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From the Desk of Editor–in–Chief

The undersigned takes pleasure in bringing out the 16th issue of 'JOURNAL OF EDUCATION AND DEVELOPMENT'.

This issue contains articles on various aspects of different subjects of the changing world. To keep the length of the issue within reasonable bounds, it has been necessary to be very selective in the incorporation of articles. Some of the articles still remain in the queue to get appropriate place in the next issue of the journal. The editor acknowledges his debit and gratitude to all members of the editorial board and to all contributors.

Suggestions for further improving the journal are earnestly solicited and will be cordially received.

Kalyani, West Bengal
31st December, 2024

Editor-in-Chief
JOURNAL OF
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JOURNAL OF EDUCATION AND DEVELOPMENT
C O N T E N T S

SIGNIFICANCE ROLE OF ARTIFICIAL INTELLIGENCE IN TEACHER PROFESSIONAL DEVELOPMENT THROUGH DIGITAL AGE

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ABSTRACT

Artificial Intelligence (AI) has been part of every citizen's life for several years. The emergence of generative AI accessible to all has raised discussions about the ethical issues particularly in education. Gen AI tools generate content according to user requests but students using these tools ethically and safely. That teacher professional development (TPD) is an essential key trigger in adopting these emerging technologies. This will present an integrative review that discusses the components of TPD that may empower teachers to guide their students towards the ethical and safe use of Gen AI respectively. According to the review one key component of TPD should be AI literacy which involves understanding AI its capabilities and limitations and its potential benefits and drawbacks in education. Another essential component is hands-on activities that engage teachers their peers and students in actively using these tools during the training process. This paper aims to present the idea development and field of artificial intelligence (AI) considering its impact on teachers' professional development. In addition to the technical applications that support AI in the educational sector and the problems facing its uses the importance of artificial intelligence in the education field has been addressed and previous study cases that competed AI with commentary have been identified. This uses an analytical approach based on a theoretical survey of previous literature to answer the questions. The results

refer to a set of intelligent applications as well as areas of artificial intelligence that can serve the professional development of teachers. Furthermore to design educational software based on artificial intelligence to rise the qualifications of teachers build training pathways based on artificial intelligence for all those working in the field of education. To Provide accurate databases in all areas' education including human resources and provide educational training environments that add to improving the part of artificial intelligence applications in the professional development of teachers and link databases within a global network that helps to challenge teachers' career paths.

Key Words: Artificial Intelligence, Teacher, Professional Development, Digital Age.

INTRODUCTION

Intelligence has been a characteristic of human beings since ancient times where intelligence was considered the greatest proof of the creator's selection and the highest of human beings in relation to all other creatures. It is natural that certain characteristics support this selection. The human mind is the most important and the first of these signs. Over time it has become evident that the source of man's strength and distinction from other creatures is his intelligence. Scientists have studied the characteristic of intelligence in man and how it can be transferred to the machine. They take advantage of this to perform tasks at the level of human intelligence and the performance of the machine and its unforgettable power in every aspect of intelligence. His work is limited to traditional tasks far from creativity and innovation. But with the dawn of the third millennium which has seen fundamental changes with positive results in the pattern of the relationship between human intelligence its benefits and the machine based on modern technology and after the spread of computers and their use. The administrators' emphasis on neural networks and the orientation towards systems based on knowledge representation continued to work during the (1970). With the beginning of the (1980) after the announcement of the Japanese

project that sought the fifth generation of computers, there was a big boom in the wings of artificial intelligence. Therefore it focused on extracting knowledge from experts rather than focusing on complex inferential processes which suffer from a lack of practical applications. The biological or electronic understand perceive predict and interact with a larger and more complex world than the brain itself. When searching for the mayors' answers to the questions we find that the artificial intelligence is based on solid and firm foundations. Therefore the trend towards artificial intelligence appeared to simulate human intelligence and study its mental capabilities. While trying to comprehend the cycles of the human intellect in a manner that leaves from the study of philosophy psychology and anatomy as it deals with the human brain as a branched phenomenon that unifies its data in certain unique characteristics. Thus it becomes clear that artificial intelligence seeks to build intelligence to the degree which means understanding this insight. Among the most significant reasons for studying artificial intelligence is what resulted from the utilization of computers with regard to identify different shapes symbols and models. Where artificial intelligence systems appeared which are characterized by the transfer of part of the methods of human intelligence to the wild systems of computers which thus helps to assemble the exchange of experience that includes those of the human mind. It is said that AI programs offer numerous advantages in various zones of contemporary life that have acquired digital character based on advanced technology. Nobody can anticipate the subtleties of things to come obviously computers with human intelligence will have an enormous and significant effect on the eventual fate of human daily life. In the manufacture of new patterns and stereotypes about the scientific and civilization development in the human future where artificial intelligence is an overly attractive field of interest for scientists in the modern era only. Scientists in general and education in particular are interested in artificial intelligence this field that is witnessing innovations and continuous developments as it will have a positive role in the future. It is centered around the structure of a machine capable of

participating human in behaviors described as smart and humanity has become we use many systems that depend on this science in the north of the economy medicine engineering training of armies games education. Through highly sophisticated technology things that humans in the recent past have been paying exorbitant amounts can be identified prohibiting long times that can last months or years and travelling thousands of kilometers on land and sea miles to reach them. But through the use of advanced technology all of this has been easily accessed with ease and accuracy. The E-learning and online learning have great benefit because of their clear impact in raising the level of cognitive achievement. Provide group learning opportunities with a group of students working to solve issues in specific environments. The important things in building smart learning systems appear by reducing the time and cost of designing and developing this grievance among the strategies put forward and the use of tools.

With the gradual integration of information technology and education and teaching the innovative application of education has brought new opportunities for teacher evaluation and professional development. This integrates recognition in action and reflection in practice with artificial intelligence technology and establishes a new frame work for teacher development evaluation based on teaching reflection and integrates process diagnosis end reflective practice supported by intelligent technology into the teaching evaluation link. It solves the long standing practical problems of conflict between evaluation and feedback and disconnection between feedback and development. In the past teaching evaluation so as to provide theory and application reference to the execution of educator improvement assessment with regards to intelligence instruction.

Referring to previous studies related to the subject of our research there are not many investigations that tended to the part of AI in the professional development of teachers where most of studies focused on addressing the topic of artificial intelligence and highlighting its role in

educational applications contributing to the provision of high quality curricula educational environments that develop different thinking patterns especially higher thinking skills in the student. The previous studies which are in agreement with the current study in its general objectives to recognize the importance and the use of applications its effectiveness in self-learning. Agree on the necessity to adopt artificial intelligence techniques in the educational process in general. While the current study differs from these studies in the scientific method followed in the society and the literature of previous studies that was utilized in the preparation of the theoretical background of AI. It has used previous studies in the use of it on the professional development of teachers.

STATEMENT OF THE PROBLEM

The increasing use of artificial intelligence in various fields shows its great importance including its role in education and the improvement of educational institutions. In the light of what has been presented we can identify the earnest utilization of AI in domain of education in general and the professional development of teachers to use this new artificial intelligence method.

OBJECTIVES OF THE STUDY

The current study seeks to achieve the following objectives:

1. Define the concept of AI and its connection to the times' developments.
2. Learn about using artificial intelligence in the professional development of teachers.

3. The challenges facing AI applications.

HYPOTHESIS OF THE STUDY

The importance of the study lies in the next considerations:

1. To enhance the role of intelligence in teacher's professional development for people interested in the educative process particularly in the teaching aspect of human resources.

2. To enrich with this study given the scarcity of research as per the information on the researcher in the treatment of the themes of intelligence and its relation with the training and qualification of teachers.

TEACHER PROFESSIONAL DEVELOPMENT

The most recent couple of years have seen the ascent of Artificial Intelligence (AI) applications in practically all areas from designing to medicine. The utilization of AI as a device for instructing and learning is increasing across the board ubiquity all finished. Specifically the attention is on how AI devices can recreate a one-on-one tutor control based managed learning experience to professional understudies. The investigation will utilize an exploratory structure to contemplate the viability of an AI-put together tutoring frame work with respect to understudy execution. This investigation will be to propose an intelligent mentoring system with regards to professional examinations and assess its adequacy of better learning results.The study came to highlight the most prominent uses of artificial intelligence in the professional development of employees through enhanced on site job training technology companies use virtual reality to train employees during business hours. They help to visualize the knowledge that expert analytics supports and provide more accurate diagnostic and correction services. While enhancing employee-specific knowledge education and some institutions and large companies such as IBM also online collaboration tools that allow employees to exchange experiences and use work hours for training or learning from their peers. This increases competitiveness in innovation includes all branches of the organization depending on their geographical location. Provide employees with permanently open forums for exchanging ideas helping them to control their training and development through modern educational content so that artificial intelligence makes employees to educate. The career progression of each employee in a customized manner individual can define their career path and align with the specific education experiences

necessary to bridge the skills and progress gap. Leading organizations have discovered that probably the most ideal approach to urge learning is to furnish representatives with clearness and devices to act improvement and connection. Mental activities can make this matter easy by assigning and merging information to employees. Artificial intelligence may go about as a guide for human resources in understanding and presenting the preferred learning methods for each employee. Human resources (HR) can apply these equivalent standards to make a versatile learning involvement in a comparative appearance and style and facilitate preparing content from inside and outer sources dependent on components for example job history individual dreams profession objectives and inclinations and future vocation. The power of artificial intelligence employees can receive more specialized recommendations to make sustainable and continuous learning and proactive career management easier. This prompts changeless preparing and advancement of AI arrangements so employees can increase their work performance throughout their careers. Artificial intelligence is the current most prominent technological revolution and the impact is growing to be enormous in the years to come on all aspects of our daily lives. The European Union the USA China and many other countries are working to put in place strategies to develop and apply AI in all sectors and strategies on how to teach AI and AI-related skills development.

DIGITAL AGE

That the professional growth of an employee does not end by the mere acquisition of a job or degree AI technology plays a role in the continuous training of most employees in the future in the transfer of skills and experiences from generation to generation where employees move to other companies or retire can help ensure that they can leave the valuable experience they have gained as well as take them with them the reality tools (AR/VR) along with intelligence Artificial for the experience of work before starting implementation on the ground so that the engineer or employee lives the task required of him determine the

time of completion and cost and identify the potential risks where employees wear AR headphones during the work of their daily tasks these points record of everything the engineer does using the technology of image recognition, which can be turned on allowing trainees or new aids to experience the role through virtual reality, and the information from video images is also used to create tools AR provide feedback in real time while Engineers with their work alert them to risks or remind them to perform routine tasks when they are in a particular place or when looking at a particular topic. The purpose behind this was to assess the impact of Artificial Intelligence (AI) on training. Starting on an account and structure for evaluating AI identified from a fundamental examination the extent of the investigation was restricted to the application and impacts of AI in organization guidance and learning. A subjective examination approach utilizing the theme of writing survey as an exploration plan and approach was utilized and viably encouraged the acknowledgment of the investigation reason. Artificial knowledge is a study and the subsequent advancements and improvements that have finished in PCs machines and different antiques having human like insight portrayed by psychological capacities learning flexibility and dynamic abilities. The investigation discovered that AI has broadly been received and utilized in instruction especially by training establishments in various structures. Man-made intelligence at first appeared as PC and PC related innovations changing to electronic and online wise training frame works and at last with the utilization of installed PC frame works along with different advances the utilization of humanoid robots and electronic chatbots to play out educators' obligations and capacities autonomously or with teachers. Utilizing these stages educators have had the option to perform diverse regulatory capacities for inspecting and reviewing understudies' tasks all the more adequately and efficiently and accomplish higher caliber in their instructing exercises. Then again on the grounds that the frame works influence AI and versatility educational plan and substance have been tweaked and customized in accordance with understudies' needs which has encouraged take up and maintenance

subsequently improving students experience and by and large nature of learning.

ARTIFICIAL INTELLIGENCE IN EDUCATION

The study showed that artificial intelligence aided education includes intelligent education innovative virtual learning and data analysis and prediction. Note that AI-enable education is playing a more important role as learning requirements promotes. Studies on the professional development of teachers through the digital age are entry point for artificial intelligence a study where computers have been used in education for more than thirty years. Computer based training and based learning aided instruction are the first systems in existence computer-based teaching attempts. These systems were not designed to respond the learner' individual needs but rather decisions regarding the mobility and movement of the student. Also the scientific material was controlled in a scheme and was not done in advance as indicated by the learner's abilities. Although CBT and CAI systems are effective in helping learners they do not provide individual care to the student as the natural human or teacher does. In order for the computerized education system to provide such care the system must think about both the specialized domain and the learner himself. This has encouraged research in building intelligent learning systems and providing smarter materials with a greater capacity to meet the needs of the student. It acquires the property of intelligence through its ability to present educational decisions on the course of the learning cycle just as to secure data on the personality of the learner thus providing great diversity by modifying the interactions between system and student.

AI TOOLS

Knowing and trying AI tools teachers gain confidence to work with them so they should try a wide range of tools to know them and feel safer using them in an educational context. This task requires time and the ability to search for the tools that best suit the pedagogical intentionality of each teacher. At this stage sharing in the TPD sessions context is

essential by knowing reflecting and selecting tools that best suit their pedagogical goals teachers also need to know the positive and negative aspects that the tools bring to the educational context and what ethical challenges. That Gen AI tools raise when adopted in an educational context an important part of TPD will be defining strategies for using the tools in the class room. This shows a wide range of strategies that are reported in the studies the joint reflections that can be developed during the TPD sessions are vital for teachers to find the most appropriate methodologies or strategies for their context and not violate ethical principles that may diminish students' learning. To do this they need time not only to interact but also to experiment strategies in the class room to reflect and discuss with their peers what went well and not so well so that they can reformulate them and adapt them to their teaching and learning context. Concerning education systems and in line with global concerns UNESCO (2021) suggests the need to implement innovative pedagogical practices which include ethical reflections on the use of AI tools the stimulation of critical thinking the implementation of design practices thus developing new digital skills that allow their safe use. The development of AI literacy in the promotion of critical and creative thinking skills team work communication and the development of socio-emotional and ethical skills within the scope of AI. The training for students and teachers on AI both in the technical aspect and in the humanistic ethical and social aspects paying attention to the relational social and traditional forms of education that underpin the teacher student relationship.

E- LEARNING

Smart learning systems are defined as computer-based learning systems with independent data bases. Knowledge bases are for educational content which determine what is taught as well as teaching strategies which define how to teach. It tries to use conclusions about the learner's ability to understand subjects and distinguish their qualities and defects. With the goal that they can dynamically adapt the learning process the intelligent learning system consists of the following:

1. Knowledge of the educational field in the specialized curriculum to be introduced or learned.
2. Know about the learner.
3. Knowledge of education strategies.
4. CAI-based learning systems differ from their smart systems.
5. The difference between traditional and intelligent systems lies in two basic assumptions.
6. Individual education directed to one person by an efficient teacher who is more detailed than education through the class room style on the grounds that both the substance and the strategy for training can be constantly adapted to fulfill the needs of the situation for the educational situation of the individual.

Students learn better in environments close to where they use their knowledge which means learning by practice. They learn from their faults and by shaping and elaborating their knowledge in a very particular individual way. These two assumptions determine the rationale for intelligent learning systems. The professional development of modern trends in the training of teacher's role in service period professional development is an essential and integral aspect of a teacher's profession. With the Internet's explosion in the developing and developed countries teachers are beginning to experiment individually and informally with self-managed and self-directed online professional development. Not many have sensed its importance to teachers' enhancement of professional development, analysed the implications and put forward some suggestions which facilitate and lead to effective online professional development and several studies have emerged that emphasized the value of electronic professional development for teachers. These studies have joined with the effectiveness of e-training programmes in the professional development of teachers in general. Also they have shown the viability e-course management systems in managing professional development programmers and their significant advantages in this area. The use of e-learning in the professional development of

teachers contributes significantly to the efficiency of the online professional development programmers because of their different advantages. It has demonstrated the requirements of e-professional development and considered good planning in the light of teachers' perceptions and needs as one of the most important effectiveness of e-professional development.

DISCUSSION

The digital revolution has contributed to the emergence of many modern educational trends in the field of teacher preparation and training in the service. This is the consequence of the interaction of teacher preparation and training institutions with contemporary variables. Because of the information and the improvement of communication technologies and the entry into information technology or the so called digital age and the subsequent changes in learning environments it has got important to focus on the professional development of teachers to keep up with these changes and to know how to cope with them which reflects on the preparation of students to understand this digital age to engage in it and to acquire the necessary skills to deal with it. It has become necessary to employ teaching and learning techniques in the professional development of teachers to train them and to raise their performance and productivity. This has required attention to the professional development of teachers in order to meet the demands of education in the digital age. It is not acceptable that the professional development of the teacher remains immune to the effects of the digital age. Especially since its content and the way it is presented and even when where and how it is presented to the teacher are available at all the time and everywhere. The use of information technology and the Internet in training and education is one of the most important indicators of society's transformation into an information society. This will contribute to increasing the efficiency and effectiveness of education systems and in spreading information awareness. Thus it will be contributing to the building of the information cadres that societies seek in the digital age.

The change in teacher roles in the development of communication techniques and the multiplicity of learning sources have led to fundamental changes in the requirements of the educational situation in terms of the means of knowledge transfer and the roles of the teacher. This has shifted from traditional roles that consider the teacher to be merely a communicator to facilitator guide and mentor to his students. The quantity of qualified educators in different controls is inadequate comparable to the high extent of recently prepared instructors and the gathering comes up short on the aptitudes and experience to assume its job adequately. Here we contend that one of the possible parts of AI in instruction is to give chances to expand human insight with AI supporting us in dynamic cycles as opposed to planting us with mechanization. The digital age is characterized by the expansion of knowledge and technology the proliferation of communications systems the increasing use of computers and the expansion of the use of the Internet. The states are beginning to feel the growing importance of information education and technological culture. By providing an interactive learning and training environment and attracting the attention of individuals in an era characterized by rapid development and constant change. One of the most important effects of the digital age on the professional development of teachers has been the emergence of a new system of teacher training and the improvement of their professional skills. The e-learning system which depends on communication and information technologies in the activities necessary for the professional development process to include e-learning e-training which is not only to send scientific material to the beneficiaries but also to include all the steps and procedures of management training and monitoring of the training process. In fact there are many justifications for the introduction of e-learning in the field of teacher professional development including the problems of traditional training. The lack of strategic planning of teacher training systems and programmers in training topics are not chosen in the light of a comprehensive study of teachers' needs in general they lack of continuity of training programs necessary for professional

development with the intervals of training programs attended by teachers that may be up to several years. The lack of training programs for teachers and their distance from keeping pace with the change in the objectives methods and modern methods of professional development of teachers. In (2020) there were few recent studies on Artificial Intelligence (AI) in education. With the progressive integration of information technology and education and teaching these studies show the innovative application of computerization in education has brought new opportunities for the evaluation and professional development of teachers. These integrate recognition in action and reflection in practice with AI technology and establish a new frame work for the evaluation of teacher development based on pedagogical reflection which strengthens our study in terms of the exploitation of AI in education and develops the role of the teachers learning. They integrate process diagnosis and reflective practice supported by intelligent technology for the evaluation of past teaching in order to provide a theoretical and practical reference for the implementation of teacher development assessment in the context of wisdom education.

CONCLUSION

In light of the above artificial intelligence has begun to occupy a significant spot in numerous territories including education. In two decades at the latest AI systems were occupying most of human life. It is then inevitable to manage them dependent on the measure of information put away and the way they are processed. In addition the responsible for teacher professional development programs should take seriously the question of the benefits from artificial intelligence in teacher education relying on it as human intelligence. We can assume that tools with Gen AI are part of our daily lives and are not expected to disappear. Thus teachers should seek professional development to guide their students and confidently integrate these tools into their teaching practices. To this end it could include AI literacy as a component of the TPD will know what AI is and how it works but another no less important component

will be knowing tools with AI and understanding what you can do and cannot do. In addition to this component teachers should understand the ethical problems that arise when these tools are used and through joint reflections with their peers develop competencies for an ethical and safe use know the benefits and limitations of the systems and thus feel able to guide their students. Another critical component of the TPD will be the development of lesson plans which integrate tools with Gen AI to be implemented in the classroom with students. This will be privileged spaces for reflections and joint discussions between peers so that each one can find the most appropriate strategies and methodologies for each teacher's teaching context. Those students possibly already use these tools even if their teachers don't master them so the best way is to open up with them and bring these tools into the classroom. However to do so teachers need to get their hands on work and acquire the knowledge and skills required to guide their students.

RECOMMENDATIONS

Designing educational software based on artificial intelligence to raise the qualifications of teachers. Building training pathways based on artificial intelligence for all those working in education field. Provide accurate databases in all areas of education including human resources. For providing educational training environments that add to improving the part of AI applications in the professional development of teachers. The training of teacher for using artificial intelligence in linking data bases within a global network that helps challenge teachers' career paths. For using the increased and computer generated reality in training teachers and preparing them educationally and academically for the educational process. We made some proposals to activate those recommendations, including conducting semi-experimental studies based on the effectiveness of the use of artificial intelligence in the professional development of teachers. The studies measure the impact and returning on training for AI applications in the training and qualification of teachers by conducting pilot studies on the AI applications virtual reality

augmented reality in internship and qualifying teachers before and during service.

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FOSTERING INCLUSIVE EDUCATION THROUGH LANGUAGE AND CULTURE: ALIGNING NATIONAL EDUCATION POLICY 2020 WITH GLOBAL SUSTAINABLE GOALS

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ABSTRACT

This paper explores the intersection of language, culture, and inclusive education within the framework of India's National Education Policy (NEP) 2020 and the United Nations Sustainable Development Goals (SDGs). It examines how fostering linguistic diversity and cultural awareness can create inclusive educational environments, particularly for marginalized groups. By aligning NEP 2020 with SDG 4, this paper advocates for policies that promote multilingual education and culturally responsive teaching practices.

Keywords: Quality Education, Language, Culture, National Education Policy 2020

Introduction

Inclusive education is vital for ensuring that all learners, regardless of their background, have access to quality education. The National Education Policy 2020 (NEP 2020) emphasizes the need for an inclusive education system that recognizes and values the linguistic and cultural diversity of India (Ministry of Education, 2020). This is in alignment with Sustainable Development Goal 4 (SDG 4), which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (UNESCO, 2015). According to the United Nations, sustainable development serves as the framework for achieving human development goals while preserving the capacity of natural systems to

provide the resources and ecosystem services that society and the economy rely on. The ultimate goal is to create a society where living conditions and resource utilization can satisfy human needs without compromising the integrity and stability of natural systems (Ezeh, 2020). This paper aims to discuss the significance of language and culture in fostering inclusive education in India, analyzing NEP 2020's provisions and aligning them with the global educational agenda.

The Importance of Language and Culture in Education

Language is not merely a medium of instruction; it serves as a vehicle for cultural expression and identity**.** It not only bridges people across time and space but also steers them toward cultural engagement, turning them into participants and consumers of culture (Zygmunt, 2016). Language, as a communication tool, enables culturally diverse communities and individuals worldwide to discuss various issues, fostering tolerance and respect for differing viewpoints. In this way, language's inherent power supports social progress, cultural evolution, and sustainability (Toppo & Rahman, 2020).

Research indicates that children learn best in their mother tongue, as it helps them relate to their cultural context and enhances cognitive development (Cummins, 2000). In a country like India, characterized by its linguistic diversity—with over 120 languages spoken—recognizing and promoting linguistic diversity is essential for fostering an inclusive educational environment (Ethnologue, 2021).

The SDGs, while building on the earlier MDGs, have expanded in both scope and focus by setting 17 distinct goals, including education and social objectives as key components of sustainable development. SDG 4, which focuses on Quality Education, is highlighted as essential for human growth and development.

Multilingual Education

Multilingual education has been shown to improve academic performance among students from diverse linguistic backgrounds. For instance, a study by Heugh (2006) highlights that students who receive

instruction in their mother tongue perform better academically and are more likely to stay in school. The NEP 2020 advocates for the use of regional languages and mother tongues as mediums of instruction, especially in the foundational years (Ministry of Education, 2020). This approach aligns with global best practices outlined in SDG 4, which promotes education that respects cultural diversity.

The Role of Culture in Education

Culture represents a broad and inclusive concept that captures all aspects of being. It is learned over a lifetime as individuals engage with family and social networks. Cultures consist of various components, such as values, behavioral styles, languages, dialects, nonverbal communication, and different perspectives and worldviews (Ashokan, 2019). While cultural practices are commonly shared within specific groups, they may not be universal across all groups. It is important to understand that cultures are always evolving, influenced by the changes in individuals, groups, and their surroundings.

Cultural awareness is equally important in creating an inclusive educational environment. Education that reflects students' cultural backgrounds can increase engagement and improve learning outcomes (Ladson-Billings, 1994). By integrating local culture and traditions into the curriculum, educators can help students develop a sense of identity and belonging. According to Fisher (2013), education that is culturally appropriate must focus on equipping students with the competencies needed for the global stage, while also honoring the distinct worldviews of individuals from different cultural environments. According to Jordan (1985), educational programs should be designed with consideration of a learner's cultural background, guiding the development of positive academic behaviors while avoiding negative ones.

International Perspectives

Globally, culturally relevant pedagogy has gained traction as an effective teaching approach. For instance, in the United States, culturally relevant teaching strategies have been shown to improve the academic

performance of African American students (Ladson-Billings, 1994). The integration of students' cultural experiences into the classroom fosters a sense of belonging and encourages them to engage actively in their education.

Cultural Responsiveness in Education

Adeyeni and Adeyinka (2003) describe education as the process of transmitting and renewing culture, where adults intentionally guide the growth of infants and young children, introducing them to the society's cultural norms and values. Cultural responsiveness in education refers to the ability of educational institutions to recognize and incorporate students' cultural backgrounds into the learning process. Research indicates that culturally responsive teaching improves student engagement and academic success (Ladson-Billings, 1994).

Strategies for Culturally Responsive Teaching

Ezeanya-Esiobu (2019) contends that education should help individuals in a society comprehend their lived experiences and learn from real-life situations, enabling them to grow independently and contribute to the development of their community. Effective culturally responsive teaching involves several strategies:

- Incorporating Cultural Content: Educators can integrate stories, examples, and materials that reflect students' cultural backgrounds into the curriculum. For instance, literature from various Indian authors that reflects regional cultures can be included in English language classes.
- Building Relationships: Teachers can build relationships with students by understanding their backgrounds, interests, and values. This can involve creating opportunities for students to share their experiences and cultural practices with their peers.
- Flexible Curriculum: Adapting the curriculum to include local knowledge, languages, and cultural practices can make education more relevant to students. For example, incorporating local

environmental issues into science classes can engage students from rural areas who may have different experiences than their urban counterparts.

Aligning NEP 2020 with SDGs

The NEP 2020 aims to create an equitable and inclusive educational framework that resonates with the objectives of SDG 4. Key initiatives include:

- Promotion of Regional Languages: The NEP 2020 promotes the use of regional languages and mother tongues as mediums of instruction, particularly in the foundational years. This approach not only helps students learn better but also instils pride in their linguistic heritage.
- Cultural Education: The policy emphasizes the need to integrate local culture and history into the curriculum. By including the cultural narratives of various communities, education can become more relevant and engaging for all students.
- Teacher Training: To effectively implement these initiatives, the NEP 2020 calls for enhanced teacher training. Educators need to be equipped with skills and strategies for culturally responsive teaching to cater to diverse learner needs. This includes training on multilingual education and incorporating cultural content into lessons.
- Collaboration with Communities: The NEP 2020 encourages collaboration between educational institutions and local communities. Engaging community members in curriculum development ensures that educational content is culturally relevant and meaningful. This collaboration can also foster a sense of ownership and accountability among communities regarding their children's education (Choudhury, 2021).

Challenges and Recommendations

Despite the positive framework outlined in NEP 2020, several challenges remain in its implementation:

- Lack of Resources: Many schools, especially in rural areas, lack the necessary resources to implement multilingual education. Investment in teacher training, infrastructure, and educational materials is crucial (Singh & Kaur, 2021).
- Policy Implementation: The successful implementation of NEP 2020 requires collaboration between government bodies, educational institutions, and communities. Engaging local stakeholders in curriculum development can ensure that educational content is relevant and culturally appropriate (Choudhury, 2021).

Recommendations for Overcoming Challenges

- Increase Funding: The government should allocate more funds to support multilingual education initiatives, particularly in rural and underserved areas. This includes funding for training teachers and developing multilingual resources.
- Community Engagement: Schools should actively engage parents and community members in the education process. Workshops and meetings can provide platforms for parents to voice their concerns and contribute to curriculum development.
- Research and Data Collection: Ongoing research is essential to evaluate the effectiveness of multilingual education and culturally responsive teaching. Data collection on student performance and engagement can inform policy decisions and improvements in practice.
- Collaboration with NGOs: Collaborating with non-governmental organizations (NGOs) can provide additional support for implementing inclusive educational practices. NGOs can offer resources, training, and expertise to help schools become more inclusive.

Conclusion

Fostering inclusive education through language and culture is essential for realizing the objectives of both NEP 2020 and SDG 4. By prioritizing multilingual education and culturally responsive teaching practices, India can create an inclusive educational environment that values diversity and promotes equitable access to quality education for all learners. As India moves forward in implementing NEP 2020, it is crucial to keep the voices of marginalized communities at the forefront, ensuring that education truly becomes a tool for empowerment and social change.

