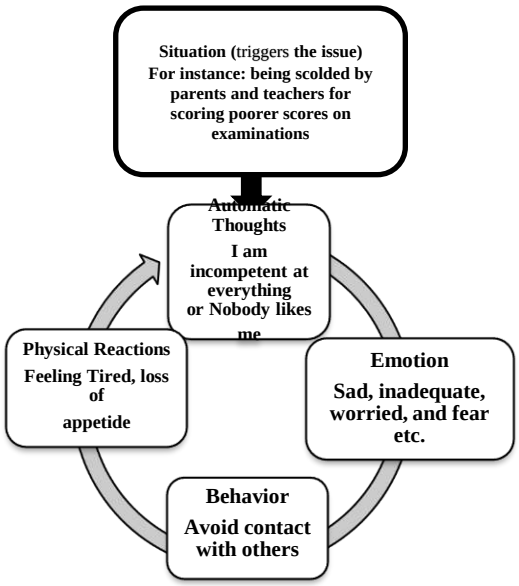
According to its etymology, the term "emotion" comes from the Latin verb "emovere," which means "to stir up" or "to excite" (Singh, 2014). "Emotion is a state characterized by physiological arousal, subjective feelings, changes in facial expression and adaptive behaviors" (quoted by Coon, 2003 as cited in Singh, 2014). Therefore, emotions can be thought of as agitated or stimulated conditions of our body and mind; emotions are mental states caused by neurophysiological changes that are related to various thoughts, sensations, behavioral tendencies, and a degree of satisfaction or dissatisfaction. There are basically two types of emotion based on feeling pleasantness and unpleasantness: Positive emotion and Negative emotion

Positive Emotion: It is an emotional reaction intended to show a positive affect such as happiness (when one achieves the state of awareness), relief (when an uncertain situation turns out well) or satisfaction (when one is satisfied with the current condition of affairs) and so on (Cohn & Fredrickson as cited in Ackerman, 2019).

Negative Emotions: Hate, rage, jealousy, fear, despair, and so on all are examples of negative emotions. However, these sensations are natural. Negative emotions can dull our enthusiasm for life, depending on how long we allow them to influence us and how we express them (Scott, 2022). In other word, negative emotions prevent us from thinking and acting sensibly, as well as viewing things objectively; when this happens, we tend to perceive and recall just what we want to see.

Students suffer from mental health issues because of a lack of awareness about how to handle negative emotions such as stress, frustration, fear, and so forth, which arise from academic pressure, failures, breakups, and many others (Times of India, 2020); and this lack of awareness further leads to thinking errors about themselves and the world around them.

As, according to Cognitive theory of Beck (1967; 2009) (as cited in Keshi, 2013), indicates the three primary kinds of thinking "errors": (1) undervaluing oneself—low self-esteem resulting from the conviction that one is inadequate and of little value; (2) a negative view of one's current experience—people with negative thoughts believe they are unable to accomplish their goals and cannot enjoy themselves; and (3) pessimism—the conviction that things will not get better, think like, I never accomplish anything perfect, every endeavor has to be perfect or it's no worth at all, or everything are only going to worse. It can be understood through cognitive distortion cycle.

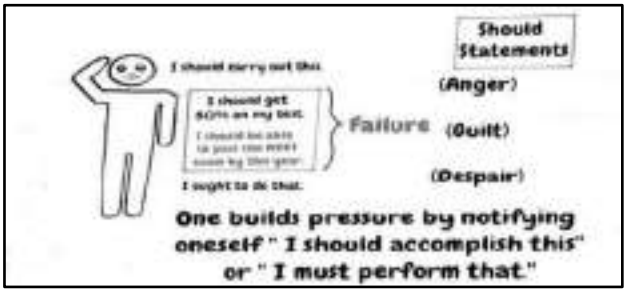


Cycle of cognitive Distortions

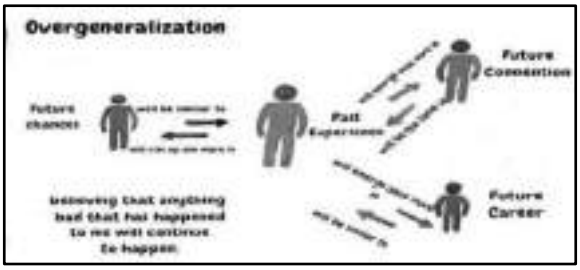
Chen, Rubin, and Li (1995) observed that children who had academic challenges in school frequently received critical feedback from their teachers about their performance, which led to the development of depressive symptoms.

CBT focuses on how a child understands his or her experiences and how these thoughts ultimately affect how well the child is behaving or feeling emotionally. Take a 9-year-old girl, for instance, who exhibits extreme anxiety before any type of examination at school. Understanding her anxiety's context (such as when taking tests) is important, but understanding her physiological responses (such as nausea, excessive sweating, and a feeling of tiredness), automatic thoughts (such as "I didn't study sufficiently; I'm going to be a failure"), and beliefs (such as "If I don't receive a A +, I'm a fool.") are more crucial for developing interventions than simply "trying to combat her nervousness." Let us understand some automatic thoughts through the images given below:

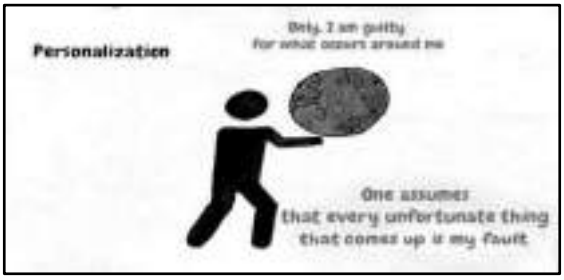
Should Statements: Putting oneself under pressure by declaring, "I should carry out this" or "I ought to do that."



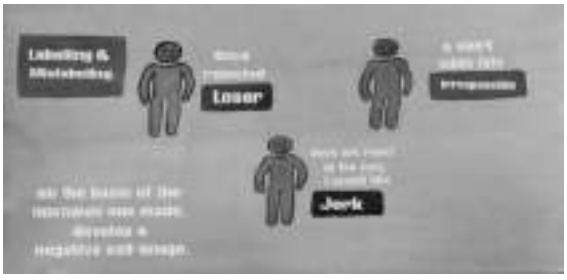
Overgeneralization**:** Believing that anything bad that has happened to them will continue to happen.



Personalization: Concluding that every unfortunate circumstance is my fault.



Labelling & Mislabelling: based on the mistakes one made, develop a negative self- image.





Excluding the positive: Experiences can be switched from being neutral or pleasant to be negative. These strong emotions and ideas are natural components. However, issues may arise if we become "hopelessly addicted (hooked)" by them. As a result, one's cognitive process determines whether they are mentally healthy or not. In this context, Vivekananda has also said, "Our thought makes

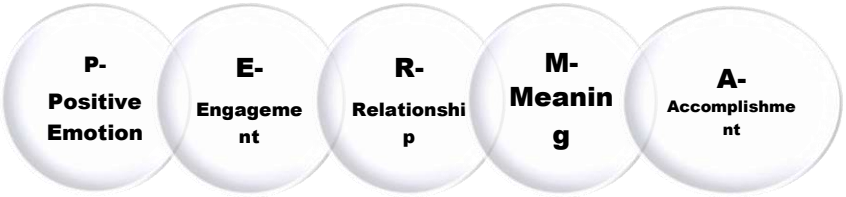
things beautiful; our thoughts make things ugly. The whole world is in our own mind. Learn to see things in the proper light" (as cited in Call to the nation p. 30).

How to deal with negative thoughts or emotions through PERMA theory

When students encounter with obstacles in life, they make foolish mistakes, become nervous, and become easily irritated with themselves or others around them and building pressure by notifying oneself, " I should accomplish this" or " I must perform that" transforming pleasant experiences into negative ones; coming to the conclusion that every unfortunate circumstance is my fault, mislabelling oneself; focusing on the negative parts of every circumstance; believing that anything bad that has happened to them will continue to happen and so on. Because of these negative emotions and thoughts, they either avoid problems or become angry at themselves or others. Their emotions and thoughts become jumbled, making it difficult for them to make the best choice.

- What can they do to get away from this?
- Can they make friendship with their thoughts and feelings?

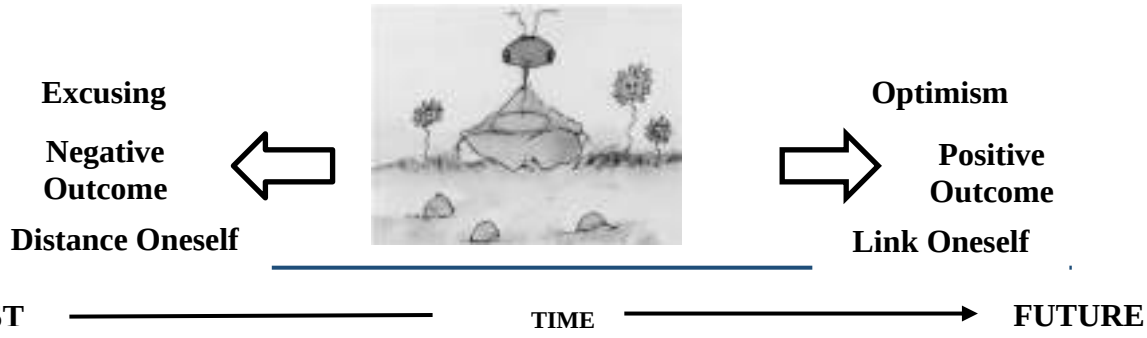
Ohm's Law: More current will flow if the resistance is lower. We learned from earthing that the brain is sub-system of our body's bio-electrical machinery. When the brain is less occupied (resistance), it has more energy i.e., the brain can take in and store more information at lower frequencies. Since using electrical energy efficiently requires the lowest possible resistance, a good circuit must have it (Jose Silve, 2020, The Silva mind control method).Let's understand it through, PERMA theory. According to Seligman's theory, happiness requires positive emotions, engagement, relationships, meaning, and accomplishment.