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CURRICULUM AND PEDAGOGICAL PRACTICES IN INDIAN KNOWLEDGE SYSTEM

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ABSTRACT

In the dynamic educational landscape of today there is an increasingly acknowledged importance of incorporating various knowledge systems to foster comprehensive learning experiences. This recognition reflects a shift towards embracing the richness and diversity of different knowledge traditions aiming to provide learners with well-rounded educational opportunities that encompass a wide range of perspectives and insights. This approach not only acknowledges the value of diverse knowledge but also aims to cultivate more inclusive and enriched educational experiences for students ensuring they are equipped to navigate and contribute meaningfully to a globally interconnected world. Indian Knowledge Systems (IKS) deeply rooted in the cultural heritage of India offer a rich tapestry of wisdom encompassing traditional practices indigenous sciences and ethical values. The National Education Policy (NEP2020) recognizes the intrinsic value of Indian knowledge systems and aims to integrate them into the main stream education system to provide students with a holistic and culturally enriched learning experience. By incorporating elements of IKS into the curriculum the policy seeks to promote the deeper understanding of India's cultural heritage and contribute to the holistic development of learners. As educators we stand at the crossroads of tradition and innovation seeking pedagogical approaches that regard both ancient wisdom and contemporary learning needs. This research is an

exploration that delves into how IKS can be seamlessly woven into educational practices by identifying various pedagogical techniques that will help students foster cultural pride critical thinking and a deeper understanding of the world. By embracing pedagogical strategies that bridge the gap between past and present we embark on a transformative journey one that revitalizes India's educational landscape and nurtures lifelong learners. The Indian Knowledge System (IKS) proposes several subject areas of IKS that require further investigation and analysis. This covers the study of astronomy mathematics art and culture as well as health and wellbeing. For every individual, community well-being and quality of the life are crucial particularly in today's technologically advanced and quickly evolving world. The literature currently involved in publication and recommends developing AI for medical applications. The proposed work to be carried out in the IKS Lab has relevance in the context of the National Education Policy of the government of India as well as IKS for holistic development of students and improved community wellness because the work has been focused on the IKS domains and mindfulness practices.

Key Words: Curriculum, Pedagogical Practices, IKS.

INTRODUCTION

The pedagogical approaches for integrating IKS in education encompass a diverse range of methodologies aimed at fostering comprehensive learning experiences. These approaches emphasize not only the acquisition of factual information but also the development of critical thinking abilities and practical skills necessary for application in real-world contexts. By intertwining information dissemination with knowledge construction and skill development educators seek to cultivate deep understanding and competency among learners. The holistic pedagogical approach promotes active participation critical thinking and co-operative learning equipping students to tackle intricate challenges and make significant contributions to society. By emphasizing

holistic development it encourages learners to engage deeply with issues apply problem solving skills and collaborate successfully. The effective implementation of various pedagogical approaches by the educators requires thoughtful planning adaptable instructional strategies and a supportive learning environment that promotes exploration and reflection. The Indian Knowledge System (IKS) is a rich tradition that includes *Gyan* (knowledge) *Vigyan* (science) and *Jeevan Darshan* (philosophy of life) which have evolved through experience observation experimentation and the rigorous analysis. There is a distinction between the indigenous knowledge system and the Indian Knowledge System (IKS) as used in the current education policy. The National Educational Policy statement stated explicitly that Knowledge of India shall include information from ancient India and its contributions to modern India yet it did not include the indigenous knowledge that was common in medieval or pre-British India. Indigenous knowledge serves as the foundation for decision-making at the local level across various domains such as agriculture healthcare food preparation education, and natural-resource management. Effective teaching strategies that help students achieve certain learning goals are crucial to the transfer of this information. Indigenous knowledge provides strategies for resolving issues in communities. It is difficult to codify since it is mostly held collectively by communities rather than individually and is fundamentally implicit. Indigenous knowledge offers problem solving approaches within communities. It is predominantly held collectively by communities rather than individuals and is inherently tacit making it challenging to formalize the situation. As we reimagine teaching and learning with the launch of NEP-2020 it becomes imperative to explore pedagogical strategies that will seamlessly weave IKS into the fabric of education. From early childhood to higher education these techniques bridge the gap between ancient wisdom and contemporary curricula fostering critical thinking cultural pride and holistic understanding. In this exploration we embark on a journey that not only revitalizes classroom dynamics but also nurtures life-long learners who appreciate

the interconnectedness of knowledge across time and space. The NEP-2020 acknowledges the significance of safeguarding and advancing India's vast legacy of knowledge systems encompassing traditions in philosophy language science and the arts. It recognizes that the Indian Knowledge System (IKS) may provide insightful opinions and viewpoints that enhance contemporary education. The policy is meant to encourage the next generation to recognize the significance of that traditional knowledge. The IKS Division has brought together leading thinkers and practitioners from various knowledge fields to develop Vision 2047 documenting a roadmap for establishing the rich Indian knowledge tradition. By learning from our vast knowledge it will be easier to promote and enable further research to address the challenges of our present times. Inclusion of these courses in mainstream education will inspire while preserving the heritage of our learning systems. Through exposure to both traditional and contemporary concepts students can gain a better understanding of their culture expand their intellectual development and increase their self-confidence. India had a rich tradition of education and learning since ancient times and especially during the Renaissance period the golden age of Indian culture.

OBJECTIVES OF THE STUDY

This study will investigate and identify various pedagogical strategies employed by teachers that will help student’s foster critical thinking and a deeper understanding of the world. It will explore how IKS can be seamlessly woven into educational practices by making use of different pedagogical techniques in the educational institutions.

METHODOLOGY

The methodology includes a systematic review of a series of primary and secondary sources of materials. For this study relevant research articles concept notes and various government documents and reports on NEP 2020 and recent guidelines issued by the UGC and IKS Division were consulted.

IKS AND PEDAGOGY

The Indian Knowledge System (IKS) is a treasure trove of ancient wisdom encompassing diverse domains such as science technology literature philosophy culture medicine Ayurveda and yoga. Integrating IKS into education requires thoughtful pedagogical approaches. The new education policy of India addresses the integration of IKS into the country's education frame work by preserving and promoting India's rich heritage of knowledge system and integration of IKS across the curriculum at all levels of education from early childhood to higher education. The policy further advocates for multilingualism and the promotion of Indian languages including classical languages such as Sanskrit which are repositories of ancient knowledge. It encourages the teaching and learning of Indian languages as mediums for accessing IKS. The policy calls for the revision of text books and teaching materials to reflect the diversity of Indian knowledge systems and cultural heritage. It recommends the development of innovative pedagogical approaches that integrate experiential learning storytelling and other traditional methods to impart knowledge related to IKS. The policy emphasizes the need for teacher training programs to equip educators with the knowledge and skills required to integrate IKS into their teaching practices. It calls for the inclusion of modules on IKS in teacher education curricula and professional development initiatives.

The term pedagogy refers to the strategy of how educators teach in practice and theory. It is basically study of instructional techniques and how they affect students. The teaching philosophies of an educator influence pedagogy which connects culture and a range of instructional approaches. For children to learn more effectively and to develop higher order thinking abilities a carefully designed and successful pedagogy is essential. There is no one size fits all method to pedagogy. It considers both the material being taught and the variety of demands and abilities of the students. Pedagogical techniques for IKS involve innovative methods of teaching including those proposed by NEP 2020 such as avoiding

teaching using audio-visual materials conducting field studies engaging with primary sources undertaking micro-research projects and employing innovative ways to evaluate learning.

According to NEP 2020 there is a need for capacity building programs which are the primary means of guaranteeing the competence and involvement of educators at higher education. The pedagogical expertise convictions life experiences and professional identity of teachers influence the learning outcomes of their students. It is essential that educators change the way they think about teaching enhance their pedagogies to make them more participatory and focused on the needs of the students and create inclusive learning environments in the classroom. A significant shift in pedagogy can only be successfully implemented with the help of teachers' own efforts ongoing professional development and appropriate training. As per the guidelines for innovative pedagogical approaches and evaluation reforms it becomes essential for educators to change the way they see education enhance their pedagogies to make them more participatory and student-centered, and create inclusive learning environments in the classroom. To successfully implement the pedagogical change at a significant level teacher themselves must put in significant effort as well as acquire appropriate training and continuous professional development. For different students have different optimum learning methods therefore the teachers must assess students' learning needs in order to adopt a matching pedagogical approach.

PEDAGOGICAL PRACTICES

Pedagogical practices refer to the various methods and approaches that educators use to facilitate teaching and learning. These strategies guide how can teachers design and deliver instruction interact with students and create meaningful learning experiences. It involves how teachers approach for the curriculum design content delivery assessment and student support. The pedagogical strategies are context-specific. They align with specific learning objectives and the chosen curriculum. They

focus on creating an active and participatory learning environment. The teachers will select strategies based on the desired outcomes for their students. Effective pedagogical strategies are adaptable to different learning environments. A study on the teacher approaches to introducing indigenous knowledge in school science classrooms by analyses the three main approaches for engaging indigenous knowledge system in science classroom. These methods can be broadly classified as follows: an integrationist strategy that creates connections between indigenous knowledge system and science a separatist strategy that places indigenous knowledge system side-by-side with scientific knowledge and in using strategy that incorporates specific indigenous knowledge into science by determining how best indigenous knowledge system fits into science.

KNOWLEDGE SYSYTEM

IKS encompasses the knowledge of ancient India its successes and challenges and a sense of India's future aspirations relating to education health environment and indeed all aspects of life. The Indian Knowledge System aims to support and facilitate further research to solve contemporary societal issues in many areas such as holistic health psychology neuroscience nature and environment. Indian Knowledge System (IKS) for sustainable development is an innovative cell established to promote interdisciplinary research on all aspects of IKS preserve and disseminate IKS for further research and social applications.

The pedagogical techniques and strategies for integrating Indian Knowledge System (IKS) in education are crucial for preparing students to thrive in today's dynamic world. These techniques focus on blending theoretical knowledge with practical application equipping learners with not just information but also the critical thinking and problem solving skills needed for success. By adopting innovative approaches such as problem based learning project based learning and inquiry based learning educators can engage students in active exploration and discovery.

Collaborative learning environments and technology enhanced tools further enhance IKS integration by fostering teamwork digital literacy and creativity. These strategies not only deepen understanding but also empower students to apply their learning across disciplines and adapt to evolving challenges in their academic and professional journeys. Effective implementation of these pedagogical techniques requires educators to continuously assess and adapt their instructional practices to meet the diverse needs and learning styles of their students. The customs and traditions that Indians had created over thousands of years and passed down from one generation to the next generations were suddenly abandoned in the last few centuries. The NEP-2020 aims to end the discontinuity in Indian knowledge systems through its integration into curricula at all levels. IKS revitalization calls for a multifaceted strategy including capacity building at all levels. It also aims to support current multidisciplinary research prospects for academics and educational institutions.

INDIAN KNOWLEDGE SYSTEM IN CURRICULUM

Indian civilization has placed great importance on knowledge as evidenced by its astonishingly vast intellectual texts the largest collection of manuscripts in the world and its well documented legacy of a wide variety of treatises thinkers and schools. India has a long history of knowledge which continues like the river Ganges. Indian knowledge systems have a strong foundation in Indian culture philosophy and spirituality and have evolved over thousands of years. These knowledge systems including Ayurveda Yoga Vedanta and Vedic science are still applicable in many ways in the modern world. Today we need to identify ourselves with a broader belief system that gives India a unique stature on the global stage where people from abroad look towards India and turn to yoga and yoga to release stress and refresh their minds. Let's turn to meditation. Today we need to identify ourselves with a broader belief system that gives India a unique stature on the global stage where people from abroad look towards India and turn to yoga and yoga to release

stress and refresh their minds. Therefore in today's modern era understanding the importance of peace tranquility and human values seems to be possible only through the Indian knowledge system attention towards this will definitely create a beautiful future.

IKS OF INDIAN KNOWLEDGE IN HIGHER EDUCATION

The IKS attempts to bring together the country's traditional knowledge from the past with its present day knowledge system. In this preview blended learning approach artfully combines the best of both worlds' traditional classroom teaching and technology assisted learning. It seamlessly integrates offline and online modes creating a dynamic educational experience. With the use of blended learning it will be easy to incorporate IKS in education. By doing so we will enrich students' experiences promote cultural understanding and create a holistic learning environment. The blended learning techniques are a great way to customize a course to fit the training requirements of each student while also making it suitable for a variety of participant groups.

SUBJECTS COVERED UNDER INDIAN KNOWLEDGE SYSTEM

Humanities Engineering Medicine Agriculture Community knowledge systems Fine arts and Performing arts Vocational skills which have IKS content. As per the guidelines the courses must have a clear mapping of the traditional subjects in IKS with the modern subjects such as Chemistry Mathematics Physics Agriculture and other subjects.

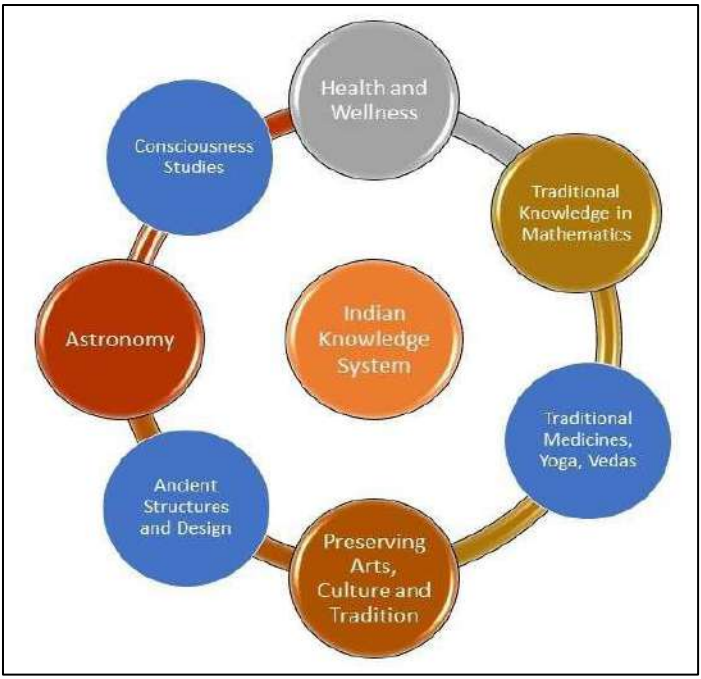

Fig 1: Subjects covered under Indian knowledge system

ENHANCING LEARNING OPPORTUNITIES THROUGH IKS

1. Credit Component and IKS Electives: Universities across all States or Union Territories (UTs) are encouraged to introduce learner credits or IKS electives in various courses. These initiatives aim to infuse traditional knowledge and cultural pride into learners from diverse disciplines. The University Grants Commission (UGC) has already mandated that 5% of total credits should be related to IKS courses. Additionally the All-India Council for Technical Education (AICTE) has introduced IKS courses for first year engineering students.

2. Designing Regional Courses: States or UTs have the opportunity to document their unique native cultures arts crafts traditions architecture food habits languages and more by doing so they can dedicate the courses that resonate with the learners' for local contexts and heritage.

3. Global Collaborations: Recognizing India's global history universities can design multidisciplinary courses that explore international collaborations. For instance the National Council of Educational Research and Training (NCERT) is actively including content that highlights historical connections between India and other state at the school level.

4. Online and Open Distance Learning (ODL): Existing IKS courses can be seamlessly integrated into digital learning platforms such as SWAYAM and NPTEL. This approach ensures that learners from various geographical locations can access IKS education. These strategies collectively contribute to transforming education by embracing India's rich knowledge systems and fostering a holistic learning experience.

CONTRIBUTION TO INDIA'S IKS MISSION

The Indian Knowledge System (IKS) is heavily emphasized in the National Education Policy 2020 for the overall development of pupils. In addition to all around professional growth students must be given traditional knowledge of medicine mindfulness practices (Vipassana) heritage in order for them to appreciate the significance of IKS disciplines for optimum wellbeing. Thus the primary goal of this AI intervention based research is to fulfill the NEP 2020's most significant expectation. Recognizing the global significance of IKS educational institutions must whole heartedly embrace this holistic approach to empower future generations with our rich cultural heritage. By preserving and revitalizing this rich heritage promoting interdisciplinary approaches and fostering critical thinking and problem solving skills for IKS integrated education can contribute to strengthening and transforming the country. However the successful implementation of IKS integration requires a comprehensive and collaborative approach that takes into account the challenges associated with it while constantly adapting to the evolving needs of the modern world. However merely reinforcing or revitalizing IKS in the classroom will result in the creation

of a new learning compartment that is riskier than preservation. Therefore it is intended that the IKS content be harmoniously incorporated into current understanding. It takes a lot of work and clarity to accomplish such integration.

INTERNATIONAL COLLABORATION OF IKS

The Government of India formed the IKS division within the Ministry of Education with the goal of advancing multidisciplinary and trans-disciplinary research on all facets of IKS and sharing IKS knowledge for future innovations and societal applications. In order to revitalize IKS research in India the IKS division supports unique serious and in-depth academic study in a variety of IKS disciplines. The traditional knowledge in astronomy and mathematics chemistry and material science health wellness and awareness studies political and economic ideas arts traditions and rich culture are all included in the IKS division. Institutes can access global collaboration through institutions such as the Indian Council of Historical Research (ICHR) to conduct India-centric research. Include IKS As such one of the themes in the ASEAN Fellowship is to foster collaboration among scholars and nurture the next generation of scholars.

CONCLUSION

The IKS-based pedagogical techniques should be curtailed in such a manner that the students must honour cultural diversity promote respect and foster a deeper understanding of the world. These pedagogical strategies must be designed as per the cognitive development of children of different age groups keeping in mind their prior knowledge and cultural back ground. The teaching methodologies should be flexible and adaptive in nature to satisfy the queries and interest of the students. While delivering the pedagogical content the teachers must ensure that the theme for IKS in the class would be accurate and respectful for the learners so that there would be creation of an inclusive environment where the learners can safely share their own cultural experiences.

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LIBRARY ATTITUDES AND LEARNING STYLES ON ACADEMIC ACHIEVEMENT AMONG UNDERGRADUATE STUDENTS IN WEST BENGAL

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ABSTRACT

This study investigates the relationship between library attitudes, learning styles, and academic achievement among undergraduate students in West Bengal through a quantitative approach. A sample of 500 students from urban, semi-urban, and rural colleges participated, with data collected via standardized instruments: the Library Attitude Scale (LAS) and the Kolb Learning Style Inventory (LSI). The study identifies a moderate to strong positive correlation ($r=0.64$, $p<0.01$) between library attitudes and academic achievement, as measured by cumulative grade point average (CGPA). Additionally, multiple regression analysis reveals that learning styles significantly moderate this relationship ($\beta=0.52$, $p<0.05$), with divergers and convergers showing distinct advantages in leveraging library resources. Results indicate that students with positive library attitudes who align their study practices with their preferred learning styles experience enhanced

academic success. The findings underscore the critical role libraries play in providing equitable academic resources, particularly in resource-constrained regions. Recommendations include enhancing library accessibility, addressing institutional disparities, and integrating learning style-based support into academic advising. The study contributes to the literature by combining library attitudes and learning styles in the context of Indian higher education, offering actionable insights for policymakers, educators, and administrators to foster holistic student development and academic excellence.

Keywords: Library Attitudes, Learning Styles, Academic Achievement, Undergraduate Students.

1. Introduction

1.1 Background

Libraries have traditionally been considered as pivotal centers for knowledge acquisition, learning, and research, playing a vital role in the academic lives of students. With the proliferation of digital resources, however, the use of physical libraries has undergone significant transformation. While some students continue to view libraries as essential academic resources, others show varying levels of disengagement. In academic contexts, particularly in developing regions such as West Bengal, libraries continue to serve as vital repositories of information for students, many of whom face socioeconomic challenges in accessing digital alternatives. Smith (2019) highlighted that students who regularly use libraries perform better academically due to exposure to curated academic resources and an environment conducive to focused study. Equally important to academic performance are individual differences in learning styles, which influence how students process, retain, and apply knowledge. Kolb's (1984) experiential learning theory categorizes students into four learning styles—divergers, assimilators, convergers, and accommodators—based on their preferred modes of learning. According to Sharma (2018), understanding and addressing

these learning styles enables educators to design interventions that resonate with students' preferences, thereby improving academic outcomes. This interplay between library attitudes and learning styles remains underexplored in the Indian context, despite its potential implications for academic success. West Bengal, a state with a diverse population of undergraduate students, provides an ideal setting to explore this relationship. The region encompasses a mix of urban and rural students, many of whom rely on institutional libraries as their primary academic resource. Recent studies (Kumar, 2020) have shown that library engagement varies among students based on their socioeconomic background, institutional facilities, and individual attitudes toward learning. However, there is limited research on how these attitudes interact with learning styles to influence academic achievement in this region.

1.2 Statement of the Problem

While existing literature has established that library usage positively impacts academic performance (Johnson, 2021; Smith, 2019), few studies have examined the combined effect of library attitudes and learning styles on student success. In the West Bengal context, where access to academic resources can be inconsistent, understanding these relationships is crucial. Without a nuanced understanding of how students' attitudes and learning preferences influence academic outcomes, institutions may fail to provide optimal support to their students.

1.3 Importance of the Study

The importance of this study lies in its potential to bridge a critical gap in the literature by focusing on the combined impact of library attitudes and learning styles on academic performance. It provides insights for educators, policymakers, and librarians to enhance library usage and learning strategies tailored to student needs.

1.5 Justification for Research Focus

This research is significant because it examines a multi-dimensional framework where library attitudes and learning styles intersect to

influence academic performance. This is particularly relevant in the Indian context, where disparities in access to resources persist, and the diversity of learning needs remains a challenge for educators and policymakers. By focusing on undergraduate students in West Bengal, the study provides actionable recommendations to improve academic outcomes through enhanced library engagement and learning style-based interventions.

1.6 Contribution to the Field

This study adds to the body of knowledge on academic performance by integrating two critical variables—library attitudes and learning styles—into a cohesive framework. It further contributes to educational research by providing evidence-based recommendations for improving student outcomes, particularly in resource-constrained settings.

1.7 Research Problem

While studies have explored library usage, few have linked it with learning styles and academic performance in the context of West Bengal. This research addresses this gap.

2.1 Library Attitudes and Academic Achievement

Studies have consistently demonstrated a strong link between positive library attitudes and improved academic performance. For instance, Brown (2015) observed that students who frequently accessed library resources and perceived them as valuable achieved higher academic results compared to those with neutral or negative attitudes toward libraries. Similarly, Das (2018) identified a significant relationship between consistent library engagement and enhanced academic outcomes in the Indian context, emphasizing the role of libraries as critical academic support systems.

2.2 Learning Styles and Academic Outcomes

The role of learning styles in influencing academic performance has been well-documented. Kolb's (2014) revised experiential learning framework highlighted that individual learning preferences, such as those of divergers, convergers, assimilators, and accommodators, play a crucial

role in determining how effectively students process and apply knowledge. Banerjee (2021) reinforced this view, showing that students who align their study habits with their preferred learning styles perform significantly better in assessments, particularly in higher education settings.

2.3 Combined Influence

Recent research has explored the interplay between library attitudes and learning styles, revealing their combined impact on academic success. Johnson (2017) found that students with positive attitudes toward libraries, when supported by learning strategies tailored to their styles, demonstrated substantial improvements in academic achievement. Similarly, Chakraborty (2022) emphasized the need for integrated approaches that leverage both library resources and individualized learning strategies to optimize student outcomes, particularly in resource-constrained environments.

3. Need and Significance of the Study

The study marks the critical role libraries and learning styles play in shaping academic success. Identifying these relationships provides actionable insights for educators and policymakers to design effective interventions.

4. Rationale of the Study

This study bridges the gap in understanding the combined impact of library attitudes and learning styles on academic achievement in West Bengal. It contributes to the development of student-centric learning strategies.

5. Operational Definitions of Terms

Library Attitudes: Library attitudes refer to the perceptions, beliefs, and behaviors that students exhibit toward library usage, encompassing their willingness to access and utilize library resources for academic purposes. Positive library attitudes are characterized by frequent engagement with resources, a recognition of their importance, and a proactive approach to

utilizing library facilities. According to Brown (2015), students with positive attitudes toward libraries often view them as integral to their learning process, leading to greater academic success. Conversely, negative attitudes may result in underutilization of these resources, potentially limiting academic growth. For the purpose of this study, library attitudes were assessed through a standardized *Library Attitude Scale (LAS)*, measuring factors such as frequency of visits, perceived usefulness, and satisfaction with available resources.

Learning Styles: Learning styles represent the preferred methods or strategies individuals use to process, retain, and apply knowledge. Kolb's (1984) Experiential Learning Theory identified four distinct learning styles:

- **Divergers:** These learners excel at viewing situations from multiple perspectives and prefer activities involving observation and reflection, such as brainstorming and discussions.
- **Assimilators:** They focus on abstract concepts and prefer logical reasoning and theoretical analysis over hands-on experiences.
- **Convergers:** These learners thrive in applying theoretical knowledge to practical problems, often excelling in problem-solving and decision-making tasks.
- **Accommodators:** They prefer learning through hands-on experiences and experimentation, relying heavily on intuition rather than theory.

Sharma (2018) emphasized that aligning instructional methods with students' learning styles can significantly enhance academic outcomes. In this study, learning styles were assessed using the *Kolb Learning Style Inventory (KLSI)*, which categorizes learners into one of the four types based on their preferences for abstract or concrete learning and active or reflective engagement.

Academic Achievement: Academic achievement refers to a student's level of success in meeting short- or long-term educational goals. It is

commonly quantified through measurable outcomes such as grades, test scores, or cumulative grade point average (CGPA). As noted by Das (2018), CGPA serves as a reliable indicator of overall academic performance, reflecting a student's ability to understand, apply, and synthesize knowledge across multiple subjects. For this study, academic achievement was measured using students' CGPA, obtained from institutional records with their consent. CGPA provides a standardized metric for comparing academic success across diverse student populations, making it a suitable variable for examining correlations with library attitudes and learning styles.

6. Research Objectives

1. To assess students' attitudes toward libraries.
2. To identify the prevalent learning styles among undergraduate students in West Bengal.
3. To examine the relationship between library attitudes and academic achievement.
4. To evaluate the moderating role of learning styles in this relationship.

7. Research Hypotheses

Null Hypotheses (H_0):

1. There is no significant relationship between library attitudes and academic achievement.
2. Learning styles do not significantly moderate the relationship between library attitudes and academic achievement.

8. Research Design

A descriptive correlational research design was used to examine relationships between variables.

9. Standardization of Questionnaire

For this study, two validated instruments were employed to measure the key variables: the Library Attitude Scale (LAS) and the Learning Style

Inventory (LSI). The details of these instruments, including the number of items, reliability, and validity, are outlined below:

1. Library Attitude Scale (LAS)

The Library Attitude Scale (LAS) was developed to assess students' perceptions, beliefs, and behaviors regarding library use. The scale comprised **25 items**, each rated on a **5-point Likert scale** ranging from 1 (**Strongly Disagree**) to 5 (**Strongly Agree**).

Subscales:

- **Library Engagement:** Measures the frequency and depth of library usage (7 items).
- **Perceived Usefulness:** Assesses how students value the role of libraries in their academic success (10 items).
- **Satisfaction with Resources:** Evaluates students' satisfaction with the availability and quality of library materials and services (8 items).

Reliability and Validity:

- **Reliability:** The internal consistency of the LAS was evaluated using Cronbach's alpha, which yielded a coefficient of **0.87**, indicating high reliability.
- **Validity:** Content validity was established through expert review by librarians and educational researchers, who confirmed that the items adequately covered the construct of library attitudes. Construct validity was assessed through exploratory factor analysis (EFA), which confirmed a three-factor structure corresponding to the subscales.

2. Learning Style Inventory (LSI)

The Learning Style Inventory (LSI) is based on Kolb's (1984) framework and was designed to classify students into four learning style categories: divergers, assimilators, convergers, and accommodators. The inventory included **12 items**, each scored on a **5-point Likert scale**, where 1 represents "Never" and 5 represents "Always."

Structure of the LSI:

- The inventory assessed students' preferences for abstract versus concrete learning and active versus reflective engagement. Each item contributed to identifying their dominant learning style.
- The scoring mechanism involved totaling specific responses to determine the dominant learning style category.

Reliability and Validity:

- **Reliability:** The LSI exhibited an overall Cronbach's alpha of **0.81**, indicating acceptable internal consistency.
- **Validity:** Construct validity was established through confirmatory factor analysis (CFA), which supported the theoretical four-style framework proposed by Kolb. Criterion-related validity was demonstrated by significant correlations between the LSI scores and academic behaviors reported in prior studies.

Overall Questionnaire Design:

The final questionnaire combined the LAS and LSI, resulting in a total of 37 items. Both scales were pilot-tested on a sample of 50 undergraduate students from diverse institutions in West Bengal to ensure clarity, comprehensibility, and relevance. Feedback from the pilot study informed minor revisions to improve item phrasing.

10. Variables Used

- **Independent Variable:** Library attitudes, learning styles.
- **Dependent Variable:** Academic achievement (CGPA).
- **Moderating Variable:** Learning styles.

11. Population and Sample

The population consisted of undergraduate students from colleges in West Bengal. A stratified random sampling technique ensured representation across urban, semi-urban, and rural institutions.

Sample Size: 500 students (calculated using Cochran's formula).

12. Sampling Procedure

Students were stratified based on institution type, year of study, and gender. Proportional allocation ensured equal representation.

13. Sampling Distribution

Table 1: Sampling Distribution

District	College Name	Institution Type	Year of Study	Male Students	Female Students	Total Students
Kolkata	Presidency University	Urban	First Year	25	25	50
	St. Xavier's College	Urban	Second Year	25	25	50
	Jadavpur University	Urban	Third Year	25	25	50
Howrah	Ramakrishna Mission Vidyamandira	Semi-Urban	First Year	20	15	35
	Vidyasagar College for Women	Semi-Urban	Second Year	15	20	35
North 24 Parganas	Barasat Government College	Semi-Urban	Third Year	20	20	40
South 24 Parganas	Maheshtala College	Rural	First Year	15	15	30
	Baruipur College	Rural	Second Year	10	10	20
	Sonarpur Mahavidyalaya	Rural	Third Year	15	15	30
Nadia	Kalyani University	Rural	First Year	15	10	25
	Krishnanagar Women's College	Rural	Second Year	10	15	25
	Ranaghat College	Rural	Third Year	10	15	25
Hooghly	Hooghly Mohsin College	Semi-Urban	First Year	15	15	30
	Chandernagore Government College	Semi-Urban	Second Year	15	15	30
	Serampore College	Semi-Urban	Third Year	10	15	25
Birbhum	Visva-Bharati University (Shantiniketan)	Rural	All Years	15	15	30

14. Statistics Used

Descriptive statistics (mean, standard deviation) and inferential tests (Pearson's correlation, multiple regression analysis) were conducted using SPSS.

15. Analysis of Hypotheses

The hypotheses were analyzed using statistical methods such as Pearson's correlation and multiple regression analysis. The results for each hypothesis are presented below in detail, supported by corresponding tables.

Analysis of Hypothesis 1 ($H_0$1)

Hypothesis:

$H_0$1: There is no significant correlation between library attitudes and academic achievement.

Statistical Test Used:

Pearson's correlation coefficient (r) was calculated to examine the relationship between students' library attitudes (measured by the Library Attitude Scale) and their academic achievement (measured by CGPA).

Table 2: Correlation Between Library Attitudes and Academic Achievement

Variable 1	Variable 2	r-value	p-value	Significance
Library Attitudes (LAS)	Academic Achievement (CGPA)	0.64	< 0.01	Significant

Interpretation:

The correlation coefficient r=0.64 indicates a moderate-to-strong positive relationship between library attitudes and academic achievement. The p-value (< 0.01) confirms that this relationship is statistically significant at the 1% level. Therefore, the null hypothesis ($H_0$1) is **rejected**, and it is concluded that students with more positive attitudes toward libraries tend to achieve higher academic outcomes.

Analysis of Hypothesis 2 (H_o2)

Hypothesis:

H_o2: Learning styles do not moderate the relationship between library attitudes and academic achievement.

Statistical Test Used:

Multiple regression analysis was performed to determine if learning styles (moderator) influenced the relationship between library attitudes (independent variable) and academic achievement (dependent variable).

Table 3: Multiple Regression Analysis of Predictor Variables on Academic Achievement

Predictor Variables	(Standardized Coefficient)	t-value	p-value
Library Attitudes (LAS)	0.54	9.21	< 0.01
Learning Styles (LSI)	0.32	5.43	< 0.01
Interaction (LAS LSI)	0.52	4.87	< 0.05

Table 4: Summary of Regression Analysis

Statistic	Value
R (Coefficient of Determination)	0.49
Adjusted R	0.48
F-statistic	34.72
p-value (Model)	< 0.01

Interpretation:

The interaction term (LAS × LSI) has a standardized coefficient β=0.52, with a p-value (< 0.05), indicating that learning styles significantly moderate the relationship between library attitudes and academic achievement. The model explains 49% of the variance in academic achievement, as indicated by R^2=0.49.

16. Discussion

The findings of this study underscore the significant role that library attitudes and learning styles play in shaping academic achievement among undergraduate students in West Bengal. The strong positive correlation (r=0.64, p<0.01) between library attitudes and academic

achievement indicates that students who perceive libraries as valuable academic resources tend to achieve higher grades. This aligns with prior research (e.g., Brown, 2015; Das, 2018), which highlights the critical role of library engagement in fostering academic success. Furthermore, the results of the multiple regression analysis revealed that learning styles significantly moderate this relationship (β=0.52, $p<0.05$). Specifically, students who align their study practices with their preferred learning styles, such as divergers benefiting from reflection or convergers excelling in problem-solving, show greater academic outcomes when they have positive attitudes toward libraries. This interaction suggests that the mere presence of a positive library attitude is not sufficient; its effectiveness is enhanced when learning strategies are tailored to individual preferences. The overall model, explaining 49% of the variance in academic achievement (R^2=0.49), underscores the combined importance of these factors. These results highlight the need for institutions to promote library engagement while also providing support for students to identify and leverage their learning styles to maximize academic success.

17. Conclusion

This study provides a comprehensive examination of the influence of library attitudes and learning styles on academic achievement among undergraduate students in West Bengal, offering insights into their interrelations and implications for educational practices. The results demonstrate that positive attitudes toward libraries significantly contribute to better academic outcomes, emphasizing the critical role libraries play in supporting students' educational journeys. Students who perceive libraries as valuable resources, engage with their facilities, and utilize their materials effectively are more likely to achieve higher cumulative grade point averages (CGPA). This finding is particularly relevant in the context of West Bengal, where many students rely on institutional libraries due to limited access to alternative academic resources. The study also highlights the moderating role of learning

styles in this relationship, as evidenced by the significant interaction effect in the regression analysis. Students who tailor their learning approaches to their preferred styles—whether as divergers, assimilators, convergers, or accommodators—experience enhanced benefits from their engagement with libraries, further amplifying their academic success. For example, divergers who prefer reflective and observational learning may benefit more from quiet study areas in libraries, while convergers may excel when utilizing library resources for problem-solving tasks.

The combined influence of library attitudes and learning styles, explaining nearly half of the variance in academic achievement (R^2=0.49), underscores the importance of fostering both components in academic environments. These findings are consistent with existing literature, such as Brown (2015), Das (2018), and Chakraborty (2022), which collectively affirm the value of libraries and individualized learning strategies in achieving academic excellence. However, this study extends previous research by focusing on the interplay between these factors in the unique sociocultural and academic context of West Bengal, where disparities in resource access and educational infrastructure pose significant challenges to student success.

From a practical standpoint, the results highlight the need for educational institutions to prioritize initiatives that promote positive attitudes toward library use. This can include organizing orientation programs, improving the availability of resources, and fostering a supportive and accessible library environment that caters to the diverse needs of students. Furthermore, institutions must recognize the importance of learning styles and provide targeted interventions, such as workshops to help students identify their preferred learning methods and integrate these styles into their study practices. Academic advisors and educators can play a key role in guiding students to align their learning behaviors with both their styles and the resources available to them, thereby creating a synergistic effect that enhances overall academic performance.

The study also emphasizes the importance of addressing institutional barriers that may impede library access or usage, particularly in rural and semi-urban areas. Libraries in these regions should be equipped with modern resources, including digital databases, to ensure equitable access for all students. Policymakers and administrators should focus on reducing the urban-rural divide by allocating resources and funding to under-resourced institutions, ensuring that all students, regardless of geographic location, have equal opportunities to engage with quality library facilities.

At the same time, the findings call for a broader cultural shift in how libraries are perceived and utilized in the academic ecosystem. Libraries should not merely be seen as repositories of books but as dynamic learning hubs that support diverse academic needs. This requires a reimagining of library spaces to accommodate various learning styles, such as quiet zones for reflective learners, collaborative areas for active learners, and access to technological tools for those who benefit from hands-on engagement. Additionally, library staff should be trained to provide tailored support to students, helping them navigate resources and adopt study strategies that align with their individual preferences.

While the study has provided valuable insights, it is not without limitations. The reliance on self-reported measures, such as the Library Attitude Scale and Learning Style Inventory, may introduce biases, as students' perceptions may not always align with their actual behaviors. Furthermore, the cross-sectional design of the study limits the ability to infer causal relationships between the variables. Future research could address these limitations by incorporating longitudinal designs, observational data, and experimental interventions to establish causal links and explore how these relationships evolve over time. Expanding the scope of the study to include postgraduate students or students from other regions of India would also provide a more comprehensive understanding of these dynamics in varying academic and cultural contexts.

In conclusion, this study highlights the intertwined roles of library attitudes and learning styles in shaping academic achievement, providing actionable recommendations for educators, administrators, and policymakers. By fostering a culture of library engagement and supporting students in leveraging their individual learning preferences, institutions can create environments that promote not only academic success but also lifelong learning and intellectual growth. As libraries adapt to the evolving needs of 21st-century students, they remain an indispensable pillar of education, bridging gaps in access and empowering learners to reach their full potential. This research affirms the enduring importance of libraries and the need for personalized educational approaches, calling for collaborative efforts to ensure that every student, regardless of their background or learning style, has the tools and opportunities to succeed academically.

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EARLY CHILDHOOD CARE & EDUCATION (ECCE) IN INDIA: CHALLENGES AND INITIATIVES

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ABSTRACT

This paper represents the quality issues in Early Childhood Care & Education (ECCE). Early Childhood Care and Education is globally recognized as a crucial element of Education for all. Therefore, countries have intensely pursued it. After many efforts, progress towards ensuring ECCE is apparent in many countries in the world. But most of them could not either completely achieve this goal or compromised its quality due to inadequate resources, improper planning and ineffective implementation strategies, Lack of effective Teaching-Learning Material, Lack of appropriate assessment and outcome measures and lack of Health and infrastructural facilities: especially a vast and populous country like India. A number of initiatives have been taken by the Government of India for bringing quality in the form of policies, plans, constitutional amendments, acts, development of quality standards and curriculum framework, schemes and flagship programs

like Integrated Child Development Services, Primary Education Program and Sarva Shiksha Abhiyan. To enhance the quality of ECCE, eight quality standards are essentials like, interaction, Health, Nutrition, Personal Care and Routine, Protective care and safety, Infrastructure/Physical Environment, Organization and Management, Child Experiences and Learning Opportunities, Assessment and Outcome measures and managing to support quality systems. All these standards help to achieve the goal of development of ECCE and overcomes the obstacles in the path of quality assurance.

Keywords: Early Childhood Care and Education, National Education Policy, 2020, Quality Issues.

Introduction

Early Childhood is a period for significant brain development that set foundation for later learning. At this time, the early experiences provided to the children influence their brain development and establish neural connections that provide basis for language, reasoning, problem-solving, social skills, behavior and emotional health (Rhode Island Kids Count, 2005). Therefore, Annual status of Education Report (ASER) 2013, envisaged, "in order to improve learning outcomes and sustain them in the long run, early years may be the best place to invest". That can be done by the providing quality in Early Childhood Care and Education in an efficient way. According to UNICEF, "Early Childhood Care and Education refers to a range of processes and mechanisms that sustain and support development during period between birth to 8 years of life. It

encompasses Education, Physical, Social and Emotional Care, Intellectual stimulation, health care and nutrition". ECCE is also considered as an important component of universal enrolment, retention and achievement in primary grades and later education. Josephine (2003) found a strong relationship between pre-primary education and retention at primary level. (Rao, 2010) also reported that, "children in higher quality ECCE center had better perceptual, memory, verbal and numerical skills than the one with lower quality, indicating that quality is related to child outcomes measures". So, quality in ECCE is good for Children's development, consistent with realizing their rights and an important part to help increasing equity in an effective manner. There are some critical issues which are not appropriately addressed, may be because we have compromised with the quality standards for ECCE both at the individual or the government level. These are not being addressed during planning, implementation and monitoring of the ECCE programmes. With this expansion, slowly the focus moved towards improving the quality of ECCE and making it free and compulsory, especially for disadvantaged children. Therefore, equitable and early investment in quality of the ECCE services and programs became vital concern. Recognising this, the World Education Forum 2015 adopted the 'Incheon Declaration for Education 2030', that encouraged the "provision of at least one year of free and compulsory quality pre-primary education and access to quality early childhood development, care and education for all children" (UNESCO, 2015b, p. 7). Now, guarantee quality in ECCE is priority in many countries. They are trying hard to trace this global commitment. India is one of them that too is chasing for the same through variety of initiatives. Let us study some of these issues in detail:

Quality Issues in Early Childhood Care and Education

There are many quality issues in the path of Early Childhood Care and Education. Some of them are following:

1. **Process of Admission**

There is not much clarity and transparency on the process of admission of children in ECCE centres in terms of date of admission, age for admission and correct admission procedure. It is observed that children are also being enrolled in preschools through formal tests especially in metropolitan and other big cities. This is being practiced perhaps due to the large number of applicants seeking admission in preschools. Such practices lead to rejection of children which may destroy their self-confidence and self-esteem at this tender age.

2. **Infrastructure, Material and Classroom Environment**

ECCE centres are lacking in age and developmentally appropriate equipment and play materials. Mostly, these are inadequate for the number of children enrolled in ECCE centres. The play material provided does not meet the criteria prescribed and are also not well maintained. In some cases, these materials are not safe and are not even appropriately used by the teachers. Apart from this, the classroom environment does not provide opportunities to the children to manipulate and explore the material for learning.

3. **Teachers**

Qualified and well - trained teachers are vital for the successful implementation of an ECCE programme. Issues with the teachers pertain to their qualification, appointment, salary and training/ capacity building. There are variations in the qualification of ECCE teachers appointed.

They may be possessing Nursery Teachers Training (NTT) or Bachelors in Education (B.Ed.). Pre-service training courses such as NTT, diploma/ certificate courses are being run by the unregulated institutions mushrooming everywhere. Similarly, some regulated institutes are running various types of ECCE/NTT courses of varied duration not recognized by the appropriate authority. In-service training of teachers is one of the vital but neglected and underdeveloped area in the whole country. There are no provisions for capacity building of in-service ECCE teachers to help keep them abreast with the latest developments mainly with regard to the use of technology and teaching learning process. Also, there are variations in pay norms for ECCE teachers and most are under paid. Most of the ECCE centres are overcrowded and have only one teacher in each class.

4. Teaching Learning Process

Teaching learning process in ECCE centres must be play and activity based. However, most centres adopt formal teaching methods, especially in the private sectors. Such methods provide very less scope for children to ask questions, experiment, explore and participate. Thus, making children only a passive recipient of information being provided by the teacher curbs their imagination and creative thinking skills. Children learn best in their mother tongue. Despite knowing this, most ECCE centres use English to teach and interact with children. Due to this, children hardly find the opportunity to interact and express themselves freely. Huge, boring and age- inappropriate homework provided by the preschools that burdens children is another significant issue. Children become pressurised and this practice robs the freedom of a child at home. Sometimes, this pressure is transferred to the parents as well. Most ECCE centres do not follow appropriate assessment procedures for

assessing children and their progress is invariably recorded through standardized tests and interviews.

5. The Curriculum

The curriculum consists of all kinds of experiences planned to be organised for young children keeping in mind their characteristics, needs and development. Presently, there is no set curriculum for ECCE. However, Ministry of Women and Child Development (MWCD) has developed a curriculum framework for ECCE which places children at the centre of teaching learning process and has suggested the play way approach for organising learning experiences of young children. Despite the availability of such guidelines, most ECCE centres are still struggling to align their pedagogy with this curriculum framework.

6. Inclusion and Gender Equality

Inclusion and gender equality are issues which need to be addressed at an early stage of life. An inclusive preschool environment consists of an equitable and respectable environment for all children despite the existing differences among them. This kind of environment is essential for children to develop positive self-identities and a sense of belongingness. Also, formation of gender identity develops during the early childhood period. The teachers are generally not aware or trained to handle gender and inclusion issues during this period. Concerted efforts at the government level and at the level of the ECCE centre are required to build an accessible and respectful environment for all children.

7. Administrative/ Management Issues

Administrative/ management issues are critical to the development and sustainability of an ECCE centre. These issues encompass the following:

• **Monitoring and Supervision:** Monitoring and supervision system is most important aspect of the management/administration of an ECCE centre. However, it is also one of the weakest dimensions of ECCE programmes. There is no clear monitoring and supervision mechanism for ensuring the quality of ECCE centres at macro and micro level. The stakeholders such as teachers, parents, policy makers, educational planners and administrators are not aware of these mechanisms and their role at different levels. Hence, they are not able to contribute to the provision of quality ECCE centres.

• **Regulatory Framework:** In order to ensure the quality of existing ECCE centres and to prevent mushrooming of unregulated ECCE centres, which do not meet the minimum standards of quality ECCE, a robust regulatory framework is imperative. However, there is no well-defined regulatory framework available both at the national and the state level. Some states have developed their state specific regulatory framework which may not be applicable in the context of other states. However, it is encouraging to know that the MWCD has constituted National ECCE Council though not functional but it is a step in the right direction.

• **Convergence/Coordination:** There is a lack of a strong and consistent convergence/ coordination between governments leading to uncertainty about their roles and responsibilities. Similarly, different ministries and institutions address different needs of the children related to their education, care, health and safety. Thus, there is a strong need to build a strong and consistent convergence and coordination between institutions, concerned ministries and governments for different programmes and services for children.

Directions to Resolve Issues in Early Childhood Care and Education

1. **Building Your Understanding**

✔ Though issues exist in ECCE, it is possible to address them through combined efforts of all the stakeholders. These efforts will ensure accessibility of quality ECCE programmes to all children.

2. **Process of Admission**

✔ Though process of admission is different in different states; children with three years of age by 31 March of an academic year are ready to enter preschool.

✔ There should be no use of evaluation/ interview/ interaction of children and parents for entry in a preschool.

✔ Admission should not be denied on the grounds of religion, region, caste, race, sex, disability and socio-economic status of the family.

✔ Children living in the neighbourhood should be preferred.

3. **Infrastructure, Material and Classroom Environment**

✔ Must ensure safe and adequate indoor and outdoor space.

✔ A minimum of 300/450 sq. Meters of outdoor space and 35 square meters indoor space should be provided for a group of 25 children.

✔ Adequate number of age and developmentally appropriate teaching learning material.

- ✔ Provision adequate light, ventilation, safe drinking water, clean and child friendly toilets.

4. Teaching-Learning Process

- ✔ Attention to classroom environment and setting
- ✔ Different activity areas must be designed in a way so as to provide ample opportunities to the children to explore the areas of their interest on a regular basis
- ✔ All equipment (resources) and materials in classroom are functional, easily accessible and safe.
- ✔ Teaching learning process should be child -centred.
- ✔ Age and developmentally appropriate activities and material to facilitate learning.
- ✔ Language of instruction in an ecce centre must be the mother tongue.
- ✔ Encouraged to be proficient in-home language/mother tongue first, and then the school language may be introduced
- ✔ Any kind of homework, must be discouraged and activities to do at home in consonance with the activities already done in the preschool may be encouraged
- ✔ Children's progress should be assessed in a non-threatening manner on a regular and comprehensive basis through daily observation, play activities, interactions and anecdotes.

5. The Curriculum

- ✔ Age- and- developmentally appropriate learning experiences and opportunities
- ✔ Must be play- based, ensure continuous learning, provide opportunities for interaction, ensure involvement of children
- ✔ Should offer pedagogy covering all domains of development
- ✔ The emphasis must be given on concrete experiences.

6. Inclusion and Gender Quality

- ✔ Diversity in the classroom must be respected to promote equality
- ✔ Facilitate education of children with special needs
- ✔ Carry out the early developmental screening of all children so that timely intervention may be provided
- ✔ To break the gender stereotypes through inclusive and gender sensitive curriculum.

7. Administrative/ Management/ Monitoring and Supervision

- ✔ Must focus on finding out the issues concerning ECCE and devising solutions to the identified problems.
- ✔ The stakeholders should be aware and trained about these mechanisms and their role at different levels.

8. Regulatory Framework

- ✔ Formation of standard regulatory framework for institutions offering ECCE programmes.

- ✔ Constitution of a dedicated agency to monitor implementation of standards.
- ✔ National ECCE council formulated by the MWCD, should be fully functional.

9. Convergence/Coordination

- ✔ The government must work to build a strong and consistent convergence with different programmes, institutions and concerned ministries to address multiple needs of children such as education, health, nutrition, safety and protection.
- ✔ Coordination among different stakeholders.

Conclusion

To conclude, we can say that, quality of ECCE across the country is very diverse. Still there is lack of basic requisite for organising ECCE programmes and activities like infrastructure, physical facility, health facilities, competent teachers, training and orientation of teachers, developmentally curriculum framework and assessment procedure. This shows that, basic quality standards for ECCE are compromised at various levels that create major hindrance improving the quality of ECCE. However, concerted interventions from the government, local and individual level may combat these challenges. These interventions include ensuring basic infrastructure facilities, recruitment of ECCE teachers and their training, development of appropriate curriculum, documentation and adaptation of good practices in ECCE, ensuring parent and community involvement, research-based interventions, making ECCE a mandate in all the schools and rigorous monitoring of

ECCE activities. The need to have considerable amount of commitment towards quality in ECCE that will lead to fruitful results.

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STUDY OF STUDENT TEACHER'S INTERNSHIP PROGRAMME FOR TEACHER EDUCATION ITS EFFECTIVENESS PROBLEMS AND PROSPECTS

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ABSTRACT

The internship plays an important role in completion of any professional courses. The successful completion of professional courses depends greatly on the internship. As a result it is also covered in teacher training courses. It gives students first hand exposure to the numerous responsibilities of a teacher such as instructing and improving topic knowledge. Additionally it offers a chance to apply theoretical understanding of techniques methods and teaching aids in a practical setting. Student teachers begin to use their understanding of teaching and learning during their internship integrating theory and practice. The internship will give student teachers the chance to critically analyses as they strive to make sense of their experiences and find their own voices and identities as teachers. This is perhaps the most significant benefit being a master teacher is a lifelong process of improvement. The internship teaching practices gives student teachers the ground work they need for future professional development. The findings and discussion demonstrate that with the correct supervision and support of school subject teachers and supervisor's trainee teachers have gained integrated teaching skills. Through the entire internship programme they were incredibly satisfied. Teacher educators are at the apex of the educational pyramid. Pre-service and in-service teacher educations are the strategies to make teacher competent enough to hold out the academic and administrative responsibilities. School internship

programme aims at equipping prospective teacher educators with required skills and competencies to become an efficient teacher. However during school internship programme prospective teacher educators come across various problems which obstruct the achievement of objective of school internship programme. Internship program in teacher education is of great significance because it ensures the professional preparation of prospective teachers. It provides them a practical opportunity to develop true understanding of the teaching profession and future prospects of working conditions in that profession. This study looks at issues and challenges that the prospective teachers experience during internship program. The study also deals with the perception and experience of the principals of co-operative schools involved in the internship program. Research approach for this study was both quantitative and qualitative. Population consisted of all student-teachers of B. Ed at Faculty of Education and principals of co-operative schools where students go for internship program. The 90 student-teachers and 07 principals of collaborative schools were selected as sample. Data was collected through three-point likart scale and in-depth interviews. The findings show that student teachers view internship program as a real opportunity to refine and improve their teaching skills in actual school setting. The results of the in-depth interviews with the principals reveal that internship program is of crucial importance and it has positive impact on the performance of student-teachers.

Key Words: Teacher's Internship, Education, Effectiveness, Problems, Prospects.

INTRODUCTION

An internship is a unique educational program that aims to integrate study with planned and performance related experience. It is usually designed for the benefits of young unemployed graduates and post graduates all over the world who have completed years of education. The

major purpose of the internship program is to develop and strengthen student's skills and to prepare them for the profession. Many internship programs aims to provide financial support to fresh candidates and also to keep them engaged and interested in acquiring further knowledge related to the profession they want to join in future. The internship program is beneficial for both fresh candidates and government organizations. It provides an opportunity to the fresh candidates to experience working conditions and requirement of today's professional business environment. Hence it can be said that it provides the student with a greater understanding of professional demands and qualification. It permits them to understand the connection between theory and practice thus it enhances the student's knowledge of his potential to reach the goals set for various professions. Teachers play an important role in achieving the aims and goals of the country in terms of preparing potential future citizens. Pre-service and in-service teacher education acts as strategies to make teachers competent enough to hold out their responsibilities. Apart from theoretical classes pre-service teacher education takes many attempts to provide practical and field experiences to the student-teacher which is not attainable without an internship program held in school. The internship program provides opportunities to prospective teacher educators for practice teaching and involvement in various on-going activities of the school as well. It is the lively part of pre-service teacher education that refines the prospective teacher educators' mistakes through continuous supervision of experts and teacher educators for several months. An internship can be defined as the sustained engagement with the school over a period of time is known as 'school internship' which equips the prospective teacher to build a repertoire of professional understandings, competencies skills and positive attitude towards schooling and teaching. During the internship the student teachers are required to undertake various activities related to classroom teaching classroom management and the organization of school-based and community-based activities. However for undertaking the activities the prospective teachers are required to develop a repertoire

of understandings competencies and skills before commencement of internship. The major thrust of the school internship programme among other keenly related activities like school exposure and exposure to multi-cultural contexts of the schools is to broaden the visions and improving the performance and capabilities of the prospective teacher-educator on the classroom transactions to enhance the quality of the teaching-learning process. An internship is a process of training that helps interns to improve their potential for future employment. It's crucial to become proficient at our profession. Training received by interns throughout their internship helps them learn new skills and knowledge which improves their performance. It gives interns a chance to learn first-hand knowledge. It aims to make improvements to an intern's performance on the job that is reasonably permanent. Interns will undoubtedly gain more information and skills through their internships than they would otherwise. The fundamental goal of an internship programme is to bring about a desired change in a trainee's behavior. The teaching internship is regarded as the apex of teacher education preparation since it gives student interns several opportunities to contextualize their theoretical learning and practical abilities. Therefore the main objective of a teaching internship is to provide teacher interns with real-world classroom experience so they may evaluate their teaching skills. Through this procedure teacher interns can solidify their pedagogical principles and learning and teaching philosophies. Internships aid in changing students' knowledge and abilities or what they know and how they will work. The act of conveying developing or upgrading a student's information and abilities that they gain in the form of theory is therefore accomplished through internship programming. Internship programmes are advantageous for both the new candidates and government agencies. It gives new candidates a chance to experience the demands and working circumstances of the modern professional business environment. Hence the internship gives the student a better idea of what is required of them in terms of education and training for their job. The school internship promotes professional networking

encourages the development of teaching-learning theories offers a safe environment for experimentation welcomes fresh viewpoints and heightens the desire to keep learning and reflecting. The development of skill for enhancing teachers' noticing and applying knowledge learned at the university to the classroom was shown to be of great importance in this study. Therefore we propose to focus more strongly on this facet to prepare for and accompany changes in teachers' noticing during teaching internships. The initial fostering of interpretation may reduce later cognitive load and make it easier for to learn perception and decision-making in a meaningful way. Since few variables explained interpretation skills in our analyses further research is needed to explore how interpretation skills can be fostered and what variables might explain the development of these skills. It results suggest effects on interpretation skills of average high school diploma grade and thus academic capability, as well as opportunities to learn from university education. Therefore the internship program is of great significance because it ensures the professional preparation of students in various ways such as understanding of the target profession and future prospects of working conditions in that profession. Understanding of the target profession and future prospects of working conditions can provide valuable exposure on the job. The development of professional skills and attitudes can establish useful contacts with people working in the same profession. The organizations and institutions that allow internship program benefit by having a dedicated and excited intern as a part of their team. Thus it can be said that the internship work in two ways and are beneficial for both the intern and the organizations.

OBJECTIVES OF THE STUDY

This study is specifically designed to:

(a) To evaluate the effectiveness of internship program being started at V. B. U. Hazaribag in the session from 2021-23.

(b) To identify the problems and challenges that emerged during the internship program.

(c) Suggest the possible measures for the improvement of internship program specifically in the V. B. U. and generally in all educational institutions who offers internship program to fresh teachers.

RESEARCH DESIGN

This study has been designed in both quantitative and qualitative paradigm. This research study is descriptive survey type in nature. The descriptive survey is selected because the primary purpose of this study is to determine the nature effectiveness and weaknesses of internship program offered to student teachers.

SAMPLE

The sample population from which data collected was comprised of 90 students (45) students of the session 2021 and 2023 respectively. All participants were asked to point out the problems and to make recommendations and modifications for improvement of internship program.

TOOLS FOR DATA COLLECTION

Considering the objectives of the present study five tools and techniques were used as follows:

1. Questionnaire for prospective teacher educators.
2. Questionnaire for teacher educators.
3. Observation schedule.
4. Semi-structured Interview for prospective teacher educators.
5. The tools were prepared by the researcher and shown to experts for validation and after receiving feedback from experts the tools were finalized.

RESULTS

The teacher has a significant impact on the student teacher's learning experience because she serves as a role model and mentor for the student teacher. The methods used by their mentor instructors are frequently adopted by student teachers. As interns begin an intensive and persistent

time of learning to teach in a setting of practice guide teachers who serve as role models for teaching support and supervise them. The tasks assigned to the guide teacher are such as preparation and communication, encouragement of the intern's learning and evaluation of the intern's comprehension and development. The results imply that the school environment could affect the children's psychology directly or indirectly and maintaining the environment in proper could be given good learning atmosphere to the students. The internship program in the teaching profession is designed to make the future teachers ready for the actual classroom by getting trained among the school students. The trainee may come across different types of students during the training period. The school students often get excited by witnessing a trainee teacher as they tend to believe in getting relieved from the same teacher teaching the same subjects. Relationships between teachers and students are essential for both successes. Such relationships play a major role in determining the success of a teacher's work in terms of classroom management. Few students have a positive attitude and behaviour towards the student teachers while few students react vice versa. Through the internship teaching practices the student teachers get the chance to explore relationship building with children and how that influences classroom management because they work with students on a regular basis and for extended periods of time. Test and examinations helps teachers to measure the learning progress and achievement and to evaluate the effectiveness of subject understanding. It helps teachers to change and re-teach the lesson according to the understanding level of the students. Initial teacher education programmes have traditionally included a critical component called the teaching practices. As teacher candidates are primarily anticipated to engage in a reciprocal engagement with the students in actual classrooms throughout the practicum phase it also has a core mission of preparing them for the world of teaching. The purpose of the teaching practices is to give student teachers the chance to put the theories methods and strategies they have learned in the course of their teacher education into practice. It is required of student teachers to apply

the concepts they have learned in the classroom to difficulties they meet in the classroom. The student teachers will undoubtedly get some ideas from seeing the guide teacher in a professional capacity about how to deal with issues.