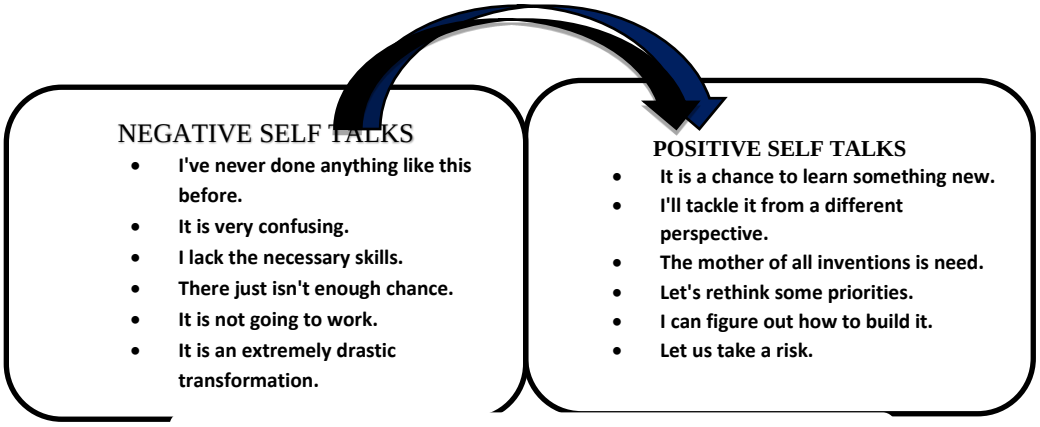
Seligman's PERMA Theory

Positive thoughts or emotions: Focusing on positive thoughts involves more than just keeping a smile on our face throughout the day (despite how we may feel internally); it involves developing the ability to remain upbeat and to view the situations and events that life throws at us in a way that is constructive and positive. As we are all aware, life is not always simple, things change, and feelings are not always happy. This makes dealing with positive thoughts more challenging. To this reason, the idea of acceptance plays a hugely significant role. Accepting that something awful

has happened to them (students) in the past or is happening to them right now (a challenging day at work) gives them the resources that they need to remain optimistic and encouraging for dealing with whatever the present and the future may hold.



Positive thinking simply means handling suffering in a more positive and useful manner by expecting the best, not the worst, to happen. Positive thinking frequently begins with self-talk. Self-talk is the continuous stream of thoughts that one has without saying anything. It can be either positive or negative. Some of one's self - talk is influenced by logic and reason. Other self-talk may result from misconceptions one acquires because of a lack of facts or expectations one forms because of preconceived notions about what might happen. If most students' thoughts are negative, their attitude toward life is more likely to be pessimistic. If students have predominantly optimistic ideas, they are probably optimists (Scott, 2022).



Switch your self-talk from negative to positive

People who think positively are more likely to act and attain their objectives. On the contrary, negative thinking can paralyses us, instilling fears and doubts and stopping us from taking activities that would get us closer to our goals; yet this does not mean that negative thoughts are harmful; being trapped in a storm of negative thoughts is detrimental to goal achievement.

As we know that success does not come without failure. Failure indicates that one tried. One took a chance and tried something. There isn't a successful person in the world who hasn't faced stress, anxiety, rejection, or failure while working toward a life goal. Failure should be embraced because it teaches us so much about how to advance our learning, development, and growth. With the help of self-talk transformation, one may develop resiliency and be better able to deal with life's ups and downs.

Engagement (Flow): According to Higgins (2006), Engagement relates to feelings of attachment, participation, attention, and level of interest in leisure, hobbies, or employment.

The state of flow, in which time seems to stand still, one loses all feeling of self, and focuses intently on the present, is a crucial idea. When students start to fully engage with the present moment and concentrate on doing the activities then experience the state of being known as "flow" (Seligman, 2011). In other words, our bodies are actively inundated with endorphins and hormones that improve our mood and produce a "flow" of immersion that engrosses us in the action. The question arises here, how one can achieve the state of flow even in challenging circumstances. Let us understand it through the images given below:



Thoughts & Emotions shift like the weather

Learn the concentration (flow) skill from the sky

Relationship: We, human beings are social animals, and can't live our lives without maintaining social connections. Through the process of socialization, one internalises the norms and ideologies of society. Social connections are essential for living a happier life. Happy people tend to have strong relationships with others. As, Direct effect theory given by Jemmott & Locke, (1984) indicates that, social connection improves health and well-being regardless of stress level. Many students may turn to their family and friends for social and emotional support when they are under stress. In all our connections, whether they be with friends, family, or society at large, we have an innate desire for emotions like affection, caring, gratitude, and respect. A worth relationship is established by these emotions, which is why they are referred to as "values." These emotions

should be satisfied, is what we hope. Only emotions have the power to satisfy these expectations; no tangible objects or things can.

We are happy when our expectations are realised. Furthermore, compared to satisfaction obtained through the senses, happiness generated from internal feelings of attachment, trust, respect, and gratitude for someone lasts longer with us. This is deeper satisfaction. They have a longer-lasting influence on how we feel internally and enable us to 'be' in a relationship. Trust, respect, gratitude, affection, caring, forgiveness, and other positive values or emotions are therefore crucial for upholding strong interpersonal relationships.



The key to living a life that one looks forward to may be to find harmony among the four categories.

Meaning (purpose of life):There is a long debate among adolescents about what should be the purpose of their lives or how to choose a career. Students need to find their life's purpose, which has been linked to having a better quality of life. One of the many psychological theories that may help students select the ideal career is the Japanese idea of ikigai. The Japanese believe that everyone has an ikigai, or what a French philosopher could refer to as a raison d'être. While everyone carries their ikigai within them, some people have found it while others are still searching. Each of us has our own ikigai, which must be found by perseveringly searching within. Those who were born on Okinawa, the island that has the most centenarians worldwide, claim that our ikigai is what motivates us to wake up each morning.

This idea (IKIGAI) states that to discover our life's purpose, we must respond to four questions:

- What do you genuinely love?
- What do you excel at?
- What is the world in need of?
- What jobs are there that you can get money for?

Accomplishment: Students feel delight, pride, and accomplishment when they succeed in reaching their life goals. Additionally, by making and completing objectives for themselves, they increase their sense of effectiveness and wellbeing. It inspires them and causes them to create new goals for themselves, giving their lives meaning and a sense of progress (Agota Kun, 2020).

Thus, it is extremely impossible to stay dry if one gets caught in a downpour. In a similar vein, it can be difficult to avoid being affected by the problems and harsh circumstances in the world. The key of experiencing inner peace, happiness, and satisfaction isn't to avoid life's obstacles; rather, it's to learn how to overcome them to live the kind of life that one wants to live. As in the Bhagavad Gita, chapter 2, verse 70, states that the ocean is remarkable in its ability to retain its undisturbed form despite being continuously flooded by rivers. The oceans receive a steady flow of water from all the world's rivers, but they never run dry or become overflowing. Thus, with the implications of the P.E.R.M.A. components of happiness, one can achieve the state of undisturbedness like an ocean despite being pressurized by today's fast-paced world.

Conclusion

It is concluded that with the help of happiness PERMA theory, students can learn the skills regarding how to filter the impurities (negativities) of their thoughts and emotions for keeping themselves healthy and happy even in challenging environments. As we know that mind is nothing more than a collection of thoughts. All our mind's information and experiences are only thoughts that our mind makes inside. There are variety of different thoughts and emotions when we discuss the mind. Some are useful, and we should take them and nourish them; some are harmful, and we should try to reduce them. In this context, Gaur Gopal Das says in Life’s amazing secrets, "Happiness does not come automatically." It means happiness is an option that must be chosen to live in harmony. This harmony will make our journey through life effortless and prosperous.

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Examining the Perceptions of Parents of Anganwadi Children regarding School Readiness

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Abstract

The number of students entering kindergarten today without the skills necessary for success is becoming an increasing concern across the nation. As their child's first and foremost teacher, parents play a crucial role in supporting the transition to school. The study aimed to find parents' views on the importance of school readiness and the factors affecting their perception. The sample consisted of 197 mothers of rural and urban Anganwadi children in Kerala. The samples were collected using a self-designed rating scale during the year 2022. Parents' perception of readiness is high or excellent according to the results of the study. Parents considered finishing a task the most significant readiness skill, followed by taking turns and sharing, identifying colors, and problem-solving skills. The study also attempted to find the influence of the locality, age, profession, income, and educational qualification of parents on views on readiness. It was found that there was no significant difference between rural and urban areas in views on readiness. The mean score of the variable did not differ between age groups, professions, income groups, or educational qualifications.

Keywords: *Early Childhood Care and Education, Integrated Child Development Scheme, Parental Perception, Preschool education, School Readiness*

Introduction

Early childhood care and education, which covers the years from birth to age 8, is critical because it takes advantage of a crucial moment for a child's brain development. This period, when it is of high quality, can help them achieve their full thrive (UNESCO, 2022). According to the New Education Policy 2022, over 85% of a child's brain development occurs in the first six years of life. The focus is on ensuring a child's holistic development by providing appropriate brain stimulation and care in the early years (Nithin Virmani, 2022).

The term school readiness refers to the individual capacities of children when they begin school. The concept encompasses a child's physical health and well-being, social and emotional competence, language and cognitive development, communication skills, and general knowledge

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(Guhn*et al.*, 2016) (Miller, M. M., & Kehl, L. M, 2019). Increasing achievement gaps over time are related to inequalities in school readiness at the beginning of preschool school (Taylor *et al.*, 2019).

Every family has a unique set of values, cultural expectations, and beliefs. Understanding why parents participate or do not participate in their children's preschool education is essential to strengthening the link between parental involvement and child preparedness (Firoz and Kamarul, 2021). Parental involvement in a child's early development is more critical and beneficial than in other phases (Konstantina, R and Adefunke, E., 2017). A parent's traits, such as their perspective on their kids' needs in terms of school readiness and development, directly affect their kids' outcomes (Kim et al., 2022).

How educational expectations play a role in children's academic achievement is helpful to comprehend the connection between what parents believe about school readiness and early academic outcomes. It is assumed that parents' values and expectations influence their behavior, which, in turn, impacts their children's performance (Puccioni, 2015). Parents, who are a child's first teachers, can aid in preparing the child for school (Ongoren S , 2021). Studies regularly cover issues concerning family involvement (Puccioni, J., 2018), family education (Mathis, E. T., & Bierman, K. L, 2015), and family traits (Burchinal, M., et al., 2018) (Son, S. C., & Peterson, M. F., 2017) that affect kids' preparedness for school.