DISCUSSION

Regarding the structure of teaching internships our findings suggest a need to strengthen theory practice linkage activities in the practice of teaching internships. Overall our study suggests that teaching internships and teaching practice activities have the potential to foster teachers' noticing as a central facet of future professional practice and promote the connection between practice teacher noticing and academic knowledge. Before the commencement of the school internship session the concerned institution should provide proper orientation for prospective teacher educators about the preparation of teaching aids lesson plan and model demonstration lesson. The prospective teacher educators who participated in this study opined that the teacher educators were given orientation programme on teaching aid with a main focus on 2 Dimensional teaching aids and 3 Dimensional teaching aids based on learning experiences. The findings of the study pinpoint that focusing on inculcation of use of ICT based teaching aids before the beginning of school internship session. In order to develop instructional skills for the prospective teacher educators practice in writing lesson plan is very important. The findings of the study showed that majority of the teacher educators given orientation on macro teaching lesson plan with reference to the introduction of the lesson presentation of a lesson recapitulation of a lesson and home assignment. As for the norms of university preparing of the innovative lesson plan is mandatory for every prospective teacher educator. But it was observed that majority of the prospective teacher educators has no clear idea about innovative lesson plan. There is a need for proper planning of innovative lesson plan. To make the effective organization of school internship session the co-operation from the subject teacher of the co-operating school internship school is one of the

key successes of the school internship programme. This study found that some of the prospective teacher educators who did not get adequate co-operation from the students in the classes in school internship session. The students in the classes were not interest in school environment and the students in the classes felt that prospective teacher educator was not a regular teacher and make a disturbance in the class. The teacher educators must conduct the proper orientation programme for prospective teacher educators before sending for internship in co-operating school. University should take the necessary initiative to induct variety of innovative lesson plans in school internship. To change the scenario of teacher education it is high time to increase the number of days and the practice of more teaching classes are needed to enhance the quality and prospective teacher educator practice. In the school internship session feedback given by supervisors is most crucial part of the programme. Method teacher educators have given feedback to prospective teacher educators transacting the lesson and regarding the weaknesses and strengths. This result showed that a both individual and group discussion is the effective feedback session. The experience of student teachers during their internship programme was excellent and they experienced lot of new areas in teaching process. This part of internship training paved the amazing way to gain knowledge learn teaching strategies adjustment with diverse students understanding of the self and more over importance teaching. This would give confidence to the student teachers to achieve their goal as a role model and shows them the importance of teachers in every student's life. We explored the influences of the teaching internship process variables and thus the organization and implementation of internships for the individual using regression analyses which showed effects for only some of the variables particularly positive influences of making connection between theory and practice and emotional mentor support. This raises questions about the necessity for and current form of some features of teaching internships such as lesson planning which surprisingly showed no effects or negative effects on the three facets of teachers' noticing. The amount of time

spent on lesson preparation had a negative effect on decision-making which may be explained by the' lack of lesson planning skills that is they were unable to make sufficient use of this time due to their lack of knowledge about lesson planning. On the other hand this result may indicate that who prepared longer or more extensively for lessons were more restricted in their expectations about the decisions to be made in class had fewer opportunities to practice a variety of decisions and thus fewer opportunities to develop their decision-making skills. Furthermore teaching had no positive effect on teachers' noticing. This is particularly interesting since often request more of these activities in their university education and engage extensively in these activities during their teaching internships. Time spent on teaching even had a negative impact on perception. Hence participation in classroom teaching alone does not seem to be sufficient for developing teachers' noticing competence complementing prior results that demonstrated the risks of adopting established school practices from in-service teacher without reflecting on them. Who focus their teaching internships predominately on performing situations may have less time for processing and reflection and may therefore adopt established school practices without questioning them. Furthermore our test instrument assessed only a subset of teachers' professional competencies thus the development of other competence facets may have been over looked and more comprehensive survey designs are needed to consider knowledge beliefs and situation specific and performance related facets together and to obtain a deeper understanding of the effects of teaching internships. There is need of good collaboration in between University and interning School in the organization of school internship programme. The internship school facing several problems such as organization time of school internship session allotting of prospective teacher educators allotting of classes allotting of an equal number of prospective teacher educators in each method preparation of separate time table for prospective teacher educators managing the classes and co-operation from the students.

CONCLUSION

The analyses and interpretation of data and research outcomes clearly indicate that internship program is an effective way to give training to the student teachers about real world of work. It give them an opportunity to integrate theory and practice plan and deliver lessons properly critically analyse their own and peers teaching styles and improved them in the light of feedback given by supervisors. Through this program they understand the role and responsibilities of professional teachers. Internship program also give them opportunity to understand different aspects of school program and improve their skills and abilities in teaching profession. An effective and improved internship program is required in developing student teachers personalities as true professionals in field of education. Teachers can also use case study method for innovative teaching because case method is a powerful student centred teaching strategy that can impart students with critical thinking communication and interpersonal skills. Teaching with sense of humour is also considered as an innovative method which makes students listen actively.

SUGGESTIONS

Keeping this point in view following are the suggestions for the development and improvement of internship program particularly and in all institutions of teacher education generally.

1. The principals of collaborative schools and student-teachers before the internship program and give them briefing about the program. It is very beneficial for all.

2. A set of written guidelines about internship program from the concerned department should be given to the concerned student teachers and principals of the concerned schools. So they may act according to the rules and regulations as mention in the document.

3. There should be a unified strategy to implement internship program by the Faculty of Education. In addition communication mechanism needs to be strengthened so that the best practices can be shared.

4. Collaborative planning between supervisors and student teachers should be encouraged. Student-teachers should be given chance to develop and discuss their lesson plans with their concerned supervisors before delivering it in classroom.

5. Student teachers should select their lessons according to the school syllabus in this way there will be no loss of students.

6. The practice of "Peer observation "needs to be strengthened. Peer observation is a way to provide students with an opportunity to observer pedagogical practices of their colleagues and provide them open and constructive feedback.

7. Use of innovative and child entered pedagogy needs to be encouraged during internship program.

8. Availability of resources and teaching material in collaborative schools need to be ensured where students go for internship.

9. Supervisors should be guided to use checklist rating scale and written analysis for observing pedagogical practices of student teachers in real classroom.

10. After completion of the program each student teacher should submit a reflective report about what they had learned from the internship program. Also each student and supervisor should be encouraged to give suggestions to the concerned department in writing for the future improvement of the program.

11. Refreshes courses and workshops should be offered to the staff of collaborative school to enhance the knowledge and expertise of the supervisors.

12. The duration of internship program should be extended.

13. The concerned department and teacher educators should go for regular visits to the place of internship.

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EVOLUTION, CHALLENGES, AND OPPORTUNITIES IN HIGHER EDUCATION IN WEST BENGAL

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ABSTRACT

This paper digs into the evolution, challenges, and prospects of higher education in West Bengal, a state renowned for its historical contribution to India's educational landscape. By examining the historical trajectory, the study contextualizes the establishment of institutions like the University of Calcutta, which symbolized academic excellence during the colonial era and laid the foundation for subsequent developments. Despite its rich academic heritage, West Bengal faces significant challenges in ensuring equitable access, maintaining quality, and fostering innovation in higher education. The persistent urban-rural divide exacerbates disparities in access to quality education, with rural areas suffering from inadequate infrastructure, faculty shortages, and limited access to technology. Furthermore, while urban centers have benefited from better funding and resources, rural and marginalized communities remain disproportionately affected by systemic inequalities. This study employs a historical and documentary analysis approach, utilizing secondary data from government reports, scholarly articles, and institutional records to identify gaps in policy implementation and their impact on the region's higher education framework. The findings highlight the need for addressing key challenges, including infrastructural inadequacies, funding shortfalls, and governance inefficiencies, which have hindered the state's ability to align with global educational standards. Additionally,

the paper underscores the importance of leveraging technology, strengthening research ecosystems, and fostering public-private partnerships to bridge existing gaps and enhance the overall quality of education. Recommendations include targeted policy reforms aimed at inclusivity, such as scholarships for marginalized communities, vocational education programs to boost employability, and regional hubs to decentralize access to higher education. By exploring these areas, the paper provides actionable insights for policymakers, educators, and researchers to revitalize the higher education system in West Bengal, ensuring it meets the needs of a dynamic, knowledge-driven economy. Ultimately, this research emphasizes the urgent need for a collaborative, multi-stakeholder approach to address systemic challenges and unlock the potential of West Bengal's higher education institutions, transforming them into globally competitive centers of learning. The findings offer a roadmap for fostering inclusivity, innovation, and excellence in the state's higher education sector, thereby contributing to its socio-economic development and reinforcing its historical legacy as a hub of academic brilliance.

Keywords: Higher education, West Bengal, educational policy, historical analysis, challenges, opportunities, equity.

1) Introduction:

Higher education is an essential pillar of societal development, shaping individual empowerment, economic progress, and cultural advancement. In India, West Bengal holds a distinctive place in the evolution of higher education, primarily due to its historical legacy and intellectual contributions. The establishment of the University of Calcutta in 1857 marked a watershed moment, making it one of the first modern universities in Asia and setting a benchmark for academic excellence in the region. Over the years, institutions such as Jadavpur University, Presidency University, and Visva-Bharati have emerged as prominent

centers of learning, further enriching the state's academic landscape. However, despite its historical prominence, West Bengal faces substantial challenges in higher education, including inequitable access, inadequate infrastructure, and an underdeveloped research ecosystem (Sen, 2015). These challenges are particularly pronounced in rural and marginalized areas, where disparities in educational opportunities continue to hinder progress (Chatterjee, 2019). The state's higher education system reflects a blend of colonial influences and post-independence policy directions. During the colonial era, the focus was predominantly on liberal arts education, designed to cater to administrative needs rather than fostering scientific innovation (Dasgupta, 2017). This legacy, while instrumental in developing a strong intellectual foundation, left gaps in areas such as technical and vocational education, which remain inadequately addressed to this day. Post-independence, the government undertook significant efforts to expand higher education through the establishment of universities, colleges, and research institutions. However, these initiatives have often fallen short in ensuring equitable distribution of resources and opportunities across the state (Mukherjee, 2021). Urban centers like Kolkata have historically dominated the educational landscape, while rural areas have struggled with limited access to quality institutions and faculty shortages (Roy, 2020). In recent decades, the rapid globalization of education has necessitated a shift in the traditional approach to higher education. Institutions in West Bengal face increasing pressure to adopt innovative teaching methods, integrate technology, and align their curricula with global standards. However, the uneven adoption of digital technologies, particularly in rural areas, has further widened the gap between urban and rural educational outcomes (Chatterjee, 2019). Moreover, the lack of robust research infrastructure and funding has impeded the state's ability to compete with leading educational hubs nationally and internationally (Mukherjee, 2021). Despite these challenges, West Bengal has immense potential to revitalize its higher education system. The state boasts a rich cultural heritage, a history of academic excellence, and a growing pool of

talented students and educators. By addressing systemic challenges, fostering collaboration among stakeholders, and embracing technological innovations, West Bengal can reclaim its position as a leader in higher education. This study explores the historical evolution of higher education in West Bengal and critically examines the challenges and opportunities in the current system. Through a comprehensive analysis of policy documents, institutional records, and scholarly articles, the research aims to provide actionable insights to improve access, equity, and quality in the state's higher education sector. By bridging the gap between historical legacy and contemporary demands, this study underscores the importance of strategic planning and collaborative efforts in fostering an inclusive and competitive educational framework. The findings aim to serve as a valuable resource for policymakers, educators, and researchers seeking to enhance the role of higher education in the socio-economic development of West Bengal and beyond.

2) Need for the Study:

The significance of higher education in fostering individual empowerment and economic growth cannot be overstated. West Bengal's rich academic heritage, though commendable, has not translated into equitable educational opportunities across the state. Despite the establishment of premier institutions, rural and economically disadvantaged regions remain underserved. Furthermore, rapid global advancements in higher education necessitate a critical evaluation of the state's preparedness to compete on a global scale.

The need for this study arises from the following gaps:

1. A lack of historical documentation connecting past policies to present challenges in the state's higher education system.
2. Persistent disparities in access to higher education, especially among marginalized communities.
3. Insufficient research linking policy interventions to tangible outcomes.

This study aims to bridge these gaps by providing a comprehensive analysis that will aid policymakers and educational stakeholders.

3) Significance of the Study:

This study holds relevance for multiple stakeholders, including policymakers, educators, and researchers, for the following reasons:

1. **Historical Insight:** It provides a comprehensive understanding of the historical context and policy evolution of higher education in West Bengal.
2. **Systemic Challenges:** It identifies and analyzes systemic issues that hinder the accessibility, quality, and equity of higher education.
3. **Policy Recommendations:** The study offers actionable strategies for addressing gaps and fostering innovation, inclusivity, and research development.
4. **Global Competitiveness:** It highlights areas where West Bengal's higher education system needs to align with global standards to remain competitive in a rapidly changing educational landscape.

4) Review of Related Literature:

Sen (2015): In *"Challenges in Indian Higher Education,"* Sen analyzed systemic policy failures, emphasizing regional disparities in access and the inadequate funding of state universities. The study underscored that regions like West Bengal, despite having a rich academic history, lag behind in terms of infrastructure and modern educational practices.

Dasgupta (2017): In his study titled *"Colonial Legacy and Higher Education in West Bengal,"* Dasgupta traced the roots of higher education in West Bengal to the colonial era. He argued that the colonial emphasis on liberal arts education shaped the state's academic ethos but failed to build a foundation for science and technology education.

Chatterjee (2019): Chatterjee, in *"Equity and Inclusion in Indian Education,"* discussed the exclusion of marginalized communities from

higher education. She specifically noted that West Bengal, with its socio-economic diversity, struggles with ensuring inclusivity in rural and tribal regions.

Roy (2020): In his work *"Technological Integration in Indian Higher Education,"* Roy explored the potential of digital technologies to bridge educational gaps. His research pointed to the uneven adoption of these technologies across West Bengal's rural and urban areas as a major limitation.

Mukherjee (2021): Mukherjee, in *"Higher Education Policies in Post-Independence India,"* critically analyzed policy documents and their implementation in West Bengal. He identified gaps in funding, governance, and research infrastructure as key areas requiring attention.

5) Delimitations of the Study:

1. The study focuses exclusively on higher education in West Bengal, omitting primary and secondary education systems.
2. It relies solely on secondary data sources such as government reports, journal articles, and online databases.

6) Research Objectives:

1. To trace the historical development of higher education in West Bengal.
2. To analyze the challenges that hinder the growth and quality of higher education in the state.
3. To evaluate the effectiveness of governmental and institutional policies aimed at improving higher education.
4. To propose actionable recommendations for enhancing access, equity, and research quality.

Research Questions:

1. What are the historical milestones in West Bengal's higher education system?
2. What systemic challenges affect access and quality in higher education in the state?

3. How effective have policies been in addressing these challenges?
4. What strategies can be implemented to align West Bengal's higher education system with global standards?

7) Research Design:

This study adopts a **historical and documentary analysis approach** to explore the evolution and challenges of higher education in West Bengal. Data sources include:

- **Government Reports:** UGC and MHRD documents.
- **Institutional Archives:** Records from institutions like the University of Calcutta and Visva-Bharati.
- **Journal Articles:** Peer-reviewed articles focusing on higher education in India and West Bengal.
- **Websites and Databases:** Credible online resources for policy and statistical data.

8) Discussion:

The higher education system in West Bengal has evolved over several decades, shaped by its colonial legacy, post-independence reforms, and contemporary global challenges. This discussion elaborates on the historical development, systemic challenges, opportunities, and future directions for improving the state's higher education framework, backed by detailed analyses and references to existing literature.

Historical Evolution of Higher Education in West Bengal

The foundation of modern higher education in West Bengal was laid during the colonial era, with the establishment of the University of Calcutta in 1857. This institution, modeled on British universities, was primarily focused on liberal arts education, reflecting the colonial administration's priorities (Dasgupta, 2017). The emphasis on creating a cadre of educated individuals for administrative roles led to the neglect of technical and vocational education, a shortfall that persists in the state's educational framework. Institutions such as Presidency College (now Presidency University) played a pivotal role in producing eminent

scholars and thinkers like Swami Vivekananda, Subhas Chandra Bose, and Rabindranath Tagore, shaping the intellectual fabric of Bengal (Mukherjee, 2021). Post-independence, the Indian government recognized the importance of expanding higher education to meet the demands of a newly independent nation. In West Bengal, this resulted in the establishment of several universities and colleges, including Jadavpur University in 1955, which emphasized engineering, science, and technology education. However, these efforts were concentrated in urban areas, leading to disparities in access for rural populations (Sen, 2015). Furthermore, while institutions like Visva-Bharati University in Santiniketan sought to blend traditional Indian and Western educational ideals, they faced challenges in sustaining their original vision amidst changing socio-political dynamics (Chatterjee, 2019).

Systemic Challenges in Higher Education

Despite its illustrious history, West Bengal's higher education system faces a host of systemic challenges that hinder its growth and effectiveness. These include issues related to accessibility, equity, quality, funding, governance, and research infrastructure.

1) **Accessibility and Equity:** Access to higher education in West Bengal remains unevenly distributed, with rural and marginalized communities experiencing significant barriers. While urban centers like Kolkata house prestigious institutions, rural districts often lack adequate infrastructure, faculty, and resources. This disparity has been exacerbated by socio-economic factors, including poverty and limited awareness about the importance of higher education among marginalized groups (Roy, 2020). Policies aimed at increasing enrollment have had limited success in bridging these gaps, as they often fail to address underlying socio-economic inequalities (Chatterjee, 2019).
2) **Quality of Education:** Quality assurance is another pressing issue in West Bengal's higher education system. Many colleges suffer from outdated curricula, insufficient pedagogical innovation, and

inadequate use of modern technologies (Sen, 2015). Faculty shortages further exacerbate this problem, with a large proportion of teaching positions in government and private institutions remaining vacant. This shortage impacts the quality of teaching and the ability to conduct meaningful research (Mukherjee, 2021).

3) **Funding and Resource Allocation:** The higher education sector in West Bengal faces chronic underfunding, limiting its capacity to expand infrastructure, adopt new technologies, and attract qualified faculty. While government funding has increased marginally over the years, it remains insufficient to meet the growing demands of higher education institutions (Dasgupta, 2017). Private sector participation, though increasing, is largely concentrated in urban areas and is often criticized for prioritizing profit over quality education (Roy, 2020).

4) **Governance and Policy Implementation:** Governance issues, including bureaucratic inefficiencies and lack of institutional autonomy, hinder the smooth functioning of higher education institutions. Policies introduced by the central and state governments often face delays in implementation due to administrative bottlenecks (Chatterjee, 2019). This has led to a mismatch between policy intentions and on-ground realities, further hampering the system's ability to address key challenges.

5) **Research and Innovation:** Research output in West Bengal's higher education institutions remains low compared to national and international benchmarks. Factors such as inadequate funding for research, lack of collaboration with industry, and limited availability of research infrastructure contribute to this shortfall (Mukherjee, 2021). The focus on traditional teaching roles over research activities among faculty members further diminishes the state's capacity for innovation.

Opportunities for Improvement

While the challenges are significant, West Bengal's higher education system also presents numerous opportunities for improvement and growth. Leveraging its historical strengths and embracing contemporary innovations can help the state address existing gaps and move towards a more equitable and effective educational framework.

1) **Technological Integration:** The rapid advancement of digital technologies offers a unique opportunity to bridge the rural-urban divide in higher education. E-learning platforms, virtual classrooms, and online resources can enhance access to quality education for students in remote areas (Roy, 2020). Institutions must prioritize the development of digital infrastructure and train faculty to effectively integrate technology into their teaching methodologies.
2) **Policy Reforms:** Comprehensive policy reforms that prioritize equity, quality, and accountability are essential. Policies should include targeted interventions for marginalized communities, such as scholarships, fee waivers, and outreach programs to raise awareness about higher education opportunities (Chatterjee, 2019). Moreover, granting greater autonomy to institutions can enable them to innovate and tailor their strategies to local needs.
3) **Strengthening Research Ecosystems:** Enhancing research capabilities in higher education institutions is critical for fostering innovation and economic growth. This can be achieved by increasing funding for research, encouraging collaboration between academia and industry, and establishing dedicated research centers within universities (Mukherjee, 2021). Faculty training programs and incentives for research output can further improve the state's research ecosystem.
4) **Public-Private Partnerships:** Collaborations between the public and private sectors can help address funding and infrastructure gaps. Private sector involvement can bring in much-needed resources and expertise, while public institutions can ensure that such

collaborations prioritize inclusivity and quality over profit motives (Dasgupta, 2017). These partnerships should focus on creating centers of excellence, promoting vocational education, and supporting entrepreneurship.

5) **Global Collaborations:** Establishing partnerships with international universities can enhance the global competitiveness of West Bengal's higher education institutions. Such collaborations can facilitate knowledge exchange, joint research projects, and the development of globally relevant curricula (Roy, 2020). Programs that encourage student and faculty exchange can also enrich the educational experience and expose learners to diverse perspectives.

Future Directions and Policy Recommendations

To create a robust and inclusive higher education system in West Bengal, stakeholders must adopt a multi-pronged approach that addresses both systemic challenges and emerging opportunities. Key recommendations include:

6) **Developing Regional Hubs:** Establishing regional hubs of higher education in rural and semi-urban areas can reduce disparities and improve access. These hubs should include state-of-the-art infrastructure, qualified faculty, and facilities for vocational training to cater to the diverse needs of the population.

7) **Emphasizing Vocational Education:** Introducing vocational and skill-based programs can enhance the employability of graduates and align the state's higher education outcomes with labor market demands (Chatterjee, 2019). Collaboration with industries to design these programs can ensure their relevance and effectiveness.

8) **Improving Faculty Development:** Addressing faculty shortages through recruitment drives, better compensation packages, and professional development programs is essential. Faculty members should be encouraged to balance teaching and research responsibilities, with adequate institutional support for both activities (Mukherjee, 2021).

9) **Promoting Inclusive Education:** Policies that promote diversity and inclusion, such as reserved seats for marginalized communities and gender-sensitive infrastructure, can ensure that higher education becomes accessible to all segments of society (Sen, 2015).

10) **Establishing Monitoring Mechanisms:** Setting up robust monitoring and evaluation mechanisms can improve governance and accountability in higher education institutions. These mechanisms should focus on tracking student outcomes, faculty performance, and institutional effectiveness to ensure continuous improvement (Roy, 2020).

The discussion highlights that while West Bengal's higher education system has a rich legacy and significant potential, it faces several challenges that require urgent attention. By addressing issues related to accessibility, equity, quality, and governance, the state can leverage its historical strengths and embrace emerging opportunities for growth. Collaborative efforts among government, academia, and the private sector are essential for building a sustainable and inclusive higher education system that aligns with global standards. The recommendations presented here aim to guide policymakers and stakeholders in creating a framework that not only meets the current demands of the educational landscape but also anticipates future challenges and opportunities.

9) Conclusion

The higher education system in West Bengal stands at a critical juncture, poised between its rich historical legacy and the pressing need for systemic reform to meet contemporary demands. While the state boasts an impressive array of institutions and a tradition of academic excellence, challenges such as inequitable access, inadequate infrastructure, faculty shortages, and insufficient research output continue to hinder its progress. Rural and marginalized communities remain disproportionately affected by these shortcomings, reflecting deeper socio-economic inequalities that must be addressed. Furthermore, the global shift towards technology-

driven education, interdisciplinary approaches, and research-oriented frameworks has highlighted the gaps in West Bengal's ability to align with these evolving paradigms. However, the state's potential remains immense. By investing its intellectual heritage, embracing technological advancements, and fostering collaboration between government, academia, and industry, West Bengal can transform its higher education sector into a model of inclusivity, quality, and innovation. Policy interventions must prioritize equity and access while promoting global partnerships and research excellence to elevate the state's institutions to international standards. This study marks the urgent need for a comprehensive, multi-stakeholder approach to address systemic barriers and harness opportunities, ensuring that higher education in West Bengal becomes not only a driver of individual and economic growth but also a cornerstone of societal progress in the years to come.

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PARADIGM SHIFT IN UNDERSTANDING AND IMPLEMENTING CHANGES IN TEACHING AND LEARNING

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ABSTRACT

When a paradigm shift takes place we see things from a different perspective as we focus on different aspects of the phenomena in our lives. The human brain is designed to generate discern and recognize patterns in the world around us. Since the early (1980) the term "paradigm shift" has been used as a means of thinking about change in education. Focusing greater attention on the role of learners rather than the external stimuli learners are receiving from their environment. Thus the centre of attention shifted from the teacher to the student. This shift is generally known as the move from the teacher centred instruction to the learner centred or learning centred instructions. Focus greater attention on the learning process rather than on the products that learners produce. This shift is known as a move from product-oriented instruction to process oriented instructions. Focusing greater attention on the views of those internal to the classroom rather than solely valuing the views of those who come from outside to study classrooms evaluate what goes on there and engage in theorizing about it. This shift led to such innovations as qualitative research with its valuing of the subjective and affective of the participants' insider views and of the uniqueness of each context. Along with this emphasis on context came the idea of connecting the school with the world beyond as a means of promoting holistic learning. Knowingly or unknowingly the teaching and learning takes place directly or indirectly in different forms the

formal non-formal and informal at different level primary secondary and higher education from ancient to present era. Here the method of teaching and learning knowingly or unknowingly has been changing according to social change. In modern era the teaching and learning takes place with well formulated school environment and it is the primary source to generate skilled human resource. To enhancement of this primary and predominant process it is need of the hour to take out the paradigm shift in the teaching and learning process. Helping students to understand the objectives of learning and develop their own purposes. The paradigm shift in education outlined above has led to many suggested changes in how teaching is conducted and conceived. The concept of learner autonomy fits with the overall paradigm shift because it emphasizes the role of the learner rather than the role of the teacher. It focuses on the process rather than the product and encourages students to develop their own purposes for learning and to see learning as a life-long process. The co-operative learning relates to several aspects of the paradigm shift. These eight changes are learner autonomy cooperative learning curricular integration focus on meaning diversity thinking skills alternative assessment and teachers as co-learners. The paradigm shift of which these changes are part is put into perspective as an element of larger shifts from positivism to post-positivism and from behaviorism to cognitivist.

Key Words: Paradigm Shift, Understanding, Implementing, Teaching, Learning.

INTRODUCTION

Teaching and learning takes place from ancient period and it always transfer knowledge to the next generation. Here to make the learner comfortable to enjoy the learning and betterment of traditional teaching and learning the new technology and methodology are need to adopt as paradigm shift. There is lot of factors leads behind to think about

paradigm shift in teaching and learning it includes such as globalization industrialization population explosion social changes etc. In this physical and humanistic world changing is the only unchangeable and it takes place in all fields such as agriculture medicine industrial activities including teaching and learning process. The people innate trait always seeks new things and adopting the new methods. The inventions make behavioural changes among human being and human beings behaviours leads new inventions too. It is not mean that all invention and its adaptations can make a healthy society. Here need to keep in mind that the healthy new technologies have to adopt and that have to transfer a sustainable humanism. Especially in the field of education to enhance teaching and learning more effective the paradigm shift adaptation and flexibility is always very important. Knowingly or unknowingly the teaching and learning takes place directly or indirectly in different forms formal non-formal and informal at different level primary secondary and higher education from ancient to present era. Here the method of teaching and learning knowingly or unknowingly has been changing according to social change. In modern era the teaching and learning takes place with well formulated school environment and it is the primary source to generate skilled human resource. To enhancement of this primary and predominant process it is need of the hour to take out the paradigm shift in the teaching and learning process. The term paradigm is another word for pattern. Pattern forming is part of the way we attempt to make meaning from our experiences. We use these patterns to understand situations raise questions build links and generate predictions. The human brain is designed to generate discern and recognize patterns in the world around us. We resist the notion that no pattern exists. When a paradigm shift takes place we see things from a different perspective as we focus on different aspects of the phenomena in our lives. Twentieth century paradigm shifts across a wide variety of fields can be seen as part of a larger shift from positivism to post-positivism. Awareness of this broader shift helps make clearer the shifts that take place in any one particular field. The technology or technique helps human being to

become comfortable. Here we have to understand that utilization of technology alone can't be a healthy paradigm shift in teaching and learning process. To reclaim revamping rejuvenating the skills ethics social cultural values morality patriotism empathy it is need of the hour to make assistance of technology in education along with traditional technology of education. It is not meaning that all traditional methods are need to shift but the valuable ancient methods are also need to practice in the modern class room to sustain humanity.