By recognizing the importance of this stage of a child's development, the current NEP 2020 focuses on early childhood care education. Pre-primary education is the first stage of the educational system, so parents have a lot of responsibilities between the ages of 3-6. The child's readiness, the family's readiness, and the school's readiness are the three elements of readiness for pre-primary education that must be considered. As a result of this viewpoint and the researcher's expertise, this study is expected to promote parental awareness, make primary education more accessible, and be sustainable. The present study aimed to evaluate parent’s views on readiness and to find out the relation between location, parents’ education, parents’ profession, parents age and parent’s income with views on readiness.

Objectives of the study

- To evaluate parents views on readiness
- To find out the relation between location and views on readiness
- To find out the relation between parents education and views on readiness

- To find out the relation between parents profession and views on readiness
- To find out the relation between parents age and views on readiness
- To find out the relation between parents monthly income and views on readiness

Methodology

The area selected for the study was intentionally selected as Kerala. According to census figures from 2011, Kerala led the nation with a 94.00% literacy rate. 33115 Anganwadi centers were functioning in Kerala (DWCD, 2020). The number of preschool education beneficiaries from Anganwadi was 531096 as of 31.03.2010 (DWCD, 2020). The total area of Kerala is 38,852 km² including 31,253.20 km² rural area and 7,598.80 km² urban area (Indian Village Directory, 2023). Therefore, the area was suitable for conducting the study. Data was collected in the year 2022 through stratified sampling. Following permission from the ICDS program officer, data was collected in Edakkad, Iritty, Kuthuparamb, and Thalassery ICDS projects in Kerala. The sample size was a total of 197 mothers including 114 from rural and 83 from urban areas. The age of the parent ranges from 18 to 53 years. Professions are categorized into 6 groups, which also include unemployed mothers. Qualifications have been classified from illiterate to professional or honor degree. A self-designed rating scale was used for data collection. Statements were related to concepts such as finishing tasks, taking turns, sharing, problem-solving, the ability to use pencils and paint brushes, the adjustment in class, language and letters of the alphabet, empathy, general knowledge, and communication. Each statement on the scale has a score of 5,4,3,2 and 1. The reliability of the research tool was checked by conducting a pilot study with 30 samples. Face validity was determined with the help of experts. The data was analyzed using SPSS with mean, standard deviation, frequency, percentage analysis, ANOVA, and Z-tests.

Results and discussions

The results of the study titled “Examining Parents' Perceptions on School Readiness and Factors Influencing Their Perceptions’ are explained below,

Parent’s views on readiness

The first objective was to evaluate parent’s views on readiness. To find the level of parents views on readiness, the respondents are asked questions on five-point Likert scale. The responses are scored as 1 for ‘Hardly ever’, 2 for ‘once in a while**’**, 3 for ‘sometimes’**,** 4 for **‘**often’ and 5 for ‘almost always’. The total score of the 9 questions for all 197 respondents is found out, based on

which we calculate the mean % score of parents views on readiness $\left[MPS = \frac{Mean\ Score \times 100}{Maximum\ possible\ score}\right]$.

Table 1 Mean, Standard deviation, and z value for parents views on readiness

Variable	***N***	***Mean***	***Standard Deviation***	***Mean % score***	***CV***	***z***	***p value***
Views on readiness	197	37.43	4.80	83.17	12.83	10.745	<0.001

The mean percentage score of parent's views on readiness is 83.17% which indicate that level of parent's views on readiness is high or excellent. The CV indicates that this score is stable as the value is less than 20%. To test whether the sample information that we observe exists in the population or to verify that the level of parent's views on readiness is high or not, we formulate the hypothesis.

H_0: The level of parents views on readiness is equal to 75 percent of total score (H_0: MPS=75%)

H_1: The level of parents views on readiness is more than 75 percent of total score (H_1: MPS>75%)

To test the above hypothesis, we use one sample Z test, and the result is exhibited in Table 1. From the table the p value is less than 0.05 and z value is positive, which indicates that the test is significant. Hence we reject the null hypothesis and conclude that the level of parent's views on readiness is more than 75% i.e., excellent.

The relation between location and views

Second objective was to find out the relation between location and views on readiness. To find out the solution a hypothesis was formed,

H_a: The mean Score of views on readiness is the same for both respondents in rural and urban areas.

An independent sample Z test is used to compare the mean scores of variables of two different groups, that is, rural and urban areas. Hence a Z test was conducted, and the results are shown in Table 2. The result shows that no significant difference exists between rural and urban areas for Views on readiness as the p value in this case is more than 0.05. So, we accept the hypothesis H_a.

Table 2: Mean, Standard deviation and Z value for Location

Variable	***Location***	***N***	***Mean***	***Standard Deviation***	***Z***	***p value***

Views on readiness	Rural	114	37.39	4.66	-0.138	0.890
	Urban	83	37.48	5.02		

Relation between parent's age and views on readiness

To find out the relation between parents age and views on readiness ANOVA test was conducted.

Table 3: Mean, Standard deviation and F value for Age

The results of the ANOVA test depicted in Table 3 reveals that the statistical value of p is more than 0.05 for all the variables. So, we conclude that the mean score of the variable do not differ with age groups.

Relation between parent's profession and views on readiness

Variable	***Age***	***N***	***Mean***	***Standard Deviation***	***Z***	***p value***
Views on readiness	18-20	1	36.00		0.300	0.825
	21-31	121	37.19	5.06		
	32-42	69	37.81	4.36		
	43-53	6	38.00	5.25		

To find out the relation between parent's profession and views on readiness a hypothesis was formed: The mean Score of views on readiness is the same for different professions

Table 4: Mean, Standard deviation and F value for Profession

Variable	***Profession***	***N***	***Mean***	***Standard Deviation***	***Z***	***p value***
Views on readiness	Unemployed	154	37.10	4.67	1.696	0.137
	Craft & Related Trade Workers	33	38.97	5.41		
	Skilled Agricultural & Fishery Workers	3	39.00	5.20		
	Skilled Workers and Shop & Market Sales Workers	4	34.75	0.96		
	Clerks	2	36.00	0.00		
	Professionals	1	45.00			

The results of the ANOVA test depicted in Table 4 reveals that the statistical value of p is more than 0.05 for all the variables. So, we conclude that the mean score of all the variables do not differ with educational qualifications. Hence we accept the hypothesis H_b.

The relation between parent's monthly income and views on readiness

The hypothesis formed to find out the relation between parents monthly income and views on readiness was,

H_c: The mean Score of views on readiness is the same for different income groups

A one sample analysis of variance is used to test hypotheses. Income was considered to be the independent variable, which included seven groups (a) Upto 6174 (b) 6,175-18,496 (c) 18,497-30,830 (d) 30,831-46,128 (e) 46129-61,662 (f) 61,663-123,321 (g) Above 123,322. So, ANOVA was used to compare the mean scores of different income groups and the result is exhibited in Table 5.

Table 5: Mean, Standard deviation and F value for Monthly income

Variable	***Monthly income***	***N***	***Mean***	***Standard Deviation***	***Z***	***p value***
Views on readiness	Upto 6174	74	37.86	3.80	1.693	0.125
	6,175-18,496	49	36.16	5.03		
	18,497-30,830	22	38.05	4.25		
	30,831-46,128	8	38.38	4.31		
	46129-61,662	13	35.31	6.77		
	61,663-123,321	8	40.00	4.66		
	Above123,322	23	38.09	6.05		

Since the ANOVA test indicate that there is no significant difference exist among the income groups for Views on readiness we accept the hypothesis H_c.

The relation between parent's education and views on readiness

The final objective was to find out the relation between parents education and views on readiness

H_d: The mean Score of views on readiness is the same for different educational qualifications

A one sample analysis of variance is used to test hypotheses. In this case, different educational qualifications was considered to be the independent variable, which included six groups (a) Illiterate (b) Primary school certificate (c) High school certificate (d) Intermediate or diploma (e)

Graduate (f) Profession or Honors. So, ANOVA was used to compare the mean scores of different qualifications and the result is exhibited in Table 6.

Table 6 Mean, Standard deviation and F value for Education

Variable	***Education***	***N***	***Mean***	***Standard Deviation***	***Z***	***p value***
Views on readiness	Illiterate	1	34.00		0.452	0.812
	Primary school certificate	6	35.83	2.64		
	High school certificate	65	37.18	4.56		
	Intermediate or diploma	27	37.93	4.52		
	Graduate	78	37.40	5.13		
	Profession or Honors	20	38.30	5.35		

The results of the ANOVA test depicted in Table 6 reveals that the statistical value of p is more than 0.05 for all the variables. So, we conclude that the mean score of all the variables do not differ with educational qualifications. Hence, we accept the hypothesis H_d.

Conclusion

The study was conducted to explore the parents' views on school readiness and the factors influencing their perception. Parents were asked to score based on the importance of different skills and abilities that have to be possessed by children who are ready to go to primary school. The mean percentage score of parents' views on readiness is 83.17%, which indicates that the level of parents' views on readiness is high or excellent. There was no significant difference exists between mothers of rural and urban areas for Views on readiness. The mean score of the variable does not differ with age groups, professions, income groups, and educational qualifications. The study was conducted only with the mother's responses. Future studies can include the father's responses and the tribal population too. Despite the fact that readiness is widely accepted by educators and policymakers, families interpret it differently. Moreover, this study has significant implications for policy, especially in countries where pre-primary education is marginally prevalent.

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NEP 2020: A Sustainable Vision towards Reformation in Education Sector

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Abstract

Indian educational system attained a very engrossing inflection point along with the initiation of National Education policy (NEP, 2020). On one hand, it lays guidelines to shed the outdated model of education and on the other hand, new digital platforms of learning, teaching and innovative practices of teaching are expediting it to global standards to achieve the agenda of education for all and for creating a new benchmark in the sector of education. The new provisions of NEP 2020 provide assurance of a span-new approach of teaching and learning. A rigorously educated generation with an inflated literacy rate will be empowered to undertake social, economic, and political roles responsibly with an overreaching consciousness about the global issues. Such a dream is envisioned is embedded in the NEP 2020. It will provide a long-term spectrum not only to the students, teachers, parents but also the whole society in the form of sustainable career and balanced ecological environment. Along with this it will emphasis on holistic view of education and practicality of the concepts. The emergence of the corona virus has taught all of us to work towards such a platform which can provide us sustainability in both the ways-firstly to maintain a balanced give and take relationship with the environment by reducing the load on the natural resources and secondly, to innovate such methods of working that can be used when situations will be unfavorable, and livelihood can be earned in adverse circumstances.

Keywords: *NEP 2020, Green Jobs, Career Sustainability, Environmental Balance, Outcome based education, online teaching*

Introduction

The perspective of understanding is changing quickly on a very exhaustive scale. Various low cost and moderately skilled jobs could be substituted by machines due to drastic technological and scientific advancements like increase in usage of artificial intelligence, machine learning, and huge data interpretation (Aithal P. S., 2015). Consequently, the demand for skilled workers with expertise in data science, computer science, mathematics, and research along with multi-disciplinary skills in the natural and social sciences as well as the humanities will automatically

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enhance. The way we are depleting the world resources for energy, water, food, and sanitation, all this leads the climate change, rising pollution, and abolition of natural resources (Aithal P. S., 2019), (Aithal P. S., 2015). Further this kind of changes will lead the demand for new skilled workers, particularly in the fields of agriculture, climate change, ecology, human management, chemistry, physics, social science and biology (Aithal P. S., 2016), (Deb, 2020), (Aithal P. S., 2016). As India is growing and coming closer to be a developed nation and could be among the greatest economies of the world, the demand for the professionals related to humanities and arts could be increased (Aithal P. S., 2018), (Kim, 2005), (Papke-Shields & Boyer-Wright, 2017).

New platforms for learning and methods for teaching are continuously being developed using revolutionary digital technology and pedagogical advancements. NEP 2020 will provide vast opportunities for creativity and many other things (Sankaran & Joshi, 2016).The NEP 2020, the digital revolution, and innovative teaching methods can raise Indian education to international standards. It is the mission which is designed in the NEP 2020.When it will be completely implemented; it is expected to make education more holistic and rewarding (Agrawal, 2013), (Aithal P. S., 2019). It is crucial to comprehend the potential of evolution of Indian education system with the help of these three forces: NEP 2020, Digitalized & new platforms and methodologies of teaching and learning as we have recovered from the coronavirus outbreak and ready to begin with new system and courses(Porter, 1982), (Saroha & Anand, 2020).

NEP 2020, has strengthen the curriculum structure along with assessment criteria which focus on outcome based learning and new regulations promise a brand-new approach of learning with practicality (Aithal P. S., 2019), (Srinivasa Rao, Kumar, & Aithal, 2015).More interactive, explorative and collaborative experience can be gained by teachers as well as students. Along with this, research-based learning will lead the students to engage more in new and innovative ideas to excel in the field of research and development (Kumar, Prakash, & Singh, 2020).This paper is a conceptual and exploratory paper where reformation in education sector is explored through the sustainable vision of NEP 2020.

NEP 2020: Major Implements for Sustainability in Education Sector

Education is the fundamental activity for exploring the potential of human capital. For just and an equitable growth, quality of education and universalization of education is must along with scientific advancement, holistic approach, preservation of culture and development of nation. By developing the outcome-based learning platform, talent can be enriched, explored, and carved, to

compete with the world standards. New NEP will lead us to fulfil sustainable development goal (SDG4) of millennium, where India has dreamt of universal, equitable and inclusive education for all by 2030 (Pandey, 2019), (Aithal P. S., 2020). Such a towering goal needs to reconfigure all the settings of education system along with the perspective of all the stakeholders including teachers, universities, administrators, and students.

Digitalized Infrastructure

The infrastructure of educational institutions will need to be upgraded to make room for new facilities, which would be needed to implement the NEP- envisioned curriculum. For constant development and upgradation of teachers and principal at least 50 hours of workshop or seminars are required each year. This will modernize the faculty members' knowledge and improve their teaching methods (Kumar, Prakash, & Singh, 2020).E-learning systems like DIKSHA, SWAYAM, and SWAYAMPRABHA will provide e-content for teaching and learning. Blended learning will be an additional method of instruction. To produce synchronous and asynchronous lessons, teachers will need to arm themselves with the necessary technological skills (Markopoulos, Kirane, Piper, && Vanharanta, 2019), (Dodgson, 1991).

Table1: Attaining technical sustainability by infrastructural changes

S. No	Areas	Status before NEP 2020	Proposed Mechanism after NEP 2020	Sustainable Approach
1	Mode of education	Offline and Distance Learning	Online distance learning and hybrid mode of teaching	Reduce the burden on natural resources by using digital mode of teaching and learning Less plants/trees need to cut as less paper work is required. Less usage of roads, energy resources, transportation in travelling and getting sitting arrangements of offline classroom/library system.
2	Technology in education	No such planning was made separately for using technology to enrich teaching learning experience	NETF(National Education Technology Forum) will work as autonomous body to provide technical support to universities	
3	Online and Distance learning courses	Very few universities provide the same	All universities who can maintain quality of ICT tools and techniques will	

			provide such type of courses	Speedy action can be taken to recover the books and documents in extensively secured manner. Reduce irrelevant competition and efficiently use of land, manpower and energy resources Lead to equitable development in remote and village areas which will boost the students from all locations to learn and sustain in global market.
4	Library and technical Labs	Physical library are focused	Digital and Virtual labs& libraries	
5	Classrooms	Traditional classroom	Smart/Virtual class room	
6	Student Monitoring system	Paper work done by institutional software	Artificial Intelligence based student portal	
7	Institution campus	Small autonomous campus with no or low tech. campus surroundings	Big institutions with high-tech campus surroundings	
8.	Education institute in rural area	Less number in rural area with lacking resources	Compulsory opening in reserved area and availability of hybrid mode of education	

Digitalized and Integrated Regulatory body

As per the plan the higher education authorities like UGC, AICTE, INC, DCI etc. will be merged in single regulatory body i.e., Higher education commission of India (HECI). Two separate kinds of universities will be divided based on teaching-oriented universities and research-oriented universities. It will not only boost up the specialization of the faculty in their respective field but also provide a clear spectrum to the students that what kind of field they want to choose for their career path. Further National Research Foundation (NRF) will be established to fund the universities and projects to expedite and accelerate the speed of the research. Consolidation of autonomous universities and colleges is to bring that scattered campus under one regulation (Aithal P. S., 2020), (Deb, 2020).

Table No.2: Attaining Sustainability by changes in administrative structure

S. No.	**Areas**	**Status before NEP 2020**	**Proposed Mechanism after NEP 2020**	**Sustainable Approach**

1	Autonomy for designing of course content	No or low autonomy for preparation of course content	Full autonomy to design course content	Obsolete course content can be removed, and new technology or content can be added for learning. It will enable us to be at par as per global standards.
2	Curriculum design	Traditional with no updated content	Updated content with use of advanced techniques	
3	Assessment and Evaluation Process	Offline assessment and evaluation with less use of techniques	Online assessment with excess use of techniques	High-tech. evaluation process will present a true picture of student's learning and area of improvement.
4	Regulatory control	Regulated by different universities and colleges	Consolidation of autonomous universities and colleges	Scattered campus under one regulation
5	Dual degree programs	Not permitted	Permitted due to various online resources	It can save the time and energy of students and they can better understand the different concepts with the help of online resources and study material

Empowering teaching profession

Allowing teachers, the freedom to make decisions regarding the objectives and regulations of the institutions and to use professional judgement in choosing the methodology and the content to educate the children is known as teacher empowerment(Kenan & Simon, 2018). Teachers need authority and independence in doing their work when they are contributing in the structural reforms. If they get such type of freedom, they become more dedicated and motivated towards their profession and gain more confidence as a result which pushes them to work really hard (Jha & Parvati, 2020), (Sankaran & Joshi, 2016).

The NEP 2020 accepts that the status of Indian teachers is very apathetic and dis-satisfactory on the reality ground (Sankaran & Joshi, 2016). So, it gives proposal to completely renew the layout

of teaching profession and for that, it proposes a vigorous structure of tenancy on the merit –basis, salary structure and promotion strategy so that the outstanding teachers can be benefitted with incentives and recognized. The NEP 2020 urges that the teachers give shape the future of our children and the children are the future of our country, so they play a vital role in nation building by preparing the students the high quality of nation builders. Despite of playing an important role in creating good quality of human beings, which is a very hard nut to crack, the teachers do not get proper honor and recognition from the administration which is the biggest drawback in reality (Nair, Guldiken, Fainshmidt, & Pezeshkan, 2015), (Daugherty, 1995), (Kenan & Simon, 2018). Many challenges and problems like unfair employment conditions, appointment of many teachers on ad hoc or contractual basis, poor salaries, absenteeism, out of date teachers' knowledge and untrained teachers are faced in post-employment range while lacking highly committed and skilled faculty members on the other hand is another issue in front of all education institutes (Kumar, Prakash, & Singh, 2020).

Now NEP 2020 will provide full hand holding to the administration for improving the teachers' miserable conditions, training for upgrading the knowledge and skills of the faculty members, teacher recruitment and positioning, service conditions, working environment that are majorly the route cause for demotivation among qualified trained teachers. Hence, NEP: 2020 recommends many reforms in teacher education as well as proposes many guidelines to bring back the high respect and status for the teachers. It is hoped that the coming generation will come forward to create talent and skills to adopt profession as their career (Aithal P. S., 2020).

Table No.3: Attaining Sustainability by Empowering Teaching Profession

S. No.	Areas	Status before NEP 2020	Proposed Mechanism after NEP 2020	Sustainable Approach
1	Apply Eligibility criteria for selection	NET/SLET along with PG degree not strictly applied	Ph.D. degree compulsory applied	It will lead to uniformity in norms and quality of teachers, which leads to quality research in multi fields and innovation for a sustainable future.
2	Appointment Process	Reservation, bribe, or political influence-based	Meritorious based and transparent appointment process	

		appointment process		
3	Faculty Responsibility	Teaching only	Include teaching, research, and publication related activities	It will make a better position of India in the field of research on global stage when higher authorities engage them in research and publication activities. New and other teaching staff will feel encouraged to do more in research for future betterment and sustainability.
4	Academic upgradation	Technical knowledge and skills not required	Technical knowledge and skills are must	By this remarkable step a control or motivation mechanism can be brought in educational institutes.
5	Teaching Methodology	No use or low use of techniques in teaching methodology	Technology based teaching methodology	Digital repository of content

Regulation and Supervision Mechanism

The setting of standards/regulatory framework as well as the supporting mechanisms for governance, teaching, affiliation, and regulation must be evaluated to make improvements based on the knowledge and experiences gathered over the past ten years. From higher education, this review will work to guarantee that all students, especially those from disadvantaged and underprivileged backgrounds, would be able to access free, authentic, universal and compulsory

high-quality and equitable education(Kumar M. J., 2020), (Suryavanshi, 2020). For years, there has been too much regulation of higher education; too much has been tried, with too little success. The regulatory system's mechanism and disempowering nature has been riddled with very basic issues, such as significant power concentrations among few numbers of bodies, there is a chance of lack of accountability and conflict of interest. To re-energize and enable the higher education industry to grow, the regulatory system needs to be completely overhauled (MHRD, Govt. of India, 2020), (Suryavanshi, 2020).