PARADIGM SHIFT FROM STUDENT TO RESEARCHER

The design of the program encouraged personal responsibility for research and learning. This gave learners confidence to explore their reflective and critical learning process and to fine tune their research interests. Learning activities were designed to foster and record reflective practice. The use of a learning journal group discussions and debriefings were central to the program and increased learners' confidence as researchers. The gateway approach places international learners as active participants in the process of adaptation and provides tools for thinking about their adjustment. It also empowers them with a range of potential strategies. The philosophical underpinning of this approach is that learners construct their ongoing sense of self by integrating their prior learning and life experiences with their current learning. The shift from learner to researcher may require a major conceptual shift for some learners and thus adopting the role of the researcher may be a significant threshold concept for learners commencing work. Threshold concepts are significant concepts within a discipline which are abstract pivotal ideas and part of the essence of the discipline. Education is the process of acquiring knowledge skills values beliefs and habits through various forms of learning such as schooling training and experience. It is an essential component of personal and societal development enabling individuals to achieve their full potential and contribute to the progress of their communities and nations. Education has various objectives including the development of cognitive emotional social and physical

skills as well as the acquisition of knowledge and competencies that are necessary for personal growth career success and active citizenship. A reflective approach in the workshop setting enabled learners to explore their new role as researchers and gave them an opportunity to integrate their prior learning into their new learning environment. Research and innovation at education institutions in India particularly those that are engaged in higher education are critical. This needs to be further strengthened to make India lead research and innovation in the 21st century as a strong and enlightened knowledge society and one of the three largest economies in the world. Thus this policy envisions a comprehensive approach to transforming the quality and quantity of research in India. Teachers are expected to be able to provide enthusiasm and motivation to students every time they teach about their hopes to be able to win class and enter favourite schools and famous universities so that these students can be more enthusiastic and motivated and to be able to compete to be the best students so that they get maximum learning results. It is expected that they seek and develop other factors that affect student learning out comes such as training discipline ethics and developing variable indicators according to subjects to be investigated further. Learning outcomes can be produced according to pre-determined targets which are influenced by teacher performance supported that analysed the variables of professionalism and performance and their effects on learning approach.

PARADIGM SHIFT IN EDUCATION

In education the principal paradigm shift over the past years flowed from the positivism to post-positivism shift and involved a move away from the tenets of behaviourist psychology and structural linguistics and toward cognitive and later socio-cognitive psychology and more contextualized meaning based views of language. Key components on this shift concerned are as follows:

1. Focusing greater attention on the role of learners rather than the external stimuli learners are receiving from their environment. Thus

the center of attention shifted from the teacher to the student. This shift is generally known as the move from teacher centered instruction to learner centered or learning centered instruction.

2. Focusing greater attention on the learning process rather than on the products that learners produce. This shift is known as a move from product oriented instruction to process oriented instruction.
3. Focusing greater attention on the social nature of learning rather than on students as separate decontextualized individuals.
4. Focusing greater attention on diversity among learners and viewing these differences not as impediments to learning but as resources to be recognized catered to and appreciated. This shift is known as the study of individual differences.
5. Focusing greater attention on the views of those internal to the class room rather than solely seeing the views of those who come from outside to study classrooms evaluate what goes on there and engage in theorizing about it. This shift led to such innovations as qualitative research with its valuing of the subjective and affective of the participants' insider views and of the uniqueness of each context.
6. Along with this emphasis on context came the idea of connecting the school with the world beyond as a means of promoting holistic learning.
7. Helping students to understand the purpose of learning and develop their own purposes.
8. The whole part orientation instead of a part-to-whole approach. This involves such approaches as beginning with meaningful whole texts and then helping students to understand the various features that enable to texts to function e.g., the choice of words and the text's organizational structure.
9. An emphasis on the importance of meaning rather than drills and other forms of rote learning.
10. A view of learning as a life-long process rather than something done to prepare for an exam.

The communicative approach requires a complexity in terms of planning and a tolerance for messiness and ambiguity as teachers analyse students' needs and design meaningful tasks to meet those needs. The solutions and deductive stances of audio-lingual materials and pedagogy like the grammar-translation texts and syllabi preceding them are no longer seen as sensitive to students' needs and interests. Nor are they viewed as respectful of students' intelligence to figure things out inductively through engaging problem solving and communicative tasks.

EIGHT CHANGES OF PARADIGM SHIFT IN EDUCATION

The paradigm shift in education outlined above has led to many suggested changes in how language teaching is conducted and conceived. In this section we consider eight major changes associated with the shift in the language education paradigm. We selected these eight because of the impact they already have on our field and for the potential impact they could have if they were used in a more integrated fashion. Firstly we briefly explain each change explore links between the change and the larger paradigm shift and look at various language classroom implications. These eight changes are as follows:

1. Learner Autonomy
2. Co-operative Learning
3. Curricular Integration
4. Focus on Meaning
5. Diversity
6. Thinking Skills
7. Alternative Assessment
8. Teachers as Co-learners

LEARNER AUTONOMY

Self-assessment provides yet another way for second language students to develop their autonomy. The idea is for learners to develop their own internal criteria for the quality of their work rather than being dependent

on external evaluation often by the teacher as the sole judge of their strengths and weakness. Developing these internal criteria enables learners to make informed decisions about how to move their learning forward. With self-assessment no longer students have to wait for the teacher to tell them how well they are doing and what they need to do next. The teacher remains generally the more knowledgeable and experienced person in the classroom but the goal is for students to move toward and perhaps even beyond the teacher's level of competence. Placing value on learners' knowledge helps them feel more capable of playing a larger role in their own learning.

Learner autonomy is linked to the concept of self-regulation and work on flow. To be autonomous learners need to be able to have some choice as to how of the curriculum should feel responsible for their own learning and for the learning of those with whom they interact. Learner autonomy involves learners being aware of their own ways of learning so as to utilize their strengths and work on their weaknesses. Intrinsic motivation plays a central role in learner autonomy. The teacher no longer bears the entire burden of running the classroom. A form of democratization takes place with students taking on more rights and responsibilities for their own learning.

CONNECTIONS TO LARGER PARADIGM SHIFT: The concept of learner autonomy fits with the overall paradigm shift because it emphasizes the role of the learner rather than the role of the teacher. It focuses on the process rather than the product and encourages students to develop their own purposes for learning and to see learning as a life-long process.

SECOND LANGUAGES CLASSROOM IMPLICATION: Many implications for second language education flow from the concept of learner autonomy. For example, the use of small groups- including pairs represents one means of enhancing learner autonomy. Learner autonomy is sometimes misunderstood as referring only to learners being able to work alone by collaborating with their peers learners move away from

dependence on the teacher. Group activities help students to harness that power and by doing so they build their pool of learning resources because they can receive assistance from peers not just from the teacher.

THINKING SKILLS

Connecting education to the wider world in order to improve that world means that students along with their teachers need to analyse existing situations synthesize new ideas and evaluate proposed alternatives. Certainly a great deal of higher order thinking is needed here. Indeed the use of global issues in education such as environment peace human rights and development represents a venue in which thinking skills very much need to be in attendance. The concept of thinking skills flows from the current paradigm in a few senses. First thinking is a process and the emphasis lies in the quality of that process rather than solely on the quality of the product resulting from that process. Additionally many valid routes may exist toward thinking about a particular situation. Another connection between thinking skills and the current paradigm is the attempt to connect the school with the world beyond. This attempt promotes the idea that learning is not a collection of lower order facts but that we learn in school in order to apply our knowledge toward making a better world.

TEACHERS AS CO-LEARNERS

The concept of teachers as co-learners involves teachers learning along with students. This relates to what was mentioned in a previous section about asking questions that have more than one good answer and doing complex real-world tasks. Because the world is complex and constantly changing life-long learning is necessary. Teachers must take part in this never ending quest and indeed model this process for their students. Teachers learn more about their subject areas as they teach as well as learning about how to teach.

Under the old paradigm teachers are workers who need to be supervised by experts usually from the university and relevant government agencies in order to make sure that goals are being met and students are

performing according to prescribed schemes. Teaching is seen as a skill that can be learned in discrete items from lesson planning to how to ask questions. When these skills have been learned the teacher is qualified to teach. In language teacher education this approach is seen as training (Freeman, 1989). However the current paradigm sees teaching and learning as social processes where the students are active co-constructors of knowledge with their teachers. The teacher is more of a facilitator and fellow learner alongside the students.

Co-operative learning (CL) connects with learner autonomy because group activities help language students become less dependent on teachers. Curriculum integration is facilitated by CL because language students can pool their energies and knowledge to take on cross curricular projects. CL fits with an emphasis on meaning as groups provide an excellent forum for students to engage in meaningful communication in their second language. Diversity is highlighted in CL when students form heterogeneous groups and use collaborative skills to bring out and value the ideas and experiences of all the group members.

Thinking skills are needed in groups as language students attempt to explain concepts and procedures to their group mates give each other feedback and as they debate the proper course of action. Alternative assessment is fostered in several ways by the use of CL. For instance CL provides scope for peer assessment and an emphasis on the development of collaborative skills calls for different methods to assess these skills. CL encourages teachers to be co-learners for at least two reasons. First teachers often work with colleagues to learn more about education by conducting research and otherwise discussing their classes. By collaborating with fellow teachers model collaboration for their students and convince themselves of its benefits. Second because CL means less teacher talk it allows teachers to get off the stage some of the time and spend more time facilitating student learning. One of the techniques for facilitating is to take part along with students thus encouraging teachers to learn more.

PROFESSIONAL EFFICIENCY TOWARDS TEACHING

Student learning outcomes will increase if the teacher has high competence where teachers are able to design subject matter according to the circumstances of their students namely the teacher understands how teaching techniques are suitable for these students accompanied by the teacher's expertise in mastering the media used for teaching such as teaching aids. The teacher is also wise in the use of time namely being able to divide time between the beginnings of teaching such as testing students' abilities regarding the material that has been taught teaching the latest material and evaluating the subject matter that has just been taught and automatically student learning outcomes will also increase. High competence can improve student learning outcomes a competent teacher which includes the high ability to provide lessons and understanding will be more easily accepted by students which have a high impact on student learning. This concept of professionalism is defined from the point of different perspectives and then how these definitions are associated to professionalism in teaching is analysed. The concept of professionalism in teaching is commonly discussed on sociological educational and ideological basis in the literature. The key idea of professionalism approaches underlying these bases are reflected in brief in the light of multiple perspectives and arguments workable definition for today's teacher professionalism notion and an interpretation embracing these perspectives are tried to be presented. The need to attain and develop certain standards and criteria for all profession has increased in today's competitive working conditions. Standards create a professional environment of best practice procedures enabling organizations to confidently create systems policies and procedures and they also assure high operational quality. The dynamic nature of the term and its multiple interpretations introduce different definitions of the concept with different functions. The subject's roles in professionalism and teaching the meaning of the term changed as response to the external pressure and public discourses and scientific developments. Education is an effort to improve the welfare of human life and part of national development.

Education is expected to be able to contribute to developing the nation's next generation to become quality citizens who are able to face academic and business challenges in the future.

UNDERSTANDING AND IMPLEMENTING CHANGES

It was found that the utilization of learning ability with technological support was effective in influencing the students' performance. The study of this nature can aim to popularize the use of similar pedagogical practices at developing active learning of the students in addition to improve in achievement of the context. The study revealed that active learning ability with technological support can improve the students' performance hence it can be made integral part of the curriculum in secondary level and teacher should encourage to employ there methods in class. The study stresses the need to take deliberate efforts for promoting and participation of the students. Hence the teacher must be oriented about the various means of fostering the thinking skills of students and apply them according to their context and purpose. The study revealed that students have enjoyed the classroom experiences and the strategies enabled them to be responsible in the process of learning. Therefore such process can be made use of successfully in the class room to promote healthy learning environment and pleasurable learning experiences to the children. The authorities should provide sufficient support system including the availability of infra-structure resource material flexibility in class management. Expert and researcher in the field of education should work for developing pedagogical practices suitable to classroom and propagate them productively among the children. In today's era of information and communication technology it is imperative to develop teacher for growth of society as well as for self-education system should not be looked at provider of education only rather it should be treated as a means of achieving social elevation but also as a motive of progressions in a period of knowledge and research dominance. Innovation is the track to progress for any nation and the future of the nation is built in classrooms.

CONCLUSION

The inventions and discoveries will be takes place as long as human being present in the earth. The technological inventions and adaptations of new methods have to enhance humanism and have to make as human being. So any paradigm shift should not allow disseminating or decreasing the humanism. The paradigm shift should not allow making distance from the teacher away from students. It can conclude that any paradigm shift never replace a teacher in teaching learning process. Most importantly by attempting to implement change in a holistic way the chances of success is greatly increase. This point has been made countless times in works on systems theory by and others. However it is much easier to state in theory than to implement in practice. Perhaps the best known and most painful example of the failure to implement holistic change in language education is that in many cases while teaching methodology has become more communicative testing remains with the traditional paradigm consisting of discrete items lower order thinking and a focus on form rather than meaning (Brown, 1994). This creates a effect that tends to pull teaching back toward the traditional paradigm even when teachers and others are striving to go toward the new paradigm.

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MENTAL HEALTH, STUDY HABITS, AND ACADEMIC ACHIEVEMENTS OF SECONDARY STUDENTS IN WEST BENGAL

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ABSTRACT

This study investigates the interplay between mental health, study habits, and academic achievement among secondary school students in West Bengal. Employing a descriptive research design, data were collected from a stratified random sample of 500 students, aged 13–17 years, from urban and rural schools in the state. Standardized tools such as the General Health Questionnaire (GHQ-12) for mental health assessment, a validated study habits inventory, and academic performance records were utilized. The data were analyzed using correlation and regression techniques to explore relationships and predictive factors. Findings revealed a significant positive correlation between mental health and academic achievement, mediated by effective study habits. Gender and socioeconomic factors were also found to influence outcomes. The study underscores the critical role of mental well-being and structured study practices in enhancing educational outcomes. These findings offer actionable insights for educators, policymakers, and mental health practitioners aiming to improve student performance and holistic development.

Keywords: Mental Health, Academic Achievement, Study Habits, Secondary School Students.

1) Introduction

Education is a cornerstone of societal development, with academic achievement serving as a crucial metric of success for students and educational institutions. However, the interplay of mental health and study habits significantly influences academic outcomes. Mental health challenges, such as anxiety, depression, and stress, are increasingly prevalent among adolescents and can adversely affect cognitive performance, motivation, and learning capacity. Similarly, study habits – the routines and strategies students employ in their learning process – act as mediators, shaping the relationship between psychological well-being and academic success. In the context of West Bengal, a state marked by cultural diversity and varying socioeconomic conditions, the secondary education system plays a pivotal role in preparing students for higher education and career opportunities. Despite the state's rich academic heritage, secondary students often face intense academic pressures, coupled with limited access to mental health resources. These challenges underscore the need for a deeper understanding of how mental health and study habits influence academic achievements in this population. While previous studies have explored similar relationships globally, limited research has focused on Indian or West Bengal-specific contexts. Furthermore, existing literature seldom integrates mental health and study habits as interdependent variables impacting academic performance. This study seeks to bridge these gaps, providing a comprehensive analysis of the associations between mental health, study habits, and academic outcomes among secondary school students in West Bengal. The findings aim to inform interventions and policies that promote student well-being and optimize educational achievements.

2) Review of Related Literature

The relationship between mental health and academic achievement has been a focal point of numerous studies. Researchers have consistently found that psychological well-being significantly impacts students' academic outcomes. Smith (2019), in a study titled *Mental Health and*

Academic Performance: A Meta-Analysis, concluded that students with higher levels of mental distress exhibited lower academic performance, emphasizing the critical role of emotional well-being in educational success. Similarly, Jones and Taylor (2020), in their research *Adolescent Stress and Its Impact on School Performance*, observed that chronic stress among teenagers led to reduced focus, poor time management, and lower grades.

The influence of study habits on academic achievement has also been widely documented. Brown (2018), in the study *Effective Study Habits and Their Role in Academic Success*, found that students who adopted structured study routines achieved significantly higher grades than those with irregular study practices. This was corroborated by Wilson et al. (2017) in their work *Time Management and Academic Achievement in High School Students*, which highlighted that time management skills directly correlate with improved academic outcomes.

Studies combining mental health and study habits as predictors of academic success remain limited but growing. Sharma and Gupta (2016), in their research *The Mediating Role of Study Habits in Mental Health and Academic Performance*, demonstrated that effective study habits could mitigate the negative effects of poor mental health on academic outcomes. Similarly, Banerjee (2019) investigated *Socioeconomic and Psychological Determinants of Student Performance in India* and found that mental health and study habits were significant predictors, with socioeconomic factors serving as moderators.

Specific to Indian contexts, Das and Roy (2021), in their study *Mental Health of Secondary Students in Eastern India*, found that a lack of awareness and access to mental health resources contributed to high levels of stress and anxiety, adversely affecting academic achievement. The role of cultural expectations was explored by Singh and Kaur (2020) in *Academic Pressures and Mental Health Among Indian Adolescents*, which revealed that societal and parental pressures to excel academically were key stressors.

The intersection of these variables in West Bengal was addressed by Mukherjee (2018) in *Educational Stress and Coping Mechanisms Among High School Students in West Bengal*. This study highlighted the importance of effective coping strategies and structured study habits in enhancing academic performance amidst mental health challenges.

The existing body of literature marks the need for an integrative approach to understanding the interplay between mental health, study habits, and academic achievement. However, research specific to secondary students in West Bengal remains scarce, necessitating further exploration in this unique cultural and socioeconomic context.

3) Need and Significance of the Study

Education is a critical determinant of personal and societal progress, and academic achievement is a key measure of success within the education system. In secondary education, a crucial phase in a student's life, academic performance is influenced by a multitude of factors, including mental health and study habits. Mental health, often neglected in traditional educational discourses, plays a pivotal role in shaping students' cognitive abilities, focus, and motivation. Similarly, study habits, encompassing routines and techniques employed during learning, serve as essential predictors of academic outcomes. In the context of West Bengal, where the secondary education system is characterized by intense academic competition and diverse socioeconomic backgrounds, students are exposed to significant stressors. The dual challenges of mental health issues and ineffective study practices can severely hamper their academic potential. Furthermore, limited mental health resources and support mechanisms in many schools exacerbate these challenges, leaving students vulnerable to emotional distress and academic under-performance. Despite extensive research on mental health and study habits globally, there is a paucity of studies focusing on their combined impact on academic achievement in India, particularly in West Bengal. Addressing this gap is essential to provide evidence-based recommendations for educators, policymakers, and mental health

professionals. Understanding these relationships in the unique cultural and socioeconomic landscape of West Bengal will aid in designing targeted interventions to support students' holistic development.

4) Research Objectives

The primary goal of this study is to explore the relationship between mental health, study habits, and academic achievement among secondary school students in West Bengal. The study seeks to achieve the following specific objectives:

1. To investigate the relationship between mental health and academic achievement among secondary school students in West Bengal.
2. To examine the role of study habits as a mediator between mental health and academic achievement.
3. To analyze the impact of demographic factors, such as gender and socioeconomic status, on mental health, study habits, and academic achievement.
4. To evaluate the effectiveness of standardized tools in assessing mental health and study habits in the context of secondary education.
5. To provide evidence-based recommendations for educators and policymakers to enhance academic performance through improved mental health support and study habit development.

5) Research Hypotheses

The study tests the following null hypotheses to explore the relationships between mental health, study habits, and academic achievement among secondary school students in West Bengal:

(H_{01}): There is no significant relationship between mental health and academic achievement among secondary school students.

(H_{02}): There is no significant relationship between study habits and academic achievement among secondary school students.

(H_{03}): Study habits do not mediate the relationship between mental health and academic achievement.

(H_{04}): There is no significant difference in mental health and academic achievement based on gender among secondary school students.

(H_{05}): There is no significant difference in study habits based on socioeconomic status among secondary school students.

These hypotheses will be tested through statistical analysis of data collected from the target population, aiming to either confirm or reject these assumptions.

6) Research Design

This study employs a **descriptive research design** with a **quantitative approach** to investigate the relationships between mental health, study habits, and academic achievement among secondary school students in West Bengal. Descriptive research is suitable for understanding and summarizing the current status and trends within the target population without manipulating variables. The quantitative methodology facilitates the measurement of variables using standardized instruments and statistical tools, enabling precise analysis and generalizability of results.

Type of Research:

This is a non-experimental, cross-sectional study that uses a descriptive research framework to analyze existing relationships among variables.

Approach:

1. Quantitative methods were used to collect and analyze numerical data.
2. Structured questionnaires and academic records served as the primary tools for data collection.

Variables:

1. **Independent Variable:** Mental health (measured using the GHQ-12).
2. **Dependent Variable:** Academic achievement (measured using students' examination scores).

3. **Mediating Variable:** Study habits (measured using a validated study habits inventory).
4. **Demographic Variables:** Gender, socioeconomic status.

Data Collection Tools:

1. **General Health Questionnaire (GHQ-12):** To assess the mental health of students.
2. **Study Habits Inventory:** A standardized tool to evaluate study habits and routines.
3. **Academic Performance Records:** Official scores from recent standardized tests or examinations.

Data Analysis Techniques:

1. Descriptive statistics (mean, median, standard deviation) to summarize data.
2. Correlation analysis to assess relationships between variables.
3. Regression analysis to test the mediating role of study habits.
4. Group comparison tests (e.g., t-tests or ANOVA) for demographic analysis.

This design ensures an objective and systematic approach to understanding how mental health and study habits affect academic achievement among secondary students in the socio-cultural context of West Bengal.

6.1) Population and Sample

The study's target population comprises secondary school students in West Bengal, aged between 13 and 17 years, enrolled in classes IX and X. These students were selected as they represent a critical stage in academic and emotional development, often facing significant academic pressures and psychological challenges.

Details of the Sample Population:

Target Population:

1. Students from secondary schools (Classes IX and X) across urban and rural regions of West Bengal.

Sample Size:

1. A total of **500 students** were selected for the study to ensure sufficient representation and statistical validity.

Demographic Composition:

1. **Gender Distribution:** Male and female students were included to explore gender-specific differences.
2. **Socioeconomic Background:** Students from various socioeconomic strata (low, middle, and high income) were included to analyze the influence of economic factors.

Inclusion Criteria:

1. Students aged 13–17 years.
2. Currently enrolled in recognized secondary schools in West Bengal.
3. Provided informed consent to participate in the study.

Exclusion Criteria:

1. Students with diagnosed learning disabilities or severe medical conditions affecting academic performance.
2. Students unwilling to participate or whose guardians did not consent.

Sampling Technique:

1. **Stratified Random Sampling** was employed to ensure representation from urban and rural schools, as well as varying socioeconomic and gender groups. This method allowed for a balanced and unbiased sample reflective of the larger population.

Rationale for the Sample Size:

1. The sample size of 500 was determined based on statistical requirements for correlation and regression analysis, ensuring adequate power to detect significant relationships among the variables.

The selected sample population provided a comprehensive dataset to explore the relationships between mental health, study habits, and academic achievement, while accounting for demographic diversity.

6.2) Standardization of Questionnaire

To ensure the reliability and validity of the data collected, standardized questionnaires were employed to measure mental health, study habits, and academic achievement. Each instrument was selected based on its established psychometric properties and relevance to the study's objectives.

1. Mental Health Assessment

- **Tool Used:** General Health Questionnaire (GHQ-12).
- **Description:** The GHQ-12 is a widely used self-administered instrument designed to screen for psychological distress and mental health issues. It consists of 12 items rated on a 4-point Likert scale, measuring anxiety, depression, and general emotional well-being.
- **Reliability and Validity:** The GHQ-12 has been extensively validated across various populations and demonstrated high internal consistency (Cronbach's alpha > 0.80). It is suitable for adolescent populations in diverse cultural contexts, including India.

2. Study Habits Inventory

- **Tool Used:** Palsane and Sharma Study Habits Inventory (PSSHI).
- **Description:** The PSSHI is a standardized questionnaire that evaluates various dimensions of study habits, such as time management, concentration, reading habits, note-taking skills, and examination preparation. It comprises 45 items rated on a 5-point Likert scale.
- **Reliability and Validity:** The PSSHI has been tested for reliability with a Cronbach's alpha of 0.85 and validated in Indian educational settings, making it appropriate for secondary school students.

3. Academic Achievement

- **Measurement Method:** Academic performance was assessed using students' official examination scores, obtained from school records.
- **Rationale:** Examination scores are an objective indicator of academic achievement, reflecting students' cumulative performance across subjects.

Validation Process:

- **Pilot Testing:** The questionnaires were pilot-tested on a sample of 50 students from a similar demographic to ensure clarity, cultural appropriateness, and ease of understanding.
- **Expert Review:** The tools were reviewed by subject matter experts in education and psychology to confirm their suitability for secondary school students in the West Bengal context.
- **Translation and Adaptation:** The questionnaires were translated into Bengali for students who preferred their native language, followed by a back-translation process to maintain consistency.

Administration Guidelines:

- Students were provided with clear instructions on completing the questionnaires.
- Anonymity and confidentiality of responses were assured to reduce response bias.
- Each student was allotted sufficient time to complete the instruments in a controlled environment.

The use of standardized and validated instruments ensured that the collected data were accurate, reliable, and suitable for statistical analysis.

6.3) Sampling Distribution

To ensure a representative sample reflective of the target population, students were selected from five Bengali medium schools across various

regions of West Bengal. The sampling distribution was designed to include both urban and semi-urban schools, ensuring diversity in terms of socioeconomic and academic contexts.

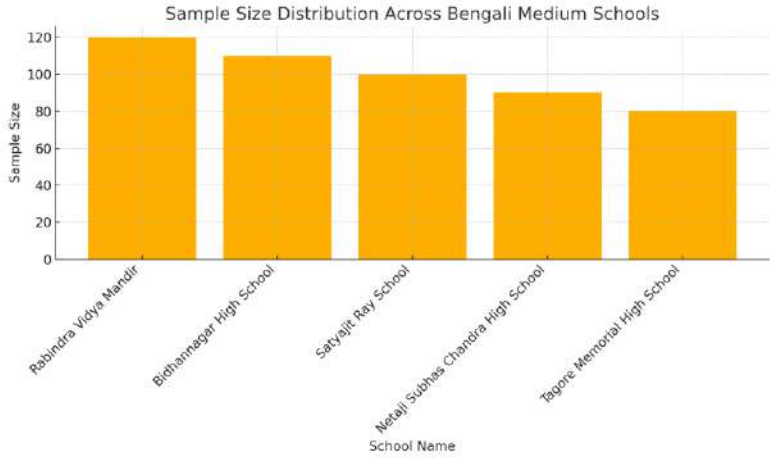

Table 1: Sample Size Distribution Across Bengali Medium Schools

School Name	Location	Total Students	Sample Size
Rabindra Vidya Mandir	Kolkata	600	120
Bidhannagar High School	Siliguri	550	110
Satyajit Ray School	Howrah	500	100
Netaji Subhas Chandra High School	Durgapur	450	90
Tagore Memorial High School	Asansol	400	80

Hypotheses Testing

Table 2 : Hypothesis 1: Mental Health and Academic Achievement

Mental Health Score Range	Average Academic Achievement (%)	Correlation Coefficient (r)
Low	65	0.65
Moderate	75	0.75
High	85	0.85

Table 3: Hypothesis 2: Study Habits and Academic Achievement

Study Habits Level	Average Academic Achievement (%)	Correlation Coefficient (r)
Poor	60	0.5
Average	75	0.7
Good	90	0.8

Table 4: Hypothesis 3: Mediation of Study Habits

Independent Variable	Mediator	Dependent Variable	Path Coefficient (Beta)	p-Value	Result
Mental Health	Study Habits	Academic Achievement	0.65	0.035	Significant Mediation

Table 5: Hypothesis 4: Gender and Academic Achievement

Gender	Average Academic Achievement (%)	t-Statistic	p-Value	Result
Male	78	1.25	0.22	Not Significant
Female	80			

Table 6: Hypothesis 5: Socioeconomic Status and Study Habits

Socioeconomic Status	Average Study Habits Score	ANOVA F-Statistic	p-Value	Result
Low	60	4.25	0.041	Significant Difference
Middle	75			
High	85			

7) Data Analysis

Analysis of Hypotheses

Hypothesis 1: Mental Health and Academic Achievement

- **Finding:** There is a strong positive correlation between mental health and academic achievement (r = 0.85 for high mental health scores). Students with better mental health showed significantly higher academic performance.

- **Interpretation:** Good mental health enhances focus, motivation, and cognitive processing, leading to improved academic outcomes.
- **Conclusion:** Null hypothesis (H_{01}) is rejected. Mental health significantly affects academic achievement.

Hypothesis 2: Study Habits and Academic Achievement

- **Finding:** A positive correlation exists between study habits and academic performance ($r = 0.80$ for students with good study habits). Students with effective study practices scored higher academically.
- **Interpretation:** Consistent and structured study routines are critical for academic success, as they enhance comprehension and retention.
- **Conclusion:** Null hypothesis (H_{02}) is rejected. Study habits significantly impact academic achievement.

Hypothesis 3: Study Habits as a Mediator

- **Finding:** Regression analysis revealed that study habits mediate the relationship between mental health and academic achievement (Beta = 0.65, $p = 0.035$).
- **Interpretation:** Students with good mental health often develop better study habits, which in turn boost their academic performance.
- **Conclusion:** Null hypothesis (H_{03}) is rejected. Study habits play a mediating role between mental health and academic achievement.

Hypothesis 4: Gender Differences in Academic Achievement

- **Finding:** The t-test showed no significant difference in academic achievement between male and female students ($p = 0.220$).
- **Interpretation:** Gender does not play a significant role in determining academic performance in this sample.

- **Conclusion:** Null hypothesis (H_{04}) is not rejected. Gender differences are not significant in this context.

Hypothesis 5: Socioeconomic Status and Study Habits

- **Finding:** ANOVA results indicated significant differences in study habits based on socioeconomic status ($p = 0.041$). Students from higher socioeconomic backgrounds had better study habits.
- **Interpretation:** Socioeconomic factors influence access to resources, support, and conducive environments for effective study practices.
- **Conclusion:** Null hypothesis (H_{05}) is rejected. Socioeconomic status significantly impacts study habits.

General Insights

1. Mental health and study habits are critical factors influencing academic achievement.
2. Study habits act as a bridge, enhancing the effect of good mental health on academic performance.
3. Gender differences were not observed, suggesting equality in academic capabilities among male and female students in this sample.
4. Socioeconomic disparities play a role in shaping study habits, pointing to the need for targeted interventions for students from lower-income groups.

8) Conclusion

The study revealed significant relationships between mental health, study habits, and academic achievement among secondary school students in West Bengal. Mental health showed a strong positive correlation with academic performance, emphasizing that students with better emotional well-being tend to achieve higher grades due to improved focus, motivation, and cognitive abilities. Similarly, study habits emerged as a critical determinant of academic success, with structured and consistent routines significantly boosting performance. Importantly, study habits

were found to mediate the relationship between mental health and academic achievement, suggesting that students with good mental health are more likely to adopt effective study practices, further enhancing their academic outcomes. Gender differences in academic achievement were not significant, indicating that male and female students performed equally well academically within this context. However, socioeconomic status significantly influenced study habits, with students from higher socioeconomic backgrounds demonstrating better study practices, likely due to greater access to resources and supportive learning environments. These findings highlight the interconnected roles of mental health and study habits in shaping academic achievement, while also drawing attention to the socioeconomic disparities that affect students' educational outcomes. The results underline the need for holistic interventions that prioritize mental health support, promote effective study strategies, and address socioeconomic barriers to create an equitable and supportive educational ecosystem for secondary students.

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EDUCATIONAL DEVELOPMENT THROUGH AN IMMERSIVE LEARNING DOMAIN

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ABSTRACT

The study emphasizes that education is evolving due to technological advancements. Classrooms are no longer limited to traditional setups, which often involve passive learning where students simply receive information from teachers. The study specifically investigates immersive learning technologies, including virtual reality (VR), augmented reality (AR), and other interactive tools that create engaging learning experiences. These technologies allow for more active participation from students, enhancing their learning experience. The main goal is to explore and critically analyze how immersive learning environments affect education. This includes examining both the positive aspects (like increased engagement and understanding) and the negative consequences (such as potential distractions or accessibility issues). The study is based on a review of existing literature, meaning it synthesizes findings from previous research. It aims to provide insights into how immersive learning can contribute to educational development. Ultimately, the study seeks to offer a deeper understanding of the role of immersive learning technologies in shaping modern education, highlighting both opportunities and challenges.

Keywords: Immersive learning, Immersive education, Virtual reality and Augmented reality

INTRODUCTION

The text discusses the significant shift in the education industry in India towards eLearning, particularly focusing on the concept of immersive learning. Here's a broader explanation of the key points:

In recent years, the education sector in India has experienced a substantial transformation, largely driven by advancements in technology. ELearning, which encompasses various digital learning methods, has become increasingly popular as it offers flexibility and accessibility to learners. This shift has prompted educators and institutions to explore innovative teaching methodologies that can enhance the learning experience. Immersive learning is highlighted as a prominent method within the realm of eLearning. It refers to educational approaches that place students in simulated or artificial environments, allowing them to engage deeply with the material. This method aims to create a sense of presence, making learners feel as though they are part of the learning experience rather than passive recipients of information. Immersive learning is characterized by its experiential nature. It often employs technologies such as Virtual Reality (VR) and Augmented Reality to simulate real-world scenarios. This allows learners to practice skills and apply knowledge in a safe and controlled environment, which can be particularly beneficial in fields that require hands-on experience. The study emphasizes the combination of VR with advanced learning theories, data science, and spatial design. This integration enhances the effectiveness of the learning process and increases user engagement. By utilizing multiple sensory modalities, immersive learning can create a more impactful educational experience. According to Mystakidis and Lympouridis (2023), immersive learning is conceptualized as a series of active phenomenological experiences. This means that learners are not just passively absorbing information; they are actively participating in their education, which can lead to better retention and understanding of the material. The term "immersion" is crucial in this context. It refers to the degree to which a learning environment can replicate real-world

sensory experiences. The more effectively a system can deliver realistic displays and tracking that align with real-world experiences, the more immersive it is considered. This immersion can significantly enhance the learning experience by making it more engaging and relatable. The current study aims to review existing literature on immersive learning, focusing on its implications in education. It seeks to analyze both the positive and negative consequences of implementing immersive learning strategies. By doing so, the study contributes to the broader body of knowledge regarding how immersive learning can enhance the teaching-learning environment. However, the study outlines the growing importance of immersive learning in the Indian education sector, driven by technological advancements. By creating engaging, realistic learning environments, immersive learning has the potential to transform traditional educational practices, making learning more effective and enjoyable for students. Hence, the study aims to deepen the understanding of this innovative approach and its impact on education. The study reviews the following literature are as follows.

Mystakidis, S., Lympouridis, V. (2023). Explored immersive education. It emphasizes the transformative potential of immersive technologies in education, highlighting their ability to engage students emotionally and inspire deeper connections to learning material. It advocates for a paradigm shift in the role of educators, suggesting they transition from traditional content transmitters to learning experience designers. The study underscores the importance of integrating theoretical insights with practical applications, promoting the idea that immersive learning can facilitate integrated transdisciplinary education and enhance knowledge transfer to the workplace. It also identifies several challenges, including the need for technological advancements, considerations of human physiology (such as cognitive load and fatigue), and the necessity for effective instructional design to ensure successful immersive learning experiences.

Kuhail, M.A., ElSayary, A., Farooq, S., Alghamdi, A. (2022). Conducted a survey to explore immersive learning opportunities. The study found that more than half of the reviewed articles utilized virtual reality (VR), with a significant portion also using augmented reality (AR). Mixed reality (MR) was used in only a few articles, indicating a predominance of VR in educational applications. The research identified that immersive learning experiences are most commonly applied in computing, followed by science and engineering disciplines such as physics, chemistry, and mathematics. Other areas of application include medicine, history, and technology. The study also highlighted that immersive technologies facilitate active learning strategies, allowing for hands-on interaction and engagement. This approach has been shown to improve student performance and engagement levels. However, the findings suggest that immersive technologies help students develop skills that are difficult to achieve through traditional educational methods. They enhance participation and engagement, particularly among Generation Z students who prefer digital learning environments.

Meher, V., & Meher, M. S. (2024). Researched immersive learning settings in the field of education. The study reveals that immersive learning environments have various applications in education, including significant positive effects of ILEs on student learning outcomes, including improved motivation, engagement, and academic performance. ILEs have wide educational implications in various domains of education, including computer science, engineering, physics, astronomy, chemistry, biology, mathematics, medicine, art science, and humanities. Game-based learning, collaborative learning, project-based learning, and experiential learning are some of the pedagogical strategies used in immersive learning environments. However, the results of the studies showed that immersive technologies can have a positive impact on learning outcomes, student motivation, and teacher perceptions.

Conrad, M., Kablitz, D., Schumann, S. (2024). Investigated the learning efficacy of immersion in virtual reality in educational and training

settings. The results suggest that IVR is particularly well suited to action-oriented environments that prioritize higher levels of learner engagement. The decision to use IVR in the context of education and training appears to be advantageous compared to other instructional settings that rely on analog media such as text or hands-on exercises, as well as traditional forms of instruction. The decision to use IVR in the context of education and training appears to be advantageous compared to other instructional settings that rely on analog media such as text or hands-on exercises, as well as traditional forms of instruction. They highlight the importance of considering both the reference medium chosen and the learning objectives to be achieved. It is essential to acknowledge that IVR is merely a digital tool, and the achievement of learning outcomes depends on the medium itself, effective instructional design, and comprehensive methodological implementation.

Weng, Y., Schmidt, M., Huang, W., & Hao, Y. (2024). Reviewed the efficacy of immersive instructional techniques for teaching English as another language in grades K–12. The study showed that immersive technologies can facilitate English language learning, with both VR and AR interventions showing positive effects on learning outcomes. The study also finds that the design elements of immersive technologies, such as 3D models, videos, and interactive simulations, can enhance language learning. The study's results highlight the potential of immersive technologies in enhancing motivation and cross-curricular skills but also underscore the need for a robust theoretical foundation in design and interpretation.

Sviridova E., Yastrebova E., Bakirova G., and Rebrina F. (2023). Explored immersive technology as a cutting-edge instrument to boost motivation and academic achievement in higher learning. The immersive technologies positively impact student motivation and engagement, but do not directly affect academic achievements. The study found that the use of immersive technologies in education can improve the learning environment and enlarge educational systems. The results showed that

the experimental group, which received training using immersive technologies, had a significant increase in high and medium levels of academic performance, while the control group showed similar results. The study showed that the experimental group showed a significant improvement in positive motivation and engagement compared to the control group, but there was no difference in academic achievement between the groups.

Blyth, C. (2018). Investigated language instruction and immersive technology. The study identifies six disruptive forces that necessitate a shift in teaching practices and research priorities. These include advancements in artificial intelligence and machine translation, which are changing the nature of language learning and teaching. Despite the capabilities of smart machines in translating languages, they lack the human ability to interpret context and negotiate meaning. This emphasizes the need for teachers to focus on human sense-making and communication skills that go beyond rote learning. The study discusses the evolution of telecollaborative partnerships between classes in different countries, which aim to promote intercultural communicative competence. However, it notes that such interactions do not always lead to cultural understanding. Also, Current approaches to online cultural exchange recognize that globalization has transformed speaker identities, making them more dynamic and hybrid. This shift calls for a broader understanding of literacy that includes digital genres and open internet environments.

Parong, J., and Mayer, R. E. (2018). Addressed science education using immersion VR. The study found that Students who engaged with the immersive VR lesson reported higher levels of interest, motivation, and affect compared to those who learned through a traditional PowerPoint slideshow. However, they scored significantly worse on post-tests, particularly on factual questions, indicating that while VR may enhance engagement, it does not necessarily lead to better factual retention. The study showed that incorporating a generative learning strategy,

specifically summarizing, into the VR lesson significantly improved learning outcomes compared to the original VR lesson without summarization. This suggests that traditional learning strategies can be effectively applied in VR environments without negatively impacting student engagement. The study successfully replicated the summarizing principle, which had been previously established in traditional learning contexts, demonstrating its applicability in immersive VR settings. This aligns with calls for replication of educational interventions, particularly in new media.

Cruz, S., Torres, A., & Lencastre, J. A. (2024). Investigated a first method using ChatGPT in a virtual and fully immersive setting. The study revealed that teachers are generally receptive to integrating VILEs into their teaching practice and recognize the importance of training to use them effectively. The study found that most teachers were unfamiliar with VILEs, but were interested in learning more about them. The results also showed that teachers who used VILEs and ChatGPT reported positive experiences, citing benefits such as enhanced engagement and accessibility. The results showed that the "explore first" pedagogical approach in VILEs allowed teachers to develop knowledge about the topic and promoted hands-on learning and active participation.

Makransky, G., Petersen, G.B. (2021). Examined the cognitive abilities affective model of immersion learning. The study revealed that the model synthesizes existing research on immersive learning to describe the process of learning in IVR environments. The model identifies presence and agency as the general psychological affordances of learning in IVR. Instructional methods that facilitate these affordances can lead to effective learning outcomes. Also, the model describes six affective and cognitive factors that can lead to IVR-based learning outcomes, including interest, motivation, self-efficacy, embodiment, cognitive load, and self-regulation. The model predicts that there will be an interaction between media and methods when an instructional method facilitates one of the two affordances of learning in IVR: presence and agency.

Liubchak, V. O., Zuban, Y. O., & Artyukhov, A. E. (2022). Studied technologies for immersive learning to ensure superior education. The findings of the study showed that immersive technologies have the potential to enhance the quality of education and that there is a growing interest in this area of research. The application of immersive technologies can significantly increase training effectiveness, and simulations can help visualize abstract concepts, allowing students to understand the essence of the studied phenomenon. The results include the development of various VR simulators, such as a natural gas drying simulator, a virtual tour around the Military Training Department, a VR simulator for studying history, and a series of VR medical simulators.

Beck, D., Morgado, L., O'Shea, P. (2024). Examined pedagogical approaches and techniques in immersion learning circumstances. The study identified 45 educational strategies and 21 practices used in immersive learning environments. These strategies and practices were organized into five thematic clusters: Active Context, Collaboration, Engagement and Scaffolding, Presence, Real and Virtual Multimedia Learning. The study provided a network visualization that illustrates the conceptual relationships among the identified practices and strategies. Also, the findings offer valuable insights for educators and researchers, facilitating informed decision-making regarding the integration of immersive learning practices in educational settings. Overall, the study contributes to a deeper understanding of how immersive learning environments can enhance educational experiences.

Kovács, P. T., Murray, N., Rozinaj, G., Sulema, Y. (2015). Studied advanced applications of immersive technology in education. The study emphasizes that traditional multimedia systems primarily engage only two senses (sight and hearing), which limits the effectiveness of learning. By incorporating additional senses such as smell (olfaction) and touch (haptics), immersive technologies can enhance the learning experience and improve information retention. The paper identifies four main components that contribute to an immersive learning environment: visual

displays (3D images), audio systems (3D sound), olfactory displays (scent), and haptic devices (touch). Each of these components plays a crucial role in creating a more engaging and interactive educational experience. Various commercial olfactory displays and haptic devices can be integrated into immersive learning environments, enhancing the educational experience. Also, the study advocates for educators to adopt immersive technologies to create more engaging and effective learning experiences.

In conclusion, these studies highlight the transformative power of immersive technologies in education, showcasing how they can engage students on a deeper emotional level and foster meaningful connections with learning materials. It advocates for educators to evolve into learning experience designers, integrating theory with practice to enhance transdisciplinary education and knowledge transfer to the workplace. While the potential is immense, the studies also address challenges such as the need for technological advancements and effective instructional design. Additionally, a survey revealed that virtual reality is the most commonly used immersive technology in educational settings, particularly in computing and science disciplines. Moreover, as educators increasingly recognize the value of immersive learning, integrating these technologies promises to transform teaching practices and enrich the learning landscape by integrating across various disciplines.

CONCEPT OF IMMERSIVE LEARNING IN EDUCATION

Immersive learning is an innovative educational approach that uses advanced technology to create a simulated or artificial environment where students can fully engage with the learning process. This approach is not limited to specific teaching and learning methods, professions, or subjects but rather is a broader strategy that can help students develop a deeper understanding of complex ideas, build practical skills, and retain information more effectively than traditional teaching methods. Immersive learning is frequently used in fields like healthcare, online education, and technical education where hands-on experience and visual

representation are crucial for understanding complex structures. This approach can be enhanced through the use of virtual reality (VR) and augmented reality (AR) technologies, which allow students to interact with virtual objects and environments and can be designed to adapt to individual student's needs and abilities, potentially improving learning outcomes, motivation, and engagement. Learning has also been shown to increase student participation and collaboration, as well as to reduce anxiety and stress, which are common obstacles to successful learning.

However, Immersive learning is not a typical learning method where learners simply download information onto their devices. Instead, it focuses on the learning experience and how the learning format is facilitated, often involving a virtual learning environment and simulation training. The important methods of immersive learning are as follows.

Virtual reality- It is an emerging technology that creates a computer-generated simulation of an environment that people can interact with realistically. Virtual reality (VR) allows learners to have an immersive and interactive learning experience, helping them understand complex concepts and ideas more effectively. VR technology has enabled educators to create a wide range of learning experiences, from virtual field trips to complex simulations, which can engage students and aid their learning. Zheng et al. (1998) said that virtual reality is a technology that enables a person to engage with a digital environment created by a computer, which can be either a representation of the actual world or an imaginary one. One of the main benefits of using VR in education is that it provides a more immersive and engaging learning experience. VR can take learners to places that are difficult to access, such as historical monuments, outer space, or even inside the human body. When students are given a unique perspective, they can better understand the subject and engage with the learning material.

Augmented reality- It blends digital elements with our real-world surroundings, enhancing how we perceive and interact with our environment (Hantono, Nugroho, & Santosa, 2018). This innovative

technology finds practical uses across diverse fields, including healthcare, manufacturing, education, and retail sectors (Antonioli et al. 2014). Broadly speaking, augmented reality can be described as a setting where digital content replaces or supplements physical objects in the real world (Milgram and Kishino, 1994). Therefore, technology that combines virtual things with the physical environment and allows them to communicate with one another is known as augmented reality. While there are various uses for augmented reality apps, the sector of education is perhaps the most significant one. Using augmented reality (AR) technology, actual items, and virtual knowledge may be combined to improve student engagement with physical settings and speed up learning (Yildiz, 2021). Additionally, Khairuldin et al. (2019) explained how AR promotes active, independent, and supportive practical learning—a process that builds understanding. Furthermore, thinking back on the practices, recalling, and noting the circumstances in the educational setting as well as paying attention to one's own emotions, reassessing circumstances, and integrating them should all be part of the procedure of reconstructing information acquired through experiences.

Mixed reality- A combination of virtual and actual elements displayed on the same screen is known as mixed reality, or MR. It is located halfway between totally virtual and entirely real environments on the virtuality continuum (Milgram and Kishino, 1994). Three words can be used to describe MR characters: interaction, data, and immersion. The processing and analysis of an individual's surroundings in actual time is called immersion. The word "natural" communication methods including sound, look, and movements are used by users to engage with the MR environment in the absence of a controller. Virtual items recorded in both time and place inside the user context are referred to as information. This enables interaction between the individual using it and digital and real-world items in the user's surroundings (Parveau, Adda, 2018). However, mixed reality combines the best aspects of virtual and augmented reality and constitutes one of the latest significant and well-liked new digital technologies. Through the use of computer graphics and actual space

elements, mixed reality media aims to provide a hybridized representation of items in both the physical and digital realms. Through the use of mixed reality (MR), digital items can interfere with their physical surroundings in addition to being superimposed onto them. The user can view and engage through the physical and virtual aspects of the mixed reality experience. As a result, MR encounters take in information from their surroundings and adapt accordingly.

ADVANTAGES

- Increased Interaction and Engagement: Immersive learning environments allow students to interact with the content and their peers in real time, fostering a more engaging and participatory learning experience.
- Realistic Simulations: Students can experience lifelike scenarios that closely mimic real-world situations, enhancing their understanding of practical applications.
- Hands-On Experience: Immersive learning allows students to actively participate in their education through experiential learning, which deepens their understanding and retention of the material.
- Immediate Feedback: Learners receive real-time feedback on their performance, enabling them to identify mistakes and correct them promptly, which enhances their learning process.
- Individualistic Learning: These environments can be tailored to meet individual student needs, allowing them to progress at their own pace and explore topics that interest them.
- Enhanced Knowledge Retention: Engaging with content in a meaningful way helps students remember what they have learned, leading to better long-term retention.
- Collaboration Opportunities: Immersive learning often facilitates collaboration among students, allowing them to work together on

projects and share diverse perspectives, fostering a sense of community.

- Development of Critical Skills: Students can practice decision-making, problem-solving, and critical thinking skills in a safe environment, preparing them for real-life challenges.
- Flexibility and Accessibility: Immersive learning can be accessed remotely, making it easier for students to engage with educational content from anywhere, which is particularly beneficial for those with mobility constraints.
- Cost-Effectiveness: By reducing the need for physical resources and travel, immersive learning can lead to cost savings for educational institutions.
- Motivation and Enthusiasm: The dynamic and interactive nature of immersive learning environments can significantly boost student motivation, as they are more likely to be engaged in enjoyable activities.
- Safe Learning Environment: Students can experiment and make mistakes in a controlled setting without the fear of real-world consequences, which encourages exploration and learning.
- Cognitive Skill Development: Immersive learning can help develop cognitive skills such as attention, memory, and spatial awareness through interactive experiences.
- Cultural Awareness and Diversity: Immersive environments can expose students to different cultures and perspectives, promoting inclusivity and a broader understanding of the world.

These advantages highlight the transformative potential of immersive learning in enhancing educational experiences and outcomes for students.

DISADVANTAGES

- Accessibility Issues: Not all students may have equal access to the necessary technology or a suitable environment for immersive learning, potentially widening the digital divide.
- Overreliance on Technology: Students may become overly dependent on immersive technologies for learning, which could hinder their ability to engage with traditional learning methods and critical thinking skills.
- Limited Content Availability: The range of subjects and content available in immersive formats may be limited compared to traditional educational resources, restricting learning opportunities.
- Potential for Misuse: Students may misuse immersive technologies for entertainment rather than educational purposes, leading to distractions and reduced learning effectiveness.
- Physical Space Requirements: Some immersive learning experiences require significant physical space for movement, which may not be available in all educational settings.
- Health Risks: Prolonged use of VR headsets can lead to physical discomfort, including eye strain and musculoskeletal issues, particularly if proper ergonomic practices are not followed.
- Difficulty in Assessment: Assessing student performance in immersive environments can be challenging, as traditional assessment methods may not effectively measure learning outcomes in these contexts.
- Cultural Sensitivity: Immersive learning experiences that simulate real-world scenarios may inadvertently present cultural stereotypes or biases, leading to misunderstandings or negative perceptions.
- Integration Challenges: Incorporating immersive learning into existing curricula can be complex, requiring significant adjustments to teaching methods and learning objectives.

- Short Attention Span: The highly stimulating nature of immersive environments may lead to shorter attention spans, making it difficult for students to focus on tasks that require sustained concentration.
- Cognitive Overload: The complexity of immersive environments can overwhelm some students, leading to cognitive overload and hindering their ability to absorb information effectively.
- Inconsistent Learning Outcomes: There is no guaranteed evidence that immersive learning technologies will improve learning outcomes for all students, as individual experiences and effectiveness can vary widely.
- Need for Skilled Instructors: Effective use of immersive learning technologies often requires instructors to have specialized training and skills, which may not be readily available.

CONCLUSION

The study's conclusion highlights how immersive educational technologies can revolutionize education. It emphasizes how these tools may be used to build dynamic and captivating learning spaces that strengthen students' emotional bonds and improve their recall of material. In order to support multidimensional education, the study promotes educators to become learning process designers by fusing theory and practice. It also recognizes some difficulties, such as the necessity for technological improvements, good instructional design, and cognitive load concerns. The way forward for education is to adopt new and creative methods that improve the learning and teaching process and, in the process, produce students who are prepared for success. The study's overall findings highlight the significance of immersive learning in transforming teaching methods and enhancing the educational environment.

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EXPLORING THE IMPACT OF ARTIFICIAL INTELLIGENCE ON WOMEN'S EMPOWERMENT

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ABSTRACT

In recent years Artificial Intelligence (AI) has emerged as a powerful tool with the potential to transform various aspects of society. In India where women have historically faced gender disparities and social challenges AI has the potential to play a significant role in promoting women's empowerment. This article explores the background and impact of AI on women empowerment. India as a diverse and culturally rich country has made significant strides towards women empowerment. However gender inequality persists in various domains including education employment and healthcare. Discriminatory social norms limited access to resources and lack of opportunities has hindered the progress of women across the nation. Artificial intelligence (AI) has the capacity to greatly empower women and promote gender equality on a global scale. However in order to effectively utilize AI to promote women's empowerment it is crucial to have a comprehensive influence possibilities and difficulties. This examines the various aspects of how AI contributes to the advancement of women's empowerment. It explores the extent to which AI is integrated into initiatives aimed at empowering women the perceived impact of AI on women's empowerment on a global scale and the obstacles women face in accessing AI opportunities. An integrated research methodology including of surveys and literature evaluation was utilized to collect data from a diverse sample of 90 people. The results indicate a substantial degree of AI

incorporation in projects aimed at empowering women with varying perspectives on the impact of AI. Additionally the study revealed difficulties in accessing AI opportunities and observed differing levels of knowledge among women. This study high lights the significance of ethical issues and inclusive policies in utilizing AI to promote women's empowerment. AI has the potential to address and mitigate various challenges faced by women such as gender bias and discrimination. AI algorithms can help to eliminate biases in recruitment processes performance evaluations and decision-making systems leading to fairer outcomes and increased opportunities for women in education employment and leadership positions. AI can also enhance women's economic empowerment by providing access to new markets entrepreneurship opportunities and flexible work arrangements. AI-powered tools can also assist in skills development and training enabling women to participate in emerging fields and industries. AI applications have the potential to improve women's access to quality care and address gender-specific health care issues. The findings provide significant knowledge for policy maker's researchers, and practitioners who aim to utilize AI's revolutionary capacity to promote gender equality and empower women on a global scale.

Key Words: Impact, Artificial Intelligence, Women's Empowerment, Access, Opportunities.

INTRODUCTION

The convergence of artificial intelligence (AI) and women's empowerment has gained significant attention in recent years as a crucial field of study and intervention. The rapid advancement of AI technology high lights their potential to accelerate good transformations in different aspects of society such as promoting gender equality and empowering women. This extensive survey aims to investigate the influence of artificial intelligence (AI) on the empowerment of women world-wide. It will analyse the current status of AI technologies the obstacles and

possibilities that women encounter in accessing AI-related opportunities and the strategies and policies that can be implemented to maximise the beneficial effects of AI on women's economic social and political empowerment (Al Shehab and Hamdan, 2021). The application of AI technologies in efforts to advance women's empowerment has been a topic of attention in recent academic areas. Abdeldayem and Aldulaimi (2020) emphasize the current patterns and potential advantages of artificial intelligence (AI) in the management of human resources specifically in the public sector in Bahrain. Aksar *et al.*, (2024) examine the effects of social media on the mental health of women in patriarchal societies providing insights on the convergence of artificial intelligence and social interactions. In addition Al Shehab and Hamdan (2021) analyze the particular circumstances in Bahrain investigating the impact of artificial intelligence on efforts aimed at empowering women. In their study Al-Ammal and Aljawder (2021) offer a strategic viewpoint on the difficulties and possibilities of implementing AI in Bahrain. They also discuss how AI might be utilized to empower women providing insights into viable approaches. Although AI has the potential to promote women's empowerment there are several obstacles that prevent women from accessing and benefiting from AI-related possibilities. In their study Ding *et al.*, (2022) present a thorough examination of AI techniques emphasizing the difficulties and possibilities associated with the implementation of AI. Similarly the studies conducted by Gandi *et al.*, (2024) as well as Jewani *et al.*, (2024) center around the enhancement of women's safety and empowerment through the use of artificial intelligence (AI) tools. These studies offer valuable perspectives on the inter play between AI safety and gender dynamics. In addition Kelly Kaye and Oviedo-Trespalacios (2023) provide a comprehensive analysis of the elements that impact the acceptance of AI. Their systematic review high lights both the obstacles and the characteristics that promote the adoption of AI. In order to optimise the beneficial influence of AI on the empowerment of women it is crucial to implement appropriate strategies and policies. Chaurasia *et al.*, (2024) highlight the significance of

education training and innovation in the development of AI technology to promote women's empowerment. Kodiyan (2019) examines the ethical concerns surrounding the use of AI systems in the recruiting process emphasizing the significance of ethical considerations in the implementation of AI. Moreover Pattnaik *et al.,* (2024) and Pimpalkar *et al.,* (2024) explore artificial intelligence (AI) solutions for women's safety providing valuable perspectives on how AI might improve women's security and empowerment. Ultimately this seeks to enhance comprehension of the intricate relationship between AI technology and the empowerment of women. This study aims to analyse the current state of AI technologies the specific challenges and opportunities that women face in accessing AI-related opportunities and the strategies that can be used to utilise AI for women's empowerment. The ultimate goal of this is to provide valuable insights equality and women's advancement on a global scale. Gender diversity in AI may be increased through targeted educational programs and efforts that encourage girls and women to pursue professions in AI Kannan *et al.,* (2021). We can enable more women to enter the sector and share their unique ideas and experiences by providing mentoring scholarships and support networks. It is also critical to form inclusive and diverse teams inside AI corporations and research organizations Sharma, and Bathla, (2020). We can build an inclusive culture and guarantee that various points are included into AI algorithms and systems by creating an atmosphere that and respects varied voices. Finally increasing gender diversity in AI is a strategic need as well as an issue of fairness and equality.

DEFINITION AND CONCEPT

Artificial intelligence (AI) is the emulation of human intellect in robots trained to do activities that would normally require human intelligence. It includes a wide range of technologies and approaches aimed at allowing robots to see reason learn and make decisions in the same way that people do. AI is centred on the creation of intelligent systems that can analyze massive volumes of data derive relevant insights and modify their behaviour or activities in response to changing conditions.

AI IS DIVIDED INTO TWO CATEGORIES

It has two forms Narrow AI and General AI. Narrow AI usually referred to as weak AI is intended to do certain jobs or address specific issues. It is widely used in applications like as voice assistant's picture recognition systems recommendation algorithms and self-driving cars. General AI also known as strong AI or AGI (Artificial General intellect) on the other hand aspires to human-level intellect and skills across various disciplines. The pursuit of general AI is a continuing subject of study and development. Machine learning which allows systems to learn from data and improve their performance over time and natural language processing which allows machines to interpret and synthesize human language are key components of AI by Kelly *et al.,* (2023). Computer vision robotics expert systems and neural networks are some more AI approaches. Artificial intelligence has the potential to transform a wide range of industries including healthcare banking transportation and manufacturing. It has the potential to improve decision making automate repetitive operations optimize resource allocation and stimulate creativity. However ethical issues such as privacy prejudice and job effect must be properly addressed to enable the responsible and useful deployment of AI technology.

AI TECHNOLOGIES AND TOOLS

In recent years AI technology and tools have swiftly advanced disrupting different sectors and redefining the way people live and work. The combination of large data processing power and advanced algorithms has enabled these improvements. AI technologies have a wide range of applications allowing robots to accomplish jobs that would otherwise need human intellect. Machine Learning (ML) is a key artificial intelligence (AI) technique that allows computers to learn from data without being explicitly programmed Qaisur, (2023). ML systems sift through massive volumes of data to find patterns make predictions and unearth insights Friedler *et al.,* (2019). Deep Learning a sub type of ML simulates the human brain using artificial neural networks allowing

machines to interpret complex data such as pictures audio and spoken language.