Table No.4: Attaining Sustainability by Robust Regulation and Supervision Mechanism

S. No.	Areas	Status before NEP 2020	Proposed Mechanism after NEP 2020	Sustainable Approach
1	Gross enrolment ratio in higher education	26.3% in 2018	50% by 2035	New guidelines and regulations will improve the quality and position of Indian education system on the world platform. Higher enrolment of students will increase the illiteracy level and accordingly intellectual thinking. More students mean, deserving students can come forward who otherwise did not get chance due to any social and economic condition. Better supervision will push more research practices for
2	Higher education internationalization	No competition from foreign universities	Need to compete with top 100 universities of the world.	
3	No admission fee for meritorious students	No such Provision	Compulsory provision for 20% meritorious students	
4	Role of institution in transforming education system	Major focus on academic and bookish knowledge	Conducting research on disruptive technology including online courses, job-oriented education with technical knowledge and skill development	

				future sustainability, as research is the only method of sustainability.

Outcome based Learning

Teachers and NEP 2020can make significant contribution and reforms in pedagogy, to upgrade the level of learning outcomes (Pereira, Flores, && Niklasson, 2016). The NEP 2020 empowers teachers to choose the best pedagogy for their pupils and encourages them to ensure socio-emotional learning, which is an essential component of holistic development. Innovative teaching strategies used by educators to enhance student learning outcomes will be acknowledged, documented, and widely disseminated as best practices (Nair, Guldiken, Fainshmidt, & Pezeshkan, 2015), (Dodgson, 1991),.

To support the transformation of institutions into thriving, compassionate, and all-inclusive communities for administrators, parents, and students necessary changes are required to do. The management of the institutions/college has been instructed to make sure that all teachers and students have access to a sufficient and secure infrastructure, basic amenities, and resources for sports and recreation. Intensified focus on vocational courses from 26.3% to 50% by 2035 (Agrawal, 2013), (Saroha & Anand, 2020). Multiple exit entry points are provided for bachelor's degree programs to meet emergencies and flexibility in learning. Introduction of research-based activities in UG and PG level to expedite the research.

Table No.5- Attaining Sustainability through Outcome based Learning

Areas	**Status before NEP 2020**	**Proposed Mechanism after NEP 2020**	**Sustainable Approach**
Nature of learning	Theoretical knowledge-based learning	Concept based learning with practical knowledge, skill enhancement, outcome based, holistic approach	Outcome based learning will prepare them for earning a better position and livelihood in future, using either education or their skills.
Subjects and curriculum	Common for all	Curriculum can be customized as per the future perspective of the student	

Industry exposure	Industry visit only for namesake. There is gap between academic knowledge and industry needs.	Internship will be compulsory to complete the course and to fill the gap between industry and academia	Practical experiences not only boost up the knowledge and confidence to the students rather it will produce more logical thinking, rational and responsible students, and citizens.
Students assessment	Choice based assessment, semester, or yearly exams	Competency based evaluation with a focus on continuous evaluation	Students with intellectual thinking can excel in country or in abroad. Integration of professional and vocational courses will them job maker not the job seeker. It will also help in employment generation.
Focused outcome	To get jobs	To provide jobs as entrepreneur	
Integration of education	Lack of integration of professional and vocational education	Integrated professional and vocational education	

Research Expedition

According to NEP 2020, all the higher education institutes will emphasize on research and innovation by establishing Technology and development centers, centres in frontier areas of research, Start-up incubation centers, Centres for Industry-Academic Linkage, and Interdisciplinary Research Centres, including humanities and social science research(Marisha & Singh, 2017), (Kenan & Simon, 2018). To safeguard students' physical, mental, and emotional wellbeing, all the higher education institutes will feature expert academic and career counselling centres with counsellors on hand for all students (Saroha & Anand, 2020).

Table No.6: Attaining Sustainability by Research Expedition

Areas	**Status before NEP 2020**	**Proposed Mechanism after NEP 2020**	**Sustainable Approach**
Research funding	Multiple authorities provide more scope	Single authority to provide funding to	Research quality can be enhanced along with

	of corruption and disparity in funding	eligible candidate and no scope of corruption	practical implications for sustainable future of living beings, better ways to doing, lesser use of natural capital among many other things.
Research Focus	Single discipline	Multidisciplinary	
Funding for seed research	No such provision	Seed fund will be provided for private and government universities both	
Retired professor use for guiding Ph.D. scholars	No such provision	Appointments can be made for guiding Ph.D. scholars	

Conclusion

Benjamin Disraeli (Former Prime Minister of United Kingdom) had said, 'The key to success is to seize opportunities as they present themselves. The moment has arrived for Indian teachers to embrace this chance and take control of their own fate. To achieve this, dream big and put forth a lot of effort. Become a knowledgeable, passionate, and confident practitioner. Share your thoughts, experiment, and learn new things. Learn from the opinions, convictions, and life experiences of your fellow practitioners. Enjoy the trip by developing meaningful connections with the generations of students who will become lifelong learners because of their time in your classrooms. Children must not only study, but more crucially, they need to learn how to learn, in this rapidly changing nature of the job market and the global environment. Therefore, education needs to shift away from teaching knowledge to teaching students how to think from different angle critically, be creative, solve issues and learn multidisciplinary, also learn how to innovate, adapt, and take new information in domains that are new and evolving. To make education more comprehensive, integrated, learner-centred, intuitive, research-oriented, analysis-based, resilient, and, of course, fun, pedagogy must change.

The National Education Policy-2020 visualized for an India- that become the central educational and knowledge platform that can directly supports our country's transformation into a just and thriving knowledge society by offering top-notch education to everyone for a sustainable society. It incorporates ideas and practices from India's rich heritage. Many intellectuals, including Charaka

and Panini, Susruta, Aryabhata, Patanjali, Bhaskaracharya and Chanakya, among others, influenced the country's educational system. The nation should make significant offering to world's knowledge in a variety of fields, including astronomy, chemistry, biology, mathematics, metallurgy, architecture, and navigation, defense equipment, medical science and surgery, yoga, fine arts, and chess, through the work of illustrious individuals. With such a history, foundation, and support, the Indian educational system should be established and constructed. This education policy will give explosive pace to the technological development and create tech-savvy educators, businessman and entrepreneurs as well as student entrepreneurs. It is true that technology will make positive impact on education in various ways and some of which can be seen at the present time such as technologies involving Artificial Intelligence, Machine learning, block chain, smart boards, handheld computer devices, adaptive computer testing for student development. Few more techniques of educational software and hardware will help students in classroom learning and motivate them to do extensive research on both the technological and educational fronts. The policy's goal is to offer a multidisciplinary and sustainable approach by doing reformation in education section and by developing the human capital of the nation in long term.

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An Interface of AI with Human Rights: Gaps, Challenges, and Possibilities

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Abstract

Now a days technology is evolving faster than it is expected earlier. New technology comes into the picture day by day and poses a greater threat to the rights of human beings. Aswe know, human rights are available to individuals to protect their dignity and integrity. It is the lacuna of the legal system that it does not foresee the threat which might come.So, it is the responsibility of the state to address the problems which are posed by newer technology by enacting new laws because it is the fundamental responsibility of the state to protect the rights of persons. In past seven to eight decades the jurisprudence of human rights has evolved very significantly, its journey started from the first and second generation of rights to the third and fourth generations of rights to cope with the new development in the field of science and technology. It has been seen that the emergence of AI has posed a significant threat to the Human Rights of the Individual, especially the right to privacy and individual's data protection. This paper tries to highlight the problem that arises in the use of AI-driven technology.

Keywords: - *Artificial Intelligence, Human Rights, Right of Physical Integrity, and Life*

Introduction

There has been no precise definition of AI. Still, John McCarthy, one of the founders of AI describes it as the field that leverages computers and machines to mimic the human mind's problem-solving and decision-making capabilities. Artificial intelligence started in 1950 but currently, it has become well known because of its capability to solve human problems. The availability of big data, high-performance computing and breakthrough in learning algorithms increase the momentum of AI in the twenty-first century. Particularly deep networks have shown striking performance in different disciplines such as translation of languages, image classification, and synthesis.

AI is rooted in many tools and services such as web search, navigation to avoid traffic jams, and processing financial transactions. Sometimes it works latently which we might ignore or avoid. AI effectively penetrates many fields where only humans are supposed to work earlier. In recent times,

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more and more types of AI have been introduced, whether in the automobile sector, financial or other services, robotics, meta-verse, or health care sector.

However, technology is moving faster than its regulation. Nowadays the use of AI in day-to- day life increased and has created many problems. Modern-day AI systems have been lackingin transparency and have the potential to reflect biases. As we have observed technology is generally neutral but the deployment of AI in day-to-day life generated several issues that mayhave the potential to violate the fundamental principle of civil society.[5] This introduces the human rights in the picture which are fundamental rights that protect the dignity and worth of every human being. These rights are the right to express an opinion, the right to privacy, rightto be treated fairly by the state.

There has been a legal basis for these rights originated from the UDHR. The European Convention on Human Rights in India, the protection of Human Rights act, 1993, and Part IIIof the Indian Constitution. The deployment of AI itself stems from a new kind of Human Rights such as encouraging innovation, and investment and protecting the public while protecting our fundamental values.

Human Rights issues linked with the use of AI.

It has been assumed that technology can be neutral, but we have witnessed, that technology has had negative consequences and a negative impact on human rights. The positive and negative impact of technology, specifically the use of AI, must be considered when the negative consequences are being discussed. In a rule-based society, it is expected that every use of technology is regulated. When we talk about regulatory measures, we must think about negative and positive consequences. It should not hamper innovative inquisitiveness; on the other hand, it would not harm the tranquility of society. It must be balanced and proportionate.