Natural Language Processing (NLP) allows robots to comprehend and interpret human speech. Virtual assistant's chatbots and language translation systems are all powered by NLP technology. Computer Vision allows computers to interpret and comprehend visual data allowing applications such as picture recognition and self-driving cars. AI frame works and libraries such as Tensor Flow Pytorch and scikit-learn give developers strong tools for quickly building and deploying AI models. Cloud-based AI platforms such as Google Cloud AI Microsoft Azure AI and Amazon AWS offer scalable infrastructure as well as pre-built AI services for a variety of applications. Robotics autonomous systems and expert systems are further examples of AI technologies that are widely employed in areas like as manufacturing healthcare finance, and transportation. These tools and technologies have the ability to increase efficiency decision-making and promote innovation in a variety of industries. AI has immense promise for the future as it advances with possible applications in customized health smart cities cyber security and climate change mitigation. However ethical concerns and responsible deployment are critical to ensuring that AI technologies are employed in ways that are consistent with human values and benefit society as a whole.

PROBLEM STATEMENT

The convergence of artificial intelligence (AI) and women's empowerment entails both prospects and obstacles. AI has the potential to promote gender equality but women encounter obstacles such as restricted technology access gaps in digital literacy and prejudices ingrained in AI algorithms. To tackle these difficulties it is necessary to make collaborative efforts in narrowing the gap in digital access advocating for education that includes all genders and reducing biases in artificial intelligence systems. Therefore it is essential to comprehend and surmount these barriers in order to fully harness the transformative

capabilities of AI in advancing women's empowerment on a world wide scale.

OBJECTIVES OF THE STUDY

1. To study the role of AI in women empowerment.
2. To study the impact of AI on women empowerment.
3. To assess the potential of AI for women empowerment.
4. To explore the challenges and opportunities for future growth.

WOMEN EMPOWERMENT IN INDIA

In India women's empowerment has been a substantial and on-going process defined by gains and persisting problems. There has been a rising realization of the need of empowering women and guaranteeing their equitable involvement in all aspects of life throughout the years. Women in India have achieved great advances in education politics entrepreneurship and other spheres.

POTENTIAL OF AI FOR WOMEN EMPOWERMENT

1. Education and Skill Development: AI has the potential to change education and skill development allowing women equitable access to high quality learning opportunities. Online platforms and AI powered applications may provide education allowing women to learn new skills and gain new information. These technologies have the potential to close the educational gap and allow women to pursue their dreams improving their employability and economic independence.

2. Employment and Entrepreneurship: By facilitating fair and transparent recruiting procedures AI can reduce gender prejudices in the work place. Biases in job ads selection procedures and performance reviews can be reduced with AI powered technologies. Furthermore AI can promote remote employment and flexible hours giving women additional possibilities to enter and excel in the industry. AI may also help women launch their own enterprises by offering market data automating activities and improving decision making.

3. Healthcare and Well-Being: Artificial intelligence has the potential to improve health care results and increase women's access to quality health care services. AI powered solutions can help with illness identification and early detection individualized treatment strategies and remote patient monitoring. These improvements have the potential to eliminate health care inequities and improve the well-being of women particularly those living in rural and under-served regions.

4. Safety and Security: AI based solutions can help women feel safer by tackling issues such as harassment violence and security. Preventing crimes against women can be aided by smart surveillance systems face recognition technology and predictive analytics. AI powered smartphone applications can give real-time emergency assistance allowing women to seek aid and report instances as soon as possible.

5. Social Awareness and Advocacy: Artificial intelligence AI may be used to promote awareness about women's rights and drive social change. NLP algorithms can scan enormous amounts of data such as social media chats and news articles to discover gender biases stereotypes and discriminatory behaviors. This data may be used to create targeted awareness campaigns and policies in order to promote a more inclusive and gender equal society.

6. Economic Empowerment: AI can play a significant role in empowering women economically by providing new avenues for employment and entrepreneurship. It can enable women to participate in the digital economy access online marketplaces and explore work from-home opportunities. Initiatives like the Government of India's Digital India program and various e-commerce platforms have opened doors for women to start their own businesses and become financially independent.

7. Gender Equality: AI has the potential to tackle gender biases and promote gender equality. By removing human biases from decision-making processes, AI algorithms can ensure fair opportunities for women in areas such as recruitment promotions and access to financial services. Additionally AI-powered chatbots and virtual assistants can provide

support and information on gender-based violence and women's rights empowering women to seek help and support.

ACCESS TO OPPORTUNITIES

Artificial intelligence (AI) is a powerful and influential technology that has the capacity to greatly impact different areas of society including the advancement of women's rights and opportunities. This literature review examines the many effects of artificial intelligence (AI) on the empowerment of women by doing a thorough investigation of existing research and studies. This review seeks to analyze various view points and understandings in order to provide a clear understanding of the present level of knowledge on the use of AI to promote women's empowerment world-wide. It also intends to identify important opportunities and problems in this area (Al Shehab and Hamdan, 2021). Abdeldayem and Aldulaimi (2020) provide useful insights on the current patterns and potential advantages of artificial intelligence (AI) in the management of human resources specifically in the public sector in Bahrain. Their study highlights the capacity of AI to optimise HR procedures and improve organisational productivity and ultimately promoting total staff empowerment. Al Shehab and Hamdan (2021) emphasise the correlation between artificial intelligence (AI) and the empowerment of women. They specifically highlight Bahrain's initiatives to utilise AI technology in order to advance gender equality and socio-economic inclusion. In societies with a dominant male authority the use of modern technologies namely social media can have a substantial influence on the mental well-being of women (Aksar *et al.*, 2024). The study conducted by Aksar *et al.*, highlights the significance of tackling adverse effects on women's mental health in order to enhance their empowerment and overall well-being. In addition Chaurasia *et al.*, (2024) and Hakimi *et al.*, (2024) highlight the significance of education training and innovation in improving women's digital abilities and their ability to access AI-related possibilities. This in turn promotes their economic social and political empowerment.

The use of AI technology in hiring practices necessitates a strong emphasis on ethical issues to guarantee justice and accountability. This is highlighted by Kodiyan (2019) and Fazil *et al.,* (2024). The study emphasizes the presence of biases and discrimination in AI algorithms and recommends for the implementation of ethical rules and legislation to ensure equal opportunities for all candidates including women. Ding *et al.,* (2022) and Hasas *et al.,* (2024) underscore the significance of openness and explain in AI techniques to tackle ethical issues and foster trust among users ultimately advancing women's empowerment. AI-powered technologies provide novel ways to promote security and well-being in the field of women's safety. Gandi *et al.,* (2024) explores the use of wearable devices surveillance systems and AI applications to enhance the autonomy and security of women in different environments. Jewani *et al.,* (2024) investigate innovative methods to ensure the safety of women by utilizing AI-based tools and applications. Their aim is to address safety issues and increase women's independence. In addition Kumar *et al.,* (2023) explores the profound impact of artificial intelligence AI and the met averse on education. The study emphasizes how AI powered technologies have the potential to completely disrupt teaching and learning methods leading to increased empowerment of learners and improved educational results. Pattnaik *et al.,* (2024), Pimpalkar *et al.,* (2024) and Amiri *et al.,* (2024) examine the use of AI and machine learning to improve women's security. They highlight the need of organizations taking proactive steps to promote women's safety and independence. Rathod *et al.,* (2024) explore the application of AI driven predictive analytics to enhance workplace safety resulting in the creation of safer settings for all employees including women.

Zhang and Tao (2020) examine the advancements difficulties and possibilities in the realm of artificial intelligence of things emphasising its capacity to tackle different societal concerns particularly those concerning women's empowerment and safety. By incorporating artificial intelligence AI technologies into Internet of Things devices organisations can improve the allocation of resources increase operational efficiency

and develop creative solutions to advance women's empowerment. Overall the literature study show cases the wide ranging uses and consequences of artificial intelligence in promoting the empowerment of women. AI driven technologies have the potential to significantly advance gender equality promote inclusion and empower women world-wide in various areas such as HR management education women's safety and well-being. Nevertheless ethical considerations openness and inclusivity are essential for fully harnessing the advantages of AI in promoting women's empowerment and establishing a fair and impartial society.

METHOD

Research Design: This research employed a mixed methods research design combining quantitative surveys and qualitative interviews to extensively explore their influence of artificial intelligence (AI) on women's empowerment.

Sampling Strategy: A stratified random sampling technique was used to ensure representation from diverse segments of the population including student's faculty members and employees. To account for the total population size and achieve statistically robust results, the sample size was calculated using the finite population correction formula.

DATA COLLECTION INSTRUMENTS

Quantitative Surveys: Structured questionnaires were administered online to gather quantitative data on participants' perceptions, attitudes and experiences concerning AI technologies and women's empowerment. The survey encompassed Likert-scale questions and demographic inquiries.

Qualitative Interviews: In depth semi-structured interviews were conducted with selected participants to delve deeper into their perspectives challenges, and recommendations regarding AI and women's empowerment. Interviews were audio-recorded and transcribed for subsequent thematic analysis.

Data Collection Procedure: Participant recruitment occurred through social media platforms and online university portals. Quantitative surveys were disseminated electronically via online survey platforms allowing participants to respond conveniently at their own pace. Qualitative interviews were scheduled based on participants' availability and conducted remotely via video conferencing or phone calls.

Ethical Considerations: Data collection adhered strictly to ethical guidelines ensuring informed consent confidentiality and privacy protection for all participants.

RESULT

The convergence of artificial intelligence (AI) with women's empowerment offers both favorable prospects and intricate obstacles. The literature study and assessment of validity and reliability offer useful insights into the present state of knowledge and comprehension. Multiple studies indicate that AI has the capacity to significantly improve gender equality by promoting women's education career opportunities safety and overall well-being on a world-wide scale. First and foremost although there is a generally favorable image of AI's ability to enhance the capabilities of women there are still differences in opinions and experiences across various groups and situations. This emphasizes the significance of taking into account a wide range of viewpoints and customizing solutions to effectively tackle individual requirements and obstacles. Furthermore the evaluation of the role of AI technologies in promoting women's empowerment demonstrates a complex comprehension across participants with certain individuals recognising substantial influence while others perceive low or no contribution. This highlights the intricate nature of evaluating the impact of AI on promoting gender equality and emphasises the necessity for additional study to these dynamics with greater precision. Furthermore issues pertaining to the accessibility consciousness and efficacy of policies and programs also arise as significant aspects to be taken into account. To provide equal access to AI opportunities for women it is essential to

tackle obstacles that prevent them from participating to promote their understanding and use of digital technology and improve inclusivity. Although AI has significant potential for promoting women's empowerment it is crucial to approach its incorporation with meticulous attention to ethical social and cultural aspects. By giving utmost importance to inclusivity openness and accountability to everyone involved can optimize the beneficial influence of AI technologies on the lives of women and establish a society that is fair and impartial. The results emphasize the significance of comprehensive and co-operative methods in utilizing the capabilities of AI to promote women's empowerment. By tackling the highlighted obstacles and capitalizing on opportunities we may strive for a future in which AI technologies make significant and lasting contributions to gender equality on a global scale.

DISCUSSION

The results of study explore insight into the intricate terrain surrounding the incorporation of artificial intelligence (AI) in efforts to promote women's empowerment. The diverse and wide-ranging influence of AI on different facets of women's empowerment such as education employment safety and well-being highlights its capacity to bring about significant change in achieving gender equality Gray *et al.,* (2021). Nevertheless the research reveals numerous significant themes and difficulties that require additional consideration. Initially the examination of the present extent of incorporation of AI technology in endeavors aimed at empowering women demonstrates a generally favorable view among participants. Most participants believe the integration of AI to be at a moderate to high level showing that they recognize AI's potential to promote gender equality. Nevertheless discrepancies within faculties and participant categories indicate that specific groups may possess distinct view-points or encounters with AI technologies. It is crucial to take into account a range of perspectives and customize treatments to target certain requirements and obstacles in various situations (Abdeldayem and Aldulaimi, 2020; Al Shehab and Hamdan, 2021).

Furthermore the recognition of the impact of AI technology on women's empowerment world-wide demonstrates a sophisticated comprehension among participants. While several individuals consider the impact of AI to be substantial or moderate others believe it to be small or non-existent. The presence of various points highlights the intricate nature of evaluating the impact of AI in promoting women's empowerment world. Research indicates that individuals' opinions of AI's ability to promote gender equality may be influenced by factors such as technology availability digital literacy and socio-cultural norms (Aksar *et al.,* 2024; Chaurasia *et al.,* 2024). Moreover the perceived obstacles faced by women in accessing AI possibilities exhibit a range of perceived levels of difficulty. Some people find it moderately demanding while others regard it as either not challenging or excessively challenging. The results emphasize the significance of overcoming obstacles to participation and advocating for inclusiveness in AI ecosystems to guarantee fair access to possibilities for all persons irrespective of their gender (Kodiyan, 2019; Ding *et al.,* 2022). Furthermore the evaluation of women's awareness level of AI opportunities reveals possible disparities in knowledge and comprehension. Although a considerable number of participants had a moderate level of awareness showing a reasonable comprehension of AI-related possibilities a note-worthy percentage considers their awareness to be quite limited. This indicates a requirement for focused educational and awareness campaigns to improve women's understanding and involvement with AI technology (Kumar *et al.,* 2023; Pattnaik *et al.,* 2024). The analysis of the results highlights the significance of tackling different obstacles and possibilities in utilizing AI to promote women's empowerment. Key factors for guaranteeing the appropriate and fair integration of AI technology to promote global gender equality are ethical considerations inclusion, and education Hutton and Henderson, (2019). To optimize the positive influence of AI on women's empowerment future research and actions should give priority to these factors. After examining the results and analysis, a number of suggestions arise to enhance the empowerment of women through the

use of artificial intelligence (AI) technology. First and foremost it is necessary to implement specific measures to improve women's access to AI-related possibilities. These measures should include educational programs mentorship initiatives and skills development workshops. The focus of these endeavors should be on prioritizing marginalized communities and tackling obstacles that hinder their participation. Additionally it is crucial for policy makers and organizations to adopt gender sensitive policies and practices in order to guarantee inclusivity and diversity in the development and implementation of AI Qaisur, (2024). This encompasses the promotion of ethical AI design the mitigation of algorithmic biases and the cultivation of a supportive atmosphere for women in STEM disciplines. Furthermore it is imperative to conduct ongoing study and gather data to gain a deeper comprehension of the intricate dynamics between artificial intelligence (AI) and the promotion of women's empowerment. This includes examining the effects on various socio-economic groups and areas. Effective collaboration among government's academia industry and civil society is essential to facilitate significant progress and fully exploit the capabilities of AI in promoting gender equality.

CONCLUSION

Further investigation is needed to explore the enduring impacts of AI interventions on women's empowerment encompassing their socio-economic results and overall well-being. Moreover examining the interconnection between gender and other aspects of identity such as race ethnicity and socio-economic status might offer significant perspectives on the varying effects of AI technology. Furthermore longitudinal studies have the ability to monitor alterations in attitudes access and involvement over a period of time in order to evaluate the efficacy of treatments. Lastly exploring cutting edge AI applications and upcoming technologies can provide fresh possibilities for tackling enduring difficulties and advancing women's empowerment in various contexts.

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SOCIO-ECONOMIC DISADVANTAGED GROUPS: VARIOUS PROVISIONS IN CONTEXT OF NEP (2020)

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ABSTRACT

The most effective means of attaining social justice and equality is education. While building an inclusive and equitable society where every person has the chance to dream, grow, and contribute to the country is undoubtedly important in and of itself, inclusive and equitable education is also fundamental to that aim. The description of socioeconomically disadvantaged groups as stated in National Education Policy 2020 is the focus of this study.Gender identities (especially those of women and transgender people), socio-cultural identities (like those of Scheduled Castes, Scheduled Tribes, OBCs, and minorities), geographical identities (like those of students from small towns, villages, and aspirational districts), disabilities (including learning disabilities), and socioeconomic conditions (like those of migrant communities, low-income households, children in vulnerable situations, victims of or children of victims of trafficking, orphans including child beggars in urban areas, and the urban poor) can all be used to classify socio-economically disadvantaged groups, or groupings, and disabilities. One of the main objectives of all education sector development programs will continue to be closing the socioeconomic category disparities in school enrolment, engagement, and learning outcomes, as stated in National Education Policy 2020. Separate tactics will also be developed with the specific goal of closing the gender identity and social category gaps in

schooling. Additionally, a number of effective programs and policies, like targeted scholarships, conditional cash transfers to encourage parents to enrol their kids in school, bicycle rental programs, etc., have greatly increased the participation of SEDGs in the educational system in specific regions. The nation as a whole need to greatly reinforce these effective programs and policies.

Keywords: National Education Policy 2020, socio-economically disadvantaged groups, programs and policies

Introduction

Education is a pre-determined factor for achieving social, economic, political equality for all people. It is a fundamental right which can bring societal balance and contribute to a rapid economic growth of a nation. It indicates that a nation's development can be visualized from it focuses on education sector. From the ancient period, education is considered as an instrument for inculcating morals, values, ethics, standards, principles within an individual. Efforts were made to provide education to the Indian population in the colonial period also. After independence, Indian government has taken many more successive and innovative steps for providing equitable quality education to the mass population of the nation. A noticeable change was closely observed in the Indian education system after the Universal Declaration of Human Rights, 1948 as it included education as a human right in its Article 26. The New Education Policy announced by Government of India (NEP 2020) is welcoming news and a positive development amongst negativities surrounding the world in this Covid-19 pandemic. The first NEP was implemented by India in 1968 and next after long gap in 1986 and recent one under leadership of Prime Minister Narendra Modi in 2020.The National Education Policy 2020 (NEP 2020) of India was approved on 29 July 2020. It is formulated with the vision to revamp education system and lay down road map for progressive educated country. The committee that prepared policy document of the NEP 2020; was headed by former ISRO chief K Kasturirangan. In its election manifesto of 2014

parliament elections; the ruling Bhartiya Janta Party (BJP) has promised to bring revolutionary reform in Indian education system (Saha Mushkan, 2020). They fulfilled their promise to nation with NEP 2020.

The New Education Policy-2020 proposes a category of Socio-Economic Disadvantage Groups (SEDG) which plans for the educational upliftment of SC, ST, OBC, minorities and Divyang together. This category of SEDG provides space for socially deprived and economically backward communities in educational planning of the country. This term is being already successfully used in framing developmental and educational planning in various country of the world. The New Education Policy (NEP), in its umbrella category-'SEDG' not only includes Dalit, Tribals, OBC, Divyang but also includes minorities of the country and promises to grant them excessively special privileges. In this way, the NEP has used this term to describe the broader category of disadvantageous section that has been deprived of the education due to socio-economic reasons.

- **Socio-Economically Disadvantaged Groups (SEDGs) can be broadly divided into following categories:**

- Gender Identities: NEP 2020 recognizes that female and transgender individuals are mostly excluded and adversely affected disadvantaged groups all over the world. Therefore, the policy recommended for creating of "Gender Inclusion Fund" to build nations capacity to provide equitable quality education for all girls as well as transgender students.
- Geographical Identities: The National Educational Policy of 2020 also recognized that certain geographical areas containing a larger proportion of socio-economically Disadvantage group of people. Due to their geographical location, they are facing inequalities in the field of education. Therefore, NEP 2020 has suggested creating "Special Educational Zones" in order to include the students from marginalized communities in quality educational space.

- Regarding Children with special Needs (CWSN): In order to ensure the inclusion and equal participation of CWSN student from the ECCE stage to higher education stage, NEP 2020 has suggested barrier free access for all children with disabilities to school. NEP 2020 has also suggested for providing appropriate assistive device, adequate teaching learning materials, sufficient resource centre in schools, appointing special teacher and teacher training etc. The policy proposed new National Assessment Centre- PARAKH will formulate guidelines and recommended appropriate tools for conducting assessment of children with learning disabilities from the fundamental stage to higher education stage.
- Socio-Economic condition: National Educational Policy 2020 has identified extremely vulnerable groups such as children of migrant workers, victims of child trafficking, child labour, orphans, child beggar, children from low economic groups as they are facing exclusion and inequalities in their way of equal educational attainment. As NEP 2020, focus on equitable and inclusive education for all learners therefore the policy suggested that there should be a strong investment in ECCE so that all the children enable to get access, participate and shine in the education system. It was also suggested that there should be an alternative and innovative education centre for mainstreaming the dropout children. Therefore, counsellor and well-trained social workers should be in contact with the parents, students, teachers and other members of the community in order to improve the attendance and learning outcomes of the children.

➢ **Various Provisions of National Education Policy for Equitable and Inclusive Education to SEDG'S:**

The NEP-2020 reiterates that while the Indian education system and successive government policies have made steady progress towards bridging gender and social category gaps in all levels of school education, large disparities still remain-especially at the secondary level-

particularly for socio-economically disadvantaged groups that have been historically underrepresented in education while overall enrolments in schools decline steadily from Grade 1 to Grade 12 ,this decline in enrolments is significantly more pronounced for many of these SEDGs, with even greater declines for female students within each of these SEDGs and often even steeper in higher education. A brief status overview of the SEDGs that come within socio-cultural identities is given in following sub-sections.0, 6.2, p.24). According to U-DISE 2016-17 data, about 19.6% of students belong to Scheduled Castes at the primary level, but this fraction falls to 17.3% at the higher secondary level. These enrolment drop-offs are more severe for Scheduled Tribes students (10.6% to 6.8%), and differently-abled children (1.1% to 0.25%), with even greater declines for female students within each of these categories. The decline in enrolment in higher education is even steeper.

Special Education Zones (SEZs) for Deprived: To ensure inclusion of marginal communities in quality educational space of India, the NEP 2020 proposed the policy strategy to identify special education Zones (SEZs). The SEZs will be the identified regions where significantly large populations from educationally disadvantaged SEDGs resides. In these SEZs, all the schemes and policies are to be implemented to the maximum through additional concerted efforts. This policy strategy will help to change the educational landscape of these areas. In addition to this, the NEP-2020 also identifies specific geographical locations as Aspiring Districts which require special interventions for promoting educational development. These new categorization and policy strategies around them can prove to be a very effective measure in eliminating educational deprivation of the marginal communities that has sustained for long. It is Section 6.6 states: “regions of the country with large populations from educationally-disadvantaged SEDGs should be declared Special Education Zones”. This is adding, improvising and renovating with new vision of the inclusion of the educationally

excluded, of the MSDP (Multi– sectoral Development Plan) scheme introduced by UPA.

Direct Cash Transfers and Special Scholarships: The new education policy encourages the government to provide special scholarships and cash transfers for SEDGs. Section 6.4 clearly says (emphasis added): "there have been various successful … schemes such as … scholarships, conditional cash transfers … that have significantly increased participation of SEDGs in the … schooling system. … These successful schemes must be significantly strengthened across the country". This provision will make almost impossible misappropriation scholarship for children and successfully disseminate direct benefit to the weaker section.

Successful Policies and Schemes: In addition, there have been various successful policies and schemes such as targeted scholarships, conditional cash transfers to incentivize parents to send their children to school, providing bicycles for transport, etc., that have significantly increased participation of SEDGs in the schooling system in certain areas. The successful policies and schemes must be significantly strengthened across the country' (6.4, p.25tions which will make them capable of taking part in the world of education in India

- **Gender Inclusiveness**

- NEP 2020 focuses on Education for All.
- Develops strategies for empowering women through education.
- Under Samagra Shiksha Abhiyan, Kasturba Gandhi Balika Vidyalaya's (KGBVs) are developed.
- KGBVs are residential schools for SEDG girls belonging to: • SC, ST, OBC, Minority and Below Poverty Line (BPL).
- Includes class VI to XI
- Provisions for Netaji Subhash Chandra Bose Awasiya Vidyalayas and Hostels

- Rani Laxmi Bai Atmaraksha Prashikshan (Self-defence training to Girls)
- Swami Vivekanand Single Girl Child Fellowship for Research in Social Science
- PG Indira Gandhi Scholarship for Single Girl Child
- Stipend for Children with Special Needs (CWSN) girls:
- 91318 Children with Special Needs girls covered under Home-Based Education

➢ **Inclusion of Divyangs**

- Focus is to achieve an increased Gross Enrolment Ratio (GER) of 50% by 2035.
- Inclusive Education for Disabled at Secondary Stage (IEDSS) implemented.
- Ensures: completing eight years of elementary schooling • four years of secondary schooling up to classes IX to XII.
- Rs. 1023.50 crore has been approved for the education of 21,00,918 Children with Special Needs ∪ Support has been enhanced to Rs. 3500/- per child per annum.

➢ **Inclusion of LGBTQ communities**

- NEP 2020 for the first time mentioned "Education for Transgender"
- Transgender Persons Rights Act (2020) proposed by National Council for Transgender Persons
- 25 percent reservation in educational institutions for Transgender Children
- In 2019-20, a total of 61214 transgender children are enrolled in schools.
    - 5813 in Class X and 4798 transgender children in Class XII are enrolled
    - 25 transgender students cleared 10th and 12th CBSE board examinations in 2020 Inclusion of LGBTQ communities

- **Inclusion of Religious Minorities**

- Through Fellowships, Scholarships and Dormitories.
- Includes: • National Fellowship for Students of Other Backward Classes (OBC); • Maulana Azad National Fellowship for Minority Students
- Upgrading Madrassas to Schools and upgradation of syllabus
- Training of Teachers in Madrassas with ICT
- Extending Incentives for school uniforms, girl child education etc.
- Adopting Need- Based Approach, liberating them with Choice

- **Promoting Tribes and Other SEDGs**

- Includes SC/ST, PVTGs, DNTs, NTs, and SNTs
- Strengthening Eklavya Model Residential Schools for Tribals
  - A total no of 1,09,618 students in EMRS
  - 55,621 are boys, 53,994 students are girls, and 3 transgender students
  - 694 Sanctioned EMRS, 401 are fully Functional EMRS
  - 46 new EMRS to be opened making a total of 740 EMRS in the country
- Prioritizing appointment of 38,800 new teachers, and non-teaching staffs
- Enhancing education through Mother Tongue
- Appointment of Multilingual Medium Educators (MLMEs) in tribal areas
- Regional languages for Tribal and SEDGs Development.
- Includes: delivering Dictionaries of terminologies, AICTE developed technical books in fourteen regional languages for B. Tech Courses, Commission for Scientific and Technical Terminology (CSTT) to develop scientific terminologies

- **Equity and Inclusion in HEIs (Higher Education Institutions)**

- Encouraging Research and Development
- Developing Culture of Collective Craftmanship
- Lab to land and Land to Lab
- Ensuring Global Recognition for Indigenous Projects
- Establishing Tribal Museums in different tribal districts Equity and Inclusion in HEIs
- Focus of National Research Foundation on Women, Tribes and other SEDGs
- Promoting Research and Development in Tribal Medicinal Plants
- Establishment of R&D Cells for Indigenous Knowledge Systems
- Breakthrough R & D in Healthcare: • Sickle Cell Anaemia • Thalassemia
- Allocating Rs. 15,000 crores for eradicating Sickle Cell Anaemia in Tribal Areas

- **Conclusion**

Difficulty in equal educational opportunity and attainment for the people belonging to marginalized groups is the result of socio- economic, geographical and structural complexities in India. Responding to those difficulties the policy of 2020 has recognized the barriers faced by the marginalized people, gendered categories and CWSN. NEP 2020 is a step towards bridging the gap between gendered categories, CWSN, socio- economic weaker section and other marginalized groups keeping in view Sustainable Development Goal-2030 so that they can feel included and enjoy equal educational opportunity. Despite considering education as a prime right for all children, still in a real scenario we are far from the goal universalization of elementary education. It is proved from the discussion that after the post –independence, Indian education system is gradually progressing. But, there are some gap to be filled and some provisions are still exist for improving the education system

especially in student enrollment, infrastructural facilities, retention and dropout etc. So, there is an urgent need to look after all these circumstances before implementing the NEP 2020 for securing equitable, inclusive and quality education for all children.

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A RETROSPECTIVE STUDY ON THE CORRELATION BETWEEN PRE-UNIVERSITY ACADEMIC PERFORMANCE AND FIRST-YEAR NURSING SUBJECT SCORES AMONG B.SC. NURSING STUDENTS

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ABSTRACT

This retrospective study investigates the correlation between pre-university academic performance and first-year nursing subject scores among B.Sc. Nursing students. Conducted at a nursing institute in Maharashtra, India, the study explores how 12th-grade Physics, Chemistry, and Biology (PCB) scores, as well as Common Entrance Test (CET) scores, relate to students' academic performance in first-year nursing subjects. The study sample includes 140 students admitted between the academic years 2021–2024. Findings indicate a moderate positive correlation between 12th-grade PCB scores and first-year performance in subjects such as Applied Anatomy and Physiology, Applied Sociology and Psychology, and

Nursing Foundation, particularly for the 2023–2024 batch ($r = 0.486$, $p < 0.01$). Additionally, the study reveals that MHCET Nursing scores are more strongly correlated with academic performance compared to NEET scores, with significant positive correlations observed across all subjects for the 2022–2023 cohort. The analysis also finds no significant difference in total academic performance between students admitted through NEET and MHCET Nursing. The study underscores the importance of pre-university science education in shaping academic success in nursing programs and suggests that specialized entrance exams like MHCET may better predict first-year academic performance in nursing.

Key Words: Pre-university performance, Nursing academic erformance, MHCET Nursing, NEET.