The negative impact is considered in the first place. There are many AI providers, they can be developers of software but also private service providers, like financial service providers. The government can also be considered the AI service provider, it can use AI in social service, and social welfare schemes. The deployment of AI by governments in public sectors and social welfare schemes is probably more dangerous because it has the potential to affect many citizens. Of course, the use of AI private sector would affect a large section of consumers.

There are many risk areas where the use of AI has put a potential threat to Human Rights. The first area of risk, the use of automatic technologies could be autonomous vehicles or other forms

of transportation infrastructure. The most important risk possibly arises is the risk to physical integrity or life.

The second area of risk is the use of AI in the software product, which in many cases makes decisions about individuals, be it in the public sector or the private sector about welfare decisions. In this area, the most prominent type of risk arises and concerns from a human rights perspective are concerns are about differential treatment, discrimination in access to opportunities, the satisfaction of basic needs, and so on so forth. Broadly speaking how individuals are treated in society.

The third risk area engrained both the previous area of risk because it is so fundamental, whenwe doubt data-related concerns, like data protection, and privacy whenever personal data is involved in the deployment or operation of an AI system.

Potential harmful impacts associated with the use of AI.

Some potential or harmful impacts associated with AI aren't captured by thinking about human rights as a framework. There are two glaring examples of the potential negative impact of the use of AI. The first one, as we can experience from the use of AI, is the potential negative impacts at the societal level that are not apprehended because of the individual nature of humanrights. For instance, problems relating to misinformation and social media, electoral integrity,in the financial services sector, and issues around financial stability when it comes to automated trading and financial markets.[13]

And there are individual-level risks that are ethically important without rising to the level of rights violations or rights issues. [14] So, when we talk about profiling and making decisions about individuals. There have been all kinds of apprehension about whether it is reasonable and ethically justifiable to use certain information about individuals to make decisions about them.

In 2017 New South Wales Police used facial recognition technology to try and identify individuals on watch lists, i.e., Potential individual suspects of a criminal offence. That use of AI was challenged in the English Courts and decisions of the English Courts are significant inrelation to the use of AI in the criminal justice system because it was the first instance in whichAI has been challenged judicially anywhere in the World based on breach of human rightslaw. The UK Court of Appeals found it was a breach of human rights using AI in the Criminal Justice administration. In this case, a video camera was mounted on the police van scanning the faces of the individuals at a public event like football matches and sending alerts to the police when found matches on the

watch list. An individual named Bridges broughta case against the South Wales Police on the basis that this was an unlawful use of technology.Mr. Bridges was not someone on the watch list, he was an innocent person, but his data was used because his face was scanned by police even though he wasn't identified as someone on the watch list, but for a small moment his data was stored, and processed and identified by thetechnology as not being someone on the watch list. Mr. Bridges brought the challenge before the court based on the violation of Human Rights and Data Protection law. In the First Instance, the High Court rejected the contention of the Petitioner and decided the use of facial recognition was lawful. Mr. Bridges appealed that decision in the Court of Appeal, the Court accepted that appeal on three different grounds, two grounds related to data protection and public safety but the third one is quite significant it is related to Human Rights. Mr. Bridges contended that the use of facial recognition by the South Wales Police is a breach of Art. 8 of the European Convention on Human Rights i.e., right to respect for your private life. [15] The Court of appeal finds that Art. 8 of the European Convention on Human Rights was violated, the Court held the authority that using AI should sincerely think before using it.[16] The key point before the court of appeal was whether the South Wales Police has a legal basis in using facial recognition technology, as Art. 8(2) of the European Convention says no interference by public authority except in accordance with the law. The South Wales police said that there is a law that allows us to use facial recognition, but the Court of Appeal said that the law did not specifyin enough detail who could be subject to the technology and in what circumstances it could be deployed. The Court of Appeal said there was too much discretion available to the Police and therefore a breach of Art. 8 of the European Convention on Human Rights. So, there are many concerns relating to the use of facial recognition technology and perhaps the use of AI technology generally. As we say that AI is not regulated but this case shows that if we want tochallenge the use of AI by the public authorities, we can find some legal basis on which to challenge it. The Court's finding is quite significant that the use of facial recognition technology is a breach of Human Rights. This case shows that even if the use of AI is regulated,it could be challenged on the ground breach of the Human Right to private life.

Risk-Based Regulation of AI: - We do not have adequate tools and frameworks to deal with violations of Human Rights. There is a shift of approach from ethic based to Human Rights based in relation to AI. As we know Human Rights cannot capture everything and there are also concerns related to democracy and rule of law. The Council of Europe has established thead hoc

committee on AI and has tried to capture the three-dimensional impact on Human Rights, Rule of Law, and Democracy. Focusing on the Human rights implications, AI has encouraged the private and public sectors to go beyond voluntary measures and voluntary mechanisms and to think of mandatory mechanisms in which sanctions are considered. The human rights council has come up with human rights due diligence principles that focus on remedying human rights violations. [17] The three pillars developed by the UNDPs, the second pillar focuses on the role of the private sector in protecting human rights and remedying humanrights, and by the third pillar, and this can be done by the private sector even in the absenceof the mandatory mechanisms. The Private sector can identify and mitigate adverse human rights impacts emanating from the use of AI by using Human Rights sense and diligence. These human rights due diligence process has also been adopted by AI or technologies on a voluntarybasis over the last few years. In the last few years, the regulators have also made the human rights due diligence approach. The first step has been taken by the European Parliament commission's proposal for the regulation of AI, the commission has looked at AI-based technologies and divided four potential levels of risks to human rights. The first level they define as the unacceptable risks, those technologies which reach to the unacceptable level of risk should be banned according to the European Commission. The second level of risk is that,basically, those technologies should be subject to risk assessment or due diligence. The third level of risk is limited risk, in this level companies, are required to be more transparent with users about the fact that artificial intelligence has been deployed. And the last category is a minimal risk which according to the European Commission should not be subject to regulationsat all. So, AI-based technologies or companies could be identified as a risk to human rights andon this basis, they can be regulated.

Good Governance and AI: - We know that there is very limited access to information in the case of the use of AI, but we do not use that as an excuse and organizations do not use that as an excuse to implement good governance around AI. Knowledge is the most important criteria in the field of use of AI, lack of knowledge of human rights, knowledge of customers or the knowledge of supply chains is not so important rather it knowledge of the AI systems that we are using is important. Artificial intelligence as a technology is being adopted and usedat an increasing rate. The development of technology is phenomenal, the things that technologycan do are unbelievable, but the use of technology and its development is increasingday by day. That is why regulation of it is necessary, but there is a disconnect in organizationsbetween those who are deploying AI They

are IT companies or commercial teams and those having the responsibility to protect the organization and look after risk. So legal teams who are responsible for the compliance of regulations are not aware of the risks, they are not aware of the human rights challenge that could be brought, and this is because they do not understand and know the technology properly. As we know that technology is complex and innately opaque. Transparency and explain ability is the prime feature of good governance. A lot of AIsystems do operate within the black box and as humans, we cannot understand how it works. We must understand the technology which causing the risk. The organizations must understandthe risks to mitigate the risk including the human rights risk. They must know how the AI system works. In the South Wales Police case, the court is very critical of the use of AI Because, they do not understand very well about the AI system that they are using.

Potential Solutions: - Regulation may be at two levels that might be used. The first one is at the governance levers or mechanisms that might be used and the second is the practice of those measures effectively, for instance, if a company is required to conduct human rights due diligence assessment, what is required to make them successful? In Answer to the first question, there is a lot of activity at the national and international levels, at the European levelthinking about the regulation of AI. The challenge has been developed between proposals andmechanisms. The mechanisms or solutions that are developed at the national level and international levels need to ensure coherence between those. Secondly, there is the challenge that considers human rights focused, cross-cutting mechanisms, and so government actors suchas mandatory human rights due diligence assessment that aims to cover all human rights areas.But at the same time, there are also existing regulatory domains to touch on certain human rights aspects, for instance, data protection regulation or equality law in the UK. There is a pertinent question do we marry those existing issues' with specific rules and regulations frameworks with more general human rights focused frameworks? There is much complexity between on the one hand having frameworks that try to cover all AI use cases that we might call horizontal cases versus governance frameworks for specific use cases in specific sectors. Here, a more important question is ensuring the responsible development of AI systems and technologies, and these basically exist regardless of which governance framework one uses. The first foundational challenge for managing the risk of the availability of information aboutAI systems and AI. This information is quite hard to access from the initial point of time to developing and deploying the AI systems because it is often not recorded

and there is a standardprocess of recording them and because the supply chain of technologies is often quite complex. This is one of the challenges that needed to be addressed with the ways of making sure that there is documentation in a standardized and consistent rate of information is available when needed. The second challenge is around both the users of the system and procurement of systems, they must be informed about the system and whether to buy or not. Certainly, there is a need for independent verification and assurance in the market for AI systems. In many areas of AI systems for both users and developers, there is a need for independent forms of auditing or certification. This provides voice and assurance to the publictrust that goes beyond what users and developers themselves proclaim about the systems. Thefinal question is about the accountability and remedy if the things go wrong. There should structurally set up that makes sure that the affected individuals have access to remedy.

Legal Approaches for managing AI Systems: The greatest drawbacks that regulations does not keep pace with the technology. AI still a developing field and the risk that are posed using AI Systems are not well recognized, this makes the authority to make a design of regulatory approaches. Regulating the AI is very complex topic and there are very diverse views regarding to what extent it could be regulated and whether regulation would be effectiveor not because day by day AI Systems are evolving.[18] So there is need balance governance measures depending on the use of AI and the risks involved.

Around the world countries have been introducing a broad framework through principle and guidelines to design, development, and use of AI systems. The European Union has issued a non-binding document *Ethics Guidelines for Trustworthy AI* that proposes 7 key requirementsthat AI systems should comply to prove itself trustworthy. Another step that has beentaken by the Monetary Authority of Singapore the 'FEAT Principles' for AI in financial services which serves as a non-prescriptive document to enhance and encourage the adoption of fair, explainable, ethical, and accountable AI.[19]

Binding rules and regulations of the parliament are generally used for well-understood reasons. Most of the instruments cover data protection as well as AI systems. In 2012 the government of Singapore released the Personal Data Protection Act 2012 which comprises of various rules relating to the collection, use, disclosure, and care of personal data.[20] The EU has issued General Data Protection Rules 2016 for the protection of personal data and highlighted the necessity of 'privacy by design' when developing automated design. In 2019 USA, proposed the Algorithmic

Accountability Act that obliges commercial bodies to assess the high-risk systems that involve personal information or make automated decisions, such as systems that use artificial intelligence or machine learning.[21]

India does not have a framework for the use of AI systems. It is necessary to provide such guiding principles for various stakeholders in the responsible management of Artificial Intelligence in India. There are certain specific frameworks that have been identified for the development and use of AI. In 2019 SEBI issued circulars to Stock Brokers, Depository Participants, Recognized Stock Exchanges, and Depositories. In May 2019 every Mutual Funds/Asset Management Companies have to report requirements for Artificial Intelligence and Machine Learning applications and systems offered and used. This reporting is making aninventory of AI systems in the market and guide future policies.[22] Various efforts have been taken to regulate and control personal data in deploying AI systems like in National Digital Health Mission and public distribution systems. NITI Aayog issued technical framework for the people to control their personal data and the means to leverage it to avail services and benefits through Data Empowerment and Protection Architecture (DEPA).[23] Indiadoes not have far-reaching legislation, especially for the use of AI. The Data Protection Bill 2019 was designed as wide-ranging legislation covering all the aspects of privacy protections that AI solutions need to comply with. One more effective piece of legislation in the field of data protection is the Information Technology Act, of 2000. The provisions cover limitations on data processing, security safeguards, and the provision of special provisions relating to vulnerable users such as children. The provisions of the IT Act, and the rule made therein (Reasonable security practices and procedures and sensitive personal data or information) Rules, 2011 establishes a technology-agnostic regime for the protection of sensitive personal information for all bodies corporate.

Conclusion

Regarding the compatibility of Human Biases and AI Biases. It is difficult to holdthe AI system more at a high standard as compared to the human systems. But here is the mostimportant question is that the many of the question of AI biases is just the manifestation of thehuman biases. The question is how law can deal with the biases, in some of the situation we doalready have the law to deal with, just like ant discrimination laws dealing with information technology and Human Rights issues. In recent times, probably we are moving towards regulation dealing with the anti-discrimination caused using AI systems. We need to tackle the causes of discrimination through

the deployment of AI systems. And we need to regulate how the data size is maintained and the way AI is trained. In some cases, AI has animpact on a much larger number of people compared to biased individual decision-makers, which is why we should hold AI to high standards of regulations. But here we must know the meaning of the bias is not static, it is dependent upon the context in which it is used such as in legal, political, or psychological terms. So before regulating AI biases weshould fix the meaning of biases in an objective term.

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Construction and Validation of an Academic Resilience Scale

Saswati Chutia* Jagat Swargiary**

Abstract

The term "resilience" which is context-specific can be characterized as a person's capacity to thrive in the face of adversity and hardship (Rutter, 1993). Thus, academic resilience is the capacity of a student to handle pressure, difficulties, and challenges in the classroom. For pupils to succeed academically and to retain psychological wellbeing, academic resilience is crucial. In today's competitive world, students frequently experience academic setbacks, failure, and obstacles; however, how they respond to these difficulties and overcome them is vital to their long-term academic performance and general welfare. Students that are academically resilient strive to succeed in challenging circumstances rather than becoming catastrophized by them; they see these challenges as learning opportunities. Resilience is undoubtedly one of the fundamental traits that distinguish academically successful individuals from those who struggle in school. Students' academic resilience must be evaluated to determine the best course of action for those pupils who need to increase their resilience. Because several scientific investigations have established that resilience is a dynamic attribute that can be learned. A scale measuring academic resilience has thus been developed and validated as part of this study.

Keywords: *Academic Resilience, Construction of a scale, adolescence, mental health of adolescence, positive psychology*

Introduction

Resilience is a context specific term. It can be defined as a person's ability to flourish despite hardship, and adverse circumstances. Academic resilience refers to "student's ability to deal with academic challenges, setbacks and pressure" (Martin & Marsh, 2009) . It is defined as the ability to overcome adversity which threaten or challenged student's educational development. Thus, in an academic context "resilience is characterized by those students that present with the capacity to reverse academic misfortune and failure and succeed while others continue to perform poorly and fail" " (Marsh, Academic resilience and academic buoyancy: multidimensional and hierarchical conceptual framing of causes, correlates and cognate constructs, 2009)" . Alva used

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the term academically vulnerable for those students who sustain "a high level of achievement, despite conditions and events that place them at risk for academic failure" (Alva, 1991). Academic resilience is crucial for students to succeed academically and to be capable of handling any academic difficulty. In today's competitive environment, academic setbacks, failure, and challenges are common to the students but how they handle these challenges and get through them is crucial to their long-term academic success and overall wellbeing. Academically resilient students aim to flourish in difficult situations rather than catastrophizing about them; they regard them as learning opportunities. It is also true that resilience is one of the key characteristics that set academically successful students apart from academically unsuccessful ones. Resilience is a dynamic quality that can be acquired, which is fascinating and exciting.

Academic resilience means "the likelihood of success in school despite environment adversities brought about by early traits, conditions, and experiences" (M. C. Wang, 1994) .

Masten (2001) states, "resilience refers to a class of phenomena characterized by good outcomes in spite of serious threats to adaptation or development." (Garmezy, 1990)

Studies have found that several factors contribute to building resilience among students. These factors include- 1. Personal factors such as motivational factors, self-beliefs, emotional relationships, social skills, etc. 2. Family factors such as parental expectations, parental involvement, total family environment, etc., 3. School factors such as school organizational factors, school atmosphere, teacher behavior, etc. (Kottalil, 2011) .

In this scale an attempt has been made to focus on internal factors that promote academic resilience. The factors that are considered for developing the scale are-

CONFIDENCE (self-efficacy): It is the belief and confidence of the students in their capacity to produce good academic outcomes, to perform well in schoolwork, and to handle the demands of schoolwork. It refers to students own assessments of their potential for academic success. It is having a clear expectation and a firm belief in students in their ability to excel well in academic field. It also includes confidence in one's capacity to influence future academic objectives and to perform to the utmost of one's capacity.

COMMITMENT (persistence): It is the commitment or perseverance of pupils when dealing with the difficult question, or how hard students attempt to complete difficult schoolwork. Commitment is working hard and trying, never giving up when facing a challenging academic problem and

embracing and utilizing feedback. It also refers the mental readiness of the students for repetitive correction of any academic assignments.

COORDINATION (planning): It includes planning. It is the process through which students organize their studies, homework, and other tasks. It also refers whether students can keep track of their progress or not. It also describes how students schedule and use their study time.

CONTROL: It basically refers to emotion regulation as well as student's impulse control. Emotional regulation includes recognizing and balancing emotions as well as maintaining control of them under pressure. When things don't go as we plan or when something unexpected happen we tend to lose our temper and burst out. This is an instinctive emotional response. It reduces one's ability to think critically and to recognize the opportunities and to solve the problem in a novel way. Additionally, it also refers students' ability to maintain focus in stressful situations or to resist temptation while engaging in academic pursuits.

COMPETENCE: Competence is the term used to describe student's academic abilities or academic skills that support academic success. These abilities include the capacity to analyze any academic content as well as the ability to complete all the question answers in exam on time and capacity to submit the prescribed homework within the stipulated time.

CONNECTION: It refers to relationship with teachers, peers, and parents. Student's handle difficult academic problems and challenges when they sense a supportive environment from their peers and teachers and parents. Also, students who have strong relationships with their teachers and peers experience a feeling of connected or related to the school, which motivates them to do well in their academics.

Objective: The aim of this study is to develop an academic resilience scale for adolescent students.

Preparation of the draft Academic resilience scale: The steps taken to construct the academic resilience scale are explained below.

- Some scales related to resilience has been consulted and taken as guide for the construction of the present scale. Following scales have been consulted for the construction of the present scale
    - Academic Resilience Scale developed by Mihir Kr. Mallick and Simranjit Kaur. (Kaur, 2016).
    - Resilience Scale developed by Connor-Davidson (Davidson, 2003).
    - Academic Resilience Scale (ARS-30) by Simon Cassidy (S.Cassidy, 2016)

- From the study of the related literature following dimensions of Academic resilience have been found out and taken for the construction of the present Academic resilience scale.

Table-1: Distribution of items on different dimensions of Academic Resilience Scale

Sr. No.	Dimensions of Academic Resilience Scale	Item No.	Total Items
1.	Confidence	1, 2,3,4,5,6,7,8,	08
2.	Control	17,18,19,20,21,22 ,23, 24, 25	09
3.	Commitment	13,14,15,16, 26, 27, 28	07
4.	Competence	9,10,11,12,	04
5.	Connection	29, 30, 31, 32, 36	05
6.	Co-ordination	33, 34, 35, 37, 38, 39, 40, 41	08
Total			41

The chosen items were randomly arranged in a single format to create the final draft.

Scoring: It is a five-point Likert scale. The scale has five response options, two of which are on the extremes and one of which is neutral, linked in the middles. According to a five-point rating system, the responses are “Strongly Agree”, “Agree”, “Undecided”, “Disagree”, and “Strongly Disagree”. Table-2 shows the scoring process of the scale. The total score of each dimension is derived by summing the scores of the items associated with that dimension. Range of scores for each dimension of Academic Resilience is given in the Table-2.

Table-2 Scoring of Academic Resilience Scale

Response	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
Scores	5	4	3	2	1

The necessary instructions were prepared and attached at the start of the scale.

The draft Academic Resilience Scale was given to 144 pupils in the Jorhat district's secondary schools to establish the time limit and it was found that they took 40 minutes in average to respond to the items. So, 40 minutes was fixed as time limit for responding the draft academic resilience scale.

Academic resilience scale:

The Academic resilience scale was developed by the investigator after reviewing many existing scales. Though a few scales are available on academic resilience the investigator decided to construct the scale. This decision was taken because no specific scale of academic resilience was found satisfactory.

First Try Out

- **Sample:** To test it out, 144 pupils in class X from 03 high schools in the Jorhat district received the draft academic resilience scale. Purposive sampling was used to choose the schools for the tryouts, and the sample included all the class X pupils from the chosen schools**.**
- Instruction: The draft academic resilience scale's introduction contains all the necessary instructions. Where necessary, verbal instructions were also given.
- Time limit: 40 minutes were allotted to finish the responses, according to the time limit.
- Scoring: When testing the proposed academic resilience scale, the scoring approach previously described was used..
- Administration of the proposed academic resilience scale: The steps taken to administer the proposed academic resilience scale are explained below-

  (a) The investigator started some cordial conversations with the respondents to establish a good rapport.

  (b) The proper sitting arrangements were made, and the respondents were given the draft academic resilience scale. It was asked to the students to carefully study the guidelines. For their convenience, necessary oral instructions were also given. The draft academic resilience scales were collected after 40 minutes from all the responded.

The Academic Resilience Scale's dimensions were chosen by the researcher. For the complete scale, 50 items were initially written. Seven experts from the domains of education, sociology, psychology, and language were given the initial draft of the 50 items to review for language effectiveness, relevance, and any ambiguities. A few items were removed, and a few others were modified for to better reflect their ideas for comprehension. 41 items were kept for the second draft.

Item Analysis: The second draft was given to a sample of 144 students from the secondary schools in the Jorhat district to assess the applicability and homogeneity of the items. Each item prompted

a response from the subjects, which may be stated as "Strongly Agree", "Agree", "Undecided", "Disagree", or "Strongly Disagree". Scores for these questions were 5, 4, 3, 2, and 1, respectively. All 144 response sheets were organized in descending order based on the overall score of the subjects. After that, the two groups were selected – 27% of the high score groups (top 39 students) and 27% of the low score groups (bottom 39 students). These two groups were taken into consideration and subjected to t-test computation. Only those items were retained which were found significant either at 0.05 level or 0.01 level. The significance of mean difference between 27% upper and 27% lower score group is given below in Table-3.

Table-3: Item analysis based on the mean difference between the lower (27%) and upper (27%) criterion groups of the Academic Resilience Scale

Item No.	Group	Mean	t-value	Item No	Group	Mean	t-value
Q1	upper	4.85	5.211	Q7	upper	4.79	6.656
	lower	4.15			lower	3.69	
Q2	upper	4.69	7.300	Q8	upper	4.54	6.463
	lower	3.44			lower	3.54	
Q3	upper	4.72	6.865	Q9	upper	4.15	6.078
	lower	3.49			lower	3.08	
Q4	upper	4.13	3.683	Q10	upper	4.67	6.486
	lower	3.33			lower	3.38	
Q5	upper	4.36	3.433	Q11	upper	4.59	5.427
	lower	3.59			lower	3.49	
Q6	upper	4.64	6.955	Q12	upper	4.72	6.463
	lower	3.41			lower	3.62	
Q13	upper	4.51	6.078	Q25	upper	4.44	4.743
	lower	3.03			lower	3.38	
Q14	upper	4.67	5.454	Q26	upper	4.74	6.277
	lower	3.46			lower	3.41	
Q15	upper	4.64	6.398	Q27	upper	4.74	6.787

	lower	3.28			lower	3.44	
Q16	upper	4.74	6.013	Q28	upper	4.67	5.309
	lower	3.56			lower	3.46	
Q17	upper	4.13	3.094	Q29	upper	4.69	7.629
	Lower	3.38			lower	3.38	
	Lower	3.38		Q30	upper	4.15	4.810
Q18	upper	4.41	3.407		lower	3.18	
	lower	3.62		Q31	upper	4.23	3.524
Q19	upper	3.82	2.261		lower	3.41	
Q20	lower	3.15	4.814	Q32	upper	4.56	5.513
	upper	4.56			lower	3.46	
Q21	upper	4.31	5.408	Q33	upper	4.26	6.023
	lower	3.03			lower	3.05	
Q22	upper	4.56	4.860	Q34	upper	4.74	7.890
	lower	3.51			lower	3.46	
Q23	upper	3.72	2.640	Q35	upper	4.67	7.566
	lower	2.95					
	upper	4.62			lower	3.08	
Q24	lower	4.62	6.024	Q36	upper	4.62	7.455
	upper	3.44			lower	3.18	

Q37	upper	4.56	6.084	Q40	upper	4.26	5.157
	lower	3.21			lower	3.03	
Q38	upper	4.77	7.083	Q41	upper	4.64	8.249
	lower	3.18			lower	2.74	
Q39	upper	4.33	4.368				
	lower	3.38					

Final form of Academic Resilience Scale (ARS)

All the 41 items were found significant either at 0.05 or 0.01 levels, as a result the entire item were kept for the final form of the scale. Distribution of 41 items under each dimension of Academic Resilience in the final form is given in Table-4.

Table-4: Distribution of items on different dimensions of Academic Resilience Scale

Sr. No.	Dimensions of Academic Resilience Scale	Item No.	Total Items
1.	Confidence	1, 2,3,4,5,6,7,8,	08
2.	Control	17,18,19,20,21,22 ,23, 24, 25	09
3.	Commitment	13,14,15,16, 26, 27, 28	07
4.	Competence	9,10,11,12,	04
5.	Connection	29, 30, 31, 32, 36	05
6.	Co-ordination	33, 34, 35, 37, 38, 39, 40, 41	08
Total			41

Reliability of the Scale: To compute the reliability of the Academic resilience scale the investigator adopted the following procedure-

- The internal consistency reliability of the scale was established with the help of Split-Half, test-retest, and Cronbach's alpha (Cronbach, 1970) methods by administering the Academic Resilience scale on a representative's sample of 144 students selected from Jorhat district.
- Split-half reliability was calculated by using Spearman-Brown Prophecy (Spearman, 2010) formula. It was found to be .816, which is significant at 0.05 .
- Cronbach's Alpha (Cronbach, 1970) was also used to calculate the reliability of the scale. The value obtained by applying Cronbach's Alpha was 0.907.
- To calculate the test-retest reliability the academic resilience scale was again administered on the try-out group of 144 students. The retest was administered after a gap of 30 days of the first test. The test-retest reliability was calculated by correlating the first test score and retest scores of the sample. The co-efficient of co-relation was 0.945, and it is significant at 0.01 level of significance.

Validity of the Scale: Based on the scale's face validity and content validity, the scale's validity (ARS) was determined. By submitting the scale to the 7 experts for review and validation, the

scale's face and content validity were established. Inter-correlations among the different dimensions of the Academic resilience were measured to calculate the construct validity.

Table-5: Cronbach's Alpha

Sr. No.	Dimensions	Cronbach's Alpha	No. of Items
1	Confidence	0.716	08
2	Control	0.670	09
3	Commitment	0.687	07
4	Competence	0.641	04
5	Connection	0.622	05
6	Co-ordination	0.802	08

Table-6: Range of Scores of each dimension of Academic Resilience

Dimensions of Academic Resilience	Total No. of Items	Range of Scores
Confidence	08	08-40
Control	09	09-45
Commitment	07	07-35
Competence	04	04-20
Connection	05	05-25
Co-ordination	08	08-40
Total	41	41-205

All the items of the scale are positive. There is no negative item on the scale.

Statistical Results: Based on the scores of the 144 students, based on the scoring presented in the Table-3 . the statistical result got has been presented in the Table-7.

Table-7: Statistical Results

N	**Mean**	**SD**	**Range of Score**
144	163.23	19.27	41-205

Instructions for Administration

While administering the Academic Resilience Scale, the following safety measures need to be taken into consideration:

1. The respondents should be given appropriate seating arrangements.

2. A minimum facility of writing material i.e., pen/pencil should be arranged for the respondents.
3. There is a time limit of 45 minutes for the completion of the scale.
4. The test's administrator should develop a good rapport with the participants to encourage them to give honest and open responses.
5. It is important to remind respondents to provide their responds to the questionnaire only.
6. It may also be emphasized that there is no wrong or right answers to the statements and their answers will not influence their academic result. The scale is meant to find out the differences of students on academic resilience and is not meant to rank good or bad students.
7. It should be clearly informed to the students that they should give responses very honestly.
8. . The test administrator should make sure that every question has been properly answered before collecting the response papers.

Norms: Based on the statistical result presented in Table **-7**, Z- score norms have been developed and the same has been showed in Table-**8**.

Z score norms for interpretation of the Level of Academic Resilience of students have been presented in Table-8.

Table -8: z-score Norms for Level of Academic Resilience Test

Mean: 163.23 **SD: 19.27** **N: 144**

RAW Score	**z- score**	**RAW score**	**z- score**	**RAW score**	**z-score**	**RAW score**	**z-score**
130	-1.72	157	-0.33	171	+0.41	186	+1.18
131	-1.67	158	-0.27	172	+0.46	187	+1.23
132	-1.62	159	-0.22	173	+0.51	188	+1.29
133	-1.57	160	-0.17	174	+0.56	189	+1.34
134	-1.52	161	-0.12	175	+0.61	190	+1.39
135	-1.46	162	-0.06	176	+0.66	191	+1.44
148	-0.79	163	-0.01	177	+0.71	192	+1.50
149	-0.74	164	+0.04	178	+0.77	193	+1.54
150	-0.68	165	+0.09	179	+0.82	194	+1.60

151	-0.63	166	+0.14	180	+0.87	195	+1.65
152	-0.58	167	+0.20	181	+0.92	196	+1.70
153	-0.53	168	+0.25	182	+0.97	197	+1.75
154	-0.48	169	+0.30	183	+1.03		
155	-0.43	170	+0.35	184	+1.08		
156	-0.38	171	+0.41	185	+1.13		

Table-9: Norms for Interpretation of the Level of Academic Resilience

Sr. No.	Range of RAW score	Range of z score	Level of Academic Resilience
1	197 & above	+1.72 & above	High
2	175-196	+0.58 to +1.71	Above average
3	152 to 174	-0.57 to +0.57	Average
4	131 to 151	-1.71 to -0.58	Below average
5	130 & below	-1.72 & below	Low

The final Academic resilience scale contains 41 items, and all items are favorable. The dimensions considered for the scale are Confidence, Control Commitment, Competence, Connection, and Co-ordination. (Connor, 2018; Chakraborty, 2019; Kottalil, 2011; S.Cassidy, 2016).

The scale contains satisfactory score of reliability and validity.

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