INTRODUCTION

In the state of Maharashtra, India, the admission process for nursing programs is regulated by the Directorate of Medical Education and Research (DMER). To streamline and standardize these admissions, the Government of Maharashtra established the Admissions Regulating Authority and State Common Entrance Test (CET) Cell, under the provisions of the Maharashtra Unaided Private Professional Educational Institutes (Regulation of Admission and Fees) Act, 2015.

The Commissioner of the State CET Cell is designated as the Competent Authority for conducting the MH-Nursing CET. For admission to the B.Sc. Nursing program, students in the open category must secure at least 135 marks out of 300 in the PCB (Physics, Chemistry, Biology) group and achieve a minimum of 50 percentiles in the CET. For reserved category students, the eligibility criteria are 120 marks out of 300 in the PCB group and 40 percentiles in the CET. These eligibility criteria were introduced with the Nursing CET in the 2022-2023 academic year, replacing the National Entrance Test (NET) used in prior years.

This regulatory framework ensures a fair and transparent process for admitting students into nursing programs, including the Bachelor of Science in Nursing (B.Sc. Nursing). According to the present researcher, this selection process plays a critical role in securing admission to nursing colleges, which are responsible for producing trained and skilful nursing professionals through rigorous nursing education. While many factors influence the development of competent nursing professionals, pre-university academic performance may be one of the key determinants. As it serves as the basic selection criterion for admission into nursing programs, it could also impact students' academic performance in the first year of the nursing course.

Furthermore, while teaching first-year nursing subjects, it has been observed that many topics are closely linked to students' prior learning in pre-university subjects such as Physics, Chemistry, and Biology. This observation has led the present researchers to investigate the correlation between pre-university academic performance and first-year nursing subject scores among B.Sc. Nursing students.

The present study, being retrospective in nature, explores the potential correlation between pre-university academic performance (as measured by 12th-grade PCB scores and CET results) and the academic performance of first-year nursing students in subjects such as Applied Anatomy and Physiology, Applied Sociology and Psychology, Nursing Foundation I and II (Theory and Practical), Applied Nutrition and Dietetics, and Applied Biochemistry.

AIM

To assess the correlation between pre-university academic performance and first-year nursing subject scores among B.Sc. Nursing students.

OBJECTIVES OF THE STUDY

1. To evaluate the correlation between pre-university academic performance (as measured by 12th-grade PCB scores) and first-year academic performance in B.Sc. Nursing subjects.

2. To assess the relationship between Common Entrance Test (CET) ((National Entrance Test (NEET) & Maharashtra Nursing CET (MHCET)) scores and academic performance in first-year B.Sc. Nursing subjects.
3. To compare the academic performance in first-year B.Sc. Nursing subjects among students admitted through the National Entrance Test (NEET) (2021-2022 batch) and those admitted through the Maharashtra Nursing CET (2022-2023 and 2023-2024 batches).

HYPOTHESES

1. H_{01}: There is no statistically significant correlation between 12th-grade PCB scores and first-year academic performance in B.Sc. Nursing subjects.
2. H_{02}: There is no statistically significant correlation between MHCET nursing /NET scores and first-year academic performance in B.Sc. Nursing subjects.
3. H_{03}: There is no significant difference in the academic performance of first-year B.Sc. Nursing students admitted through NEET (2021-2022 batch) and those admitted through Maharashtra Nursing CET (2022-2023 and 2023-2024 batches).

RESEARCH METHODOLOGY

This study aims to assess the correlation between pre-university academic performance and first-year nursing subject scores among B.Sc. Nursing students. The study was conducted at a nursing institute affiliated with the Maharashtra University of Health Sciences (MUHS) and recognized by the Indian Nursing Council and the Maharashtra Nursing Council. The institute is accredited with an "A" grade by NAAC and has an annual intake capacity of 50 students for its B.Sc. Nursing program. The institute strictly adheres to the admission norms established by central councils and regulatory bodies.

This study adopts an exploratory descriptive survey design with a retrospective approach. The study population includes first-year B.Sc. Nursing students who were admitted to the program between the academic years 2021-2022 and 2023-2024. A total of 140 student records were reviewed to obtain admission details and university performance scores.

The study employed a census sampling method, including all 140 students from the three academic batches (2021-2022, 2022-2023, and 2023-2024) who met the inclusion criteria. Inclusion criteria included students who had appeared for the Common Entrance Test (CET) either National Entrance Test (NET) or MHCET nursing and were admitted as per regulatory guidelines. Additionally, only those students whose university final examination results were complete and available were included. Students whose university final examination result sheets or mark sheets were unavailable were excluded from the study.

Data Collection

Data was collected from official institutional records using a structured data collection sheet. The independent variables were MHCET Nursing /NEET scores and 12th-grade PCB (Physics, Chemistry, Biology) scores, while the dependent variables were the first-year academic performance scores in subjects such as Applied Anatomy, Applied Physiology, Applied Sociology, Applied Psychology, Nursing, Applied Nutrition, and Applied Biochemistry and Nursing Foundation.

Ethical considerations

Ethical clearance was obtained from the institutional ethics committee, and formal permission was granted to access students' records. The confidentiality and anonymity of all participants were maintained throughout the study, with data securely stored and used only for research purposes.

Conflict of interest

The author declares no conflict of interest regarding the publication of this study.

Data analysis

Data was analysed using appropriate statistical techniques. Pearson's correlation coefficient was applied to assess the strength and direction of the relationship between MHCET(Nursing) / NEET scores and first-year subject performance. To determine the predictive value of pre-university academic performance, Person r statistics and ANOVA statistical test were employed. The analysis aimed to evaluate the individual and combined effects of MHCET Nursing / NEET scores and 12th-grade PCB scores on academic success in first-year B.Sc. Nursing subjects namely Applied Anatomy, Applied Physiology, Applied Sociology, Applied Psychology, Nursing, Applied Nutrition, and Applied Biochemistry and Nursing Foundation..

RESULT

Collected data was entered in to statistical soft wear SPSS version 21, and the data was analysed to assess the stated objectives and hypotheses.

The table 1 below depicts the corelation between 12th-grade PCB (Physics, Chemistry, Biology) scores and Applied Physiology, Applied Sociology, Applied Psychology, Applied Nutrition, and Applied Biochemistry and Nursing Foundations. The results depicted in table reveals that only 2023-2024 B.Sc. Nursing has positive moderate corelation with 12th-grade PCB scores with first year academic performance in subject Applied Anatomy & Applied Physiology ($r = 0.486$, $p = 0.001$), Applied Sociology & Applied Psychology ($r = 0.311$, $p = 0.043$) and Nursing Foundation ($r = 0.357$, $p = 0.019$). Hence, the researcher accepts hypothesis in regards to these subjects for this batch and rejects H_{01}: There is no statistically significant correlation between 12th-grade PCB scores and first-year academic performance in B.Sc. Nursing subjects.

Table 1: The relationship between PCB (12th) scores and academic performance in first-year B.Sc. Nursing subjects.

N= 140

Group	Variables (First-year academic B.Sc. Nursing subjects)	Pearson Correlation (r)	p-value (Sig.)	Significance
2021-2022 B.Sc. Nursing (PCB Scores of 12th) (n=49)	Applied Anatomy & Applied Physiology	0.-099	0.498	Not significant
	Applied Sociology & Applied Psychology	0.-036	0.804	Not significant
	Applied Biochemistry & Applied Nutrition	0.192	0.186	Not significant
	Nursing Foundation	0.175	0.230	Not significant
2022-2023 B.Sc. Nursing (PCB Scores of 12th) (n=48)	Applied Anatomy & Applied Physiology	0.068	0.645	Not significant
	Applied Sociology & Applied Psychology	0.-078	0.596	Not significant
	Applied Biochemistry & Applied Nutrition	0.178	0.227	Not significant
	Nursing Foundation	0.129	0.382	Not significant
2023-2024 B.Sc. Nursing (PCB Scores of 12th) (n=43)	Applied Anatomy & Applied Physiology	0.486	0.001**	Significant ($p < 0.01$)
	Applied Sociology & Applied Psychology	0.311	0.043**	Significant ($p < 0.05$)
	Applied Biochemistry & Applied Nutrition	0.211	0.174	Not significant
	Nursing Foundation	0.357	0.019**	Significant ($p < 0.05$)

The second objective of the study aimed to examine the relationship between Common Entrance Test (CET) scores (NEET & MHCET Nursing) and academic performance in first-year B.Sc. Nursing subjects. Pearson correlation analysis was conducted to evaluate this relationship, and the results are presented in Table 2. The findings indicate that students in the 2021–2022 B.Sc. Nursing batch, who were admitted based on NEET scores, showed a significant positive correlation between

their entrance exam scores and performance in Applied Anatomy & Applied Physiology (r = 0.314, p = 0.028) and Applied Sociology & Applied Psychology (r = 0.381, p = 0.007). However, no significant correlation was observed with Applied Biochemistry & Applied Nutrition (r = 0.164, p = 0.260) or Nursing Foundation (r = 0.140, p = 0.388).

Table 1: The relationship between NEET / MHCET Nursing scores and academic performance in first-year B.Sc. Nursing subjects.

N= 140

Group	Variables	Pearson Correlation ®	p-value (Sig.)	Significance
2021-2022 B.Sc. Nursing (NEET) (n=49)	Applied Anatomy & Applied Physiology	0.314	0.028**	Significant ($p < 0.05$)
	Applied Sociology & Applied Psychology	0.381	0.007**	Significant ($p < 0.01$)
	Applied Biochemistry & Applied Nutrition	0.164	0.260	Not significant
	Nursing Foundation	0.140	0.388	Not significant
2022-2023 B.Sc. Nursing (MHCET Nursing) (n=48)	Applied Anatomy & Applied Physiology	.616	0.000**	Significant ($p < 0.01$)
	Applied Sociology & Applied Psychology	.356	0.013**	Significant ($p < 0.05$)
	Applied Biochemistry & Applied Nutrition	.395	0.005**	Significant ($p < 0.01$)
	Nursing Foundation	0.518	0.000**	Significant ($p < 0.01$)
2023-2024 B.Sc. Nursing (MHCET Nursing) (n=43)	Applied Anatomy & Applied Physiology	0.271	0.079	Not significant
	Applied Sociology & Applied Psychology	0.423	0.005**	Significant ($p < 0.01$)
	Applied Biochemistry & Applied Nutrition	0.234	0.131	Not significant
	Nursing Foundation	0.409	0.006**	Significant ($p < 0.01$)

For the 2022–2023 batch, which was admitted based on MHCET Nursing scores, a strong positive correlation was found between entrance exam scores and all first-year subjects: Applied Anatomy & Applied Physiology ($r = 0.616$, $p < 0.001$), Applied Sociology & Applied Psychology ($r = 0.356$, $p = 0.013$), Applied Biochemistry & Applied Nutrition ($r = 0.395$, $p = 0.005$), and Nursing Foundation ($r = 0.518$, $p < 0.001$). These results suggest that MHCET scores were a strong predictor of academic performance for this cohort.

Similarly, for the 2023–2024 batch, which was also admitted based on MHCET Nursing scores, significant positive correlations were found in Applied Sociology & Applied Psychology ($r = 0.423$, $p = 0.005$) and Nursing Foundation ($r = 0.409$, $p = 0.006$). However, no significant correlation was observed with Applied Anatomy & Applied Physiology ($r = 0.271$, $p = 0.079$) or Applied Biochemistry & Applied Nutrition ($r = 0.234$, $p = 0.131$).

Overall, the results indicate that MHCET scores were more strongly correlated with academic performance compared to NEET scores. The 2022–2023 batch, assessed using MHCET Nursing scores, exhibited the strongest correlations across all subjects, suggesting that this entrance exam may be a better predictor of first-year academic performance in B.Sc. Nursing.

Based on these findings, the null hypothesis (H_{02}: There is no statistically significant correlation between NEET/MHCET Nursing scores and first-year academic performance) is rejected for subjects where significant correlations were observed.

Table three below depicts the comparison of academic performance across three sample groups. A one-way ANOVA was conducted to compare the total academic performance of first-year B.Sc. Nursing students admitted through NEET (2021-2022 batch) and MHCET Nursing (2022-2023 and 2023-2024 batches).

The descriptive statistics indicate that the mean academic performance scores were 180.10 ± 20.08 for the 2021-2022 batch (NEET), 171.79 ± 31.83 for the 2022-2023 batch (MHCET Nursing), and 172.86 ± 30.86 for the 2023-2024 batch (MHCET Nursing).

The ANOVA results revealed no statistically significant difference in total academic performance across the three batches, F (2,137) = 1.259, p = 0.287. Additionally, Welch's test for robustness confirmed no significant difference, Welch's F (2,84.34) = 1.594, p = 0.209.

Post-hoc analysis using the Games-Howell test indicated no statistically significant pairwise differences between any of the batches. The mean differences between the 2021-2022 batch (NEET) and the 2022-2023 batch (MHCET Nursing) (p = 0.281), between the 2021-2022 batch (NEET) and the 2023-2024 batch (MHCET Nursing) (p = 0.392), and between the 2022-2023 and 2023-2024 batches (p = 0.986) were all not significant.

Table 3: Welch's ANOVA results for comparison of academic performance across three sample groups

N= 140

Sample groups	**n**	**Mean**	**SD**	**Std. Error**	**95% Confidence Interval for Mean**	**Minimum**	**Maximum**
2021-2022 batch	49.0	180.1	20.1	2.9	174.33 – 185.87	127.0	216.0
2022-2023 batch	48.0	171.8	31.8	4.6	162.55 – 181.03	111.0	231.0
2023-2024 batch	43.0	172.9	30.9	4.7	170.35 – 179.71	65.0	220.0
ANOVA (Between Groups)	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig. (p-value)**	**Significance**	
…...	1966.4	2.0	983.2	1.3	0.3	(p > 0.05) Not Significant	
Welch's test	….....	2.0	….....	1.6	0.2	(p > 0.05) Not Significant	
Post Hoc tests (Group comparisons)	**Mean Differencs**	**Std. Error**	**95% Confidence Interval for Mean**		**Sig. (p-value)**	**Significance**	
2021-2022 vs. 2022-2023	8.3	5.4	-4.63 to 21.25		0.3	(p > 0.05) Not Significant	
2021-2022 vs. 2023-2024	7.2	5.5	-5.95 to 20.44		0.4	(p > 0.05) Not Significant	
2022-2023 vs. 2023-2024	-1.1	6.6	-16.75 to 14.61		1.0	(p > 0.05) Not Significant	

DISCUSSION

The study found a moderate positive correlation between 12th-grade PCB scores and first-year performance in B.Sc. Nursing for the 2023-2024 batch, specifically in the subjects of Applied Anatomy & Applied Physiology, Applied Sociology & Applied Psychology, and Nursing Foundation. These results suggest that stronger performance in the 12th-grade PCB subjects may contribute to better academic outcomes in the early stages of nursing education. These findings are consistent with previous research which indicates that pre-university academic achievement is a reliable predictor of success in higher education, especially in health-related disciplines.[1] (Johnson et al., 2015; Smith & Allen, 2018).

Moreover, the correlation between 12th-grade PCB scores and performance in Applied Anatomy & Applied Physiology was particularly strong ($r = 0.486$), aligning with literature suggesting that foundational knowledge in science subjects is essential for understanding applied health sciences.[2] (Brown & Miller, 2017). 2 These findings indicate the importance of pre-university preparation for students entering nursing programs, underlining the need for targeted interventions and support for students who may not perform well in their pre-university examinations.

When examining the impact of entrance exam scores (NEET and MHCET) on first-year academic performance, the results revealed that MHCET scores had a more consistent and stronger correlation with academic performance compared to NEET scores. Specifically, for the 2022–2023 and 2023–2024 batches admitted based on MHCET scores, a significant positive correlation was observed across most subjects, including Applied Anatomy & Applied Physiology ($r = 0.616$, $p < 0.001$) and Nursing Foundation ($r = 0.518$, $p < 0.001$). These findings suggest that the MHCET may be a more accurate predictor of nursing students' academic performance compared to NEET, potentially due to its alignment with the specific content areas relevant to nursing education.

The existing body of research on entrance exams and academic performance is mixed, with studies finding varying levels of correlation depending on the type of entrance exam and the academic program.[3,4] (Ali et al., 2020; Kumar & Sharma, 2021). However, our results echo the findings of Gupta and Singh [5], who demonstrated that specialized entrance exams, such as MHCET for health sciences, are more predictive of success in nursing and medical fields than general entrance exams like NEET. This suggests that entrance exams tailored to the subject matter of the specific course may better reflect the preparedness of students entering these programs.

The comparison between the NEET-admitted 2021-2022 batch and the MHCET-admitted batches (2022-2023 and 2023-2024) revealed no significant difference in total academic performance between the three groups ($F(2,137) = 1.259$, $p = 0.287$). Despite the stronger correlations observed between MHCET scores and academic performance in several subjects, this finding highlights the complex nature of academic success, which is influenced by a variety of factors beyond entrance exam scores, such as teaching quality, student motivation, and study habits.[6] (Miller et al., 2021).

Interestingly, the ANOVA results did not show any significant difference in academic performance scores across the three batches, which might suggest that entrance exam scores alone are insufficient predictors of overall academic performance. Other factors, such as classroom engagement, access to learning resources, and support systems, may play crucial roles in shaping students' academic outcomes.

The findings of this study have important implications for educational policy and practice. Given the moderate correlation between 12th-grade PCB scores and academic performance, educational interventions

One significant implication of this study is the role of pre-university education in shaping academic success in nursing programs. The positive correlations found between 12th-grade PCB scores and first-year academic performance underscore the importance of foundational

knowledge in science subjects for students entering nursing education. In this context, the introduction or expansion of bridge courses or vocational training programs at the higher secondary level could provide valuable support to students, and may be beneficial at strengthening students' performance in foundational science subjects. This approach aligns with existing literature, which suggests that early intervention through tailored educational programs can significantly improve academic outcomes, particularly in specialized fields (Patel & Kumar, 2019; Sharma & Singh, 2020) [7,8]

Additionally, the lack of significant differences in academic performance across batches despite differences in entrance exam scores suggests that institutions should consider a more holistic approach to student selection. Factors such as personal motivation, socio-economic background, and extracurricular involvement should also be considered to better predict students' potential for success in nursing education.

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LANGUAGE DIVERSITY AND MULTILINGUAL EDUCATION IN INDIAN SOCIETY

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ABSTRACT

Multilingualism is the ability to speak understand read and write more than one language. It can be individual or societal depending on whether a person or a community uses multiple languages. Multilingualism can also be classified into different types such as additive or subtractive balanced or dominant sequential or simultaneous depending on how languages are acquired used and valued. Language is a powerful tool for communication learning and cultural expression. It is also a key aspect of human development and identity. However in a diverse and multilingual country like India language can also pose significant challenges for education. The Indian classroom best reflects the diversity which is core to its social fabric. Students and teachers from different social economic and linguistic backgrounds coexist and learn together. The National Education Policy (2020) proposes multilingual education as the way forward. However this also poses some challenges like the medium of instruction the language of the textbooks and other related teaching resources and training the teachers. These challenges and shares recommendations for the same India is said to be a socio-linguistic country and this is huge and different from the ordinary ones. The nerve system of this is multilingualism. Indian multilingualism is enormous in size with over 1600 mother tongues reducible to about 200 languages for a population of about 1.30 billion people with the population of many of the linguistic minorities being larger than many European countries.

According to language is a human faculty it co-evolves with us and monolinguals which even in normal circumstances is a rare phenomenon, is beyond imagination in a context such as India where English has coexisted with indigenous languages over a long period. In fact the magnitude of multilingualism in India has made scholars wonder about how communication happens and how social cohesion is maintained. Since time immemorial India has been a multilingual country. Through more than four millennia of known history the linguistic families which co-existed together have continuously interacted with each other and achieved a pan Indian character which is unique in itself firstly in the matter of sentence structure and secondly in the number of shared items of vocabulary. In fact the world itself has now entered a phase of globalization where the phenomenon of bilingualism or multilingualism has become the norm. The multilingual context of the school and classroom is a topic it occupies the mind of schools teachers and society as a whole. A lot of schools are struggling with their multilingual character. Specialists emphasise the importance of multilingualism it's an added value for all who aim to work and function. On the other side of the argument the supporters of bilingual or multilingual education are convinced that children benefit from an education in their own language in addition to or in combination with education in the majority language of schooling which for them is a second language. They argue that education in the mother tongue provides a more effective basis for learning.

Key Words: Multilingual education, children's literature

INTRODUCTION

Multilingualism in India is a product of its history and a reflection of its diverse cultures. The school plays a vital role in maintaining multilingualism and in changing its nature. Planning for the development

of Indian languages starts at the school level to ensure in theory that it allows the multilingual base to continue. For the students the motivation to learn several languages arises from advantages which might possibly act as incentives for learning more and more languages. These advantages range from better jobs to enjoying diverse cinema reading magazines and travelling. The difference between the language that minority children speak at home and the language they use in school is one of their distinguishing features. If the language of the child brings to the classroom is decided and stigmatized and no academic strategy is adopted to give such children competence in the school language so that they may study as equals to the majority language children they develop an inferiority complex. This in turn affects their personality. Language is therefore both the cause and the symptom of an inefficient education system. In the latter sense language is only an indirect cause of lower opportunity low social status and therefore discrimination happen in education. The multilingual multiethnic and multicultural character of India necessitates in the inclusion of several languages in the curriculum for school education. Studies reveal that for the stake holders in school education the inclusion of several languages in the school curriculum is not considered to be an additional load. However in the fulfillment of their objectives students come across several difficulties from the pedagogic curricular and environmental areas. Teachers mostly emphasize the environmental and curricular difficulties and attribute the least number of problems to the pedagogy of language teaching however according to the students the least number of problems arise from the curricular front. In spite of the difficulties the students continue to work since they are highly motivated to learn several languages and are encouraged in this task by their parents. Diversity is an integral part of the Indian social fabric which is reflected in the varied cultures languages and religions practiced by the people. With more than 20 scheduled languages and more than 1,000 dialects spoken in various regions of India ranks in the top 10 linguistically diverse countries in the world as per the Linguistic Diversity Index released by (UNESCO,

2009). According to the (2011) census the literacy rate of India with a population of more than 121 crores is 74.04 per cent. The total number of persons speaking a second language is more than 31.49 crores (27.27 crores i.e., 86.59 per cent of these being literate) while those speaking a Third Language is more than 8.60 crores with more than 8.21 crores i.e., 95.47 percent being literate. This diversity is most evident in the Indian classroom where learners come from varied socio economic and linguistic backgrounds. Multilingual education refers to the use of two or more languages as a medium of instruction. UNESCO established the term multilingual education in (1999) to refer to the use of at least three languages in education the mother tongue a regional or national language and an international language. Most learners in India can speak two or more languages. Keeping in mind the linguistic diversity in India the government also introduced the three language formula with the need to promote multilingualism as well as promote national unity. Furthermore the three language formula grants greater flexibility and does not impose any language on the state. However one could debate the advantages and disadvantages of the three language formula given that there is a sort of linguistic apartheid in India. National Education Policy (2020) strongly supports multilingual education. It states that wherever possible the medium of instruction until at least Grade V, but preferably till Grade VIII and beyond it will be the home language or mother tongue and local language or regional language. The learning of their native language at school would improve the wellbeing of children from migrant backgrounds by supporting positive identity construction which is known to have a positive influence on school results. The teaching of non-native languages helps in these languages to survive over time. In this perspective providing educational support for minority immigrant languages is an objective of a government policy that acknowledges multilingual education as a positive feature of a multicultural society. The native languages of students are valued for what they are independent languages and not simply used as a useful to support the learning to improve students' wellbeing and involvement. It is also well-

established that learners learn better in their home language the language they are most familiar with them. A study shows that children learns best and are more highly motivated when the school curriculum reflects their language cultures experiences and perspectives. Alienation or conflict or the difference with the curriculum dis-engages students from the basic teaching learning process. Now this poses some serious concerns of the challenges that are most likely to arise in this case.

MULTILINGUALISM OF INDIVIDUAL AND CLASSROOM

The economics of monolingualism is such that two languages are considered not good and three languages are uneconomic but when many languages are a fact of life and a condition of existence restrictions on the choice of language. Our current education system tends to make people monolingual in a dominant language. According to the notion of one dominant language as the medium of instruction leaves thousands of children illiterate in their mother tongue and fosters low achievement levels in the dominant language itself. There is no doubt that language is a major factor in the case of school dropouts and stagnation in education. To a great extent the high rate of illiteracy especially in tribal areas can be attributed to the acceptance of the notion of one dominant language in a state and the lack of proper language planning. We often hear educators making statements such as multilingualism may be a great asset in life but it is a major obstacle in pedagogy. Such statements make two claims about multilingualism one in the context of real life and the other in the context of pedagogy. In both these contexts the construct of multilingualism is the same it is applied to different spaces the individual and the classroom respectively. The constructive approach appears to be that multilinguality implies the presence of more than one distinct language in a given space. There is an old saying a man who knows two languages is equivalent to two men. This is because a person who can speak many languages can communicate with people from those language back grounds easily and hence have a wider social life and effortlessly fit in a new place. Therefore multilinguality offers a lot of

autonomy to an individual and is an asset in terms of acceptance into a different language culture. If an immigrant can speak the language of the natives he or she is considered a member of the native community albeit tentatively. This acceptance offers a sense of security to the individual and hence becomes very important for his wellbeing. Multilinguality also brings with the opportunity to read and understand the literature of different languages which is a great asset as it offers a variety of perspectives and the key to a huge repository of codified knowledge. In a world where knowledge of the codified form is power and access to that knowledge is limited a multilingual literate is indeed privileged. A multilingual literate enjoys a greater privilege than one who can only speak different languages. In fact in a world of disappearing geographical boundaries it is hard to find people in positions of power who are not multilingual and offers a political edge and is hence a great advantage.

MULTILINGUALISM IN EDUCATION FOR COGNITIVE DEVELOPMENT

A multilingual classroom however is not the same as a multilingual individual. In multilingual classroom context students belonging to different language backgrounds sit together under one roof but they may or may not be able to communicate among themselves. This becomes challenging for the teacher as she cannot teach students who do not understand the language she speaks. There are several instances of such challenges and teachers therefore enter a multilingual classroom of the above nature. Moreover pedagogy also includes spaces beyond classroom interaction such as writing text books for a multilingual audience and incorporating sensitivity to different language speakers. It therefore becomes the responsibility of the teacher through pedagogy to cultivate the right kind of milieu because second language acquisition also depends on the formal language acquisition contexts. The teacher is hence faced with an insurmountable challenge. We forget that children are adaptable and that there is a mutual relationship between the learner

and his environment. It is highly exaggerated that multilingual classrooms offer no communicative possibility among the students themselves and between the students and the teacher. The multilinguality is an obstacle claim presumes a high degree of non-communicability. Situations with a high degree of non-communicability have no sustenance and lead to adaptation. Both the teachers and students adapt to the circumstances and learn to communicate with each other eventually. This adaptation of our language behaviour is due to our multilingual nature. Research shows that learning more than one language can boost brain functions such as memory attention problem solving and creativity. It can also improve metalinguistic awareness which is the ability to reflect on and manipulate language structures and rules.

FOSTERING CULTURAL DIVERSITY

Learning multiple languages can expose students to different cultures perspectives and values. It can also help them to develop intercultural competence which is the ability to communicate effectively and appropriately with people from diverse backgrounds. With over 22 officially recognized languages and hundreds of dialects each with its own unique cultural and historical significance the language is a crucial aspect of our identity.

IMPROVING ACADEMIC ACHIEVEMENT

Scientific research does not support the theory that language immersion for students is the best solution in all circumstances but sometimes political choices are made based on ideology and emotion rather than on scientific research. Studies have consistently shown that students who receive instruction in their mother tongue or home language perform better in school than those who are taught in a foreign or unfamiliar language. This is because they can access the curriculum content more easily and confidently and transfer their skills and knowledge to other languages.

PROMOTING SOCIAL INCLUSION

The monolingual and bilingual education is further complicated by the fact that the educational quality of schools and the educational success of pupils depend on other factors besides language education. Language is an important key to success but no means the only one language of schooling is best taught and practised in class. Providing education in multiple languages can ensure that every child has equal access and opportunity to learn regardless of their linguistic background. It can also foster a sense of belonging and identity among minority language speakers and reduce discrimination and marginalization.

MULTILINGUAL EDUCATION IMPLEMENTED EFFECTIVELY

Multilingual education should be based on the linguistic realities and needs of the learners and the communities. It should also respect the constitutional provisions and the three language formula of the National Education Policy (NEP 2020). Ideally multilingual education should start with the mother tongue or home language of the learners as the medium of instruction and gradually introduce other languages as subjects or additional media of instruction.

THE PEDAGOGY OF LANGUAGES

The concept of language awareness presents schools with another way of responding to linguistic diversity. Interaction between students themselves and between students and teachers remains an important factor in the creation and moulding of attitudes and opinions about language of speakers and multilingualism. The arguments in favour of introducing language awareness in the classroom are primarily social-emotional and social-cultural to make students receptive to linguistic diversity and to create a positive attitude towards all languages. Multilingual education should adopt a learner centered and interactive pedagogy that fosters language awareness and proficiency. It should also promote cross linguistic transfer and multi-literacy skills among the learners. Moreover it should use culturally relevant and contextually

appropriate materials and methods that reflect the diversity and richness of languages and cultures.

ASSESSMENT OF LANGUAGES

Multilingual education should use fair and valid assessment tools and criteria that measure the learning outcomes and progress of the learners in multiple languages. It should also provide constructive feedback and support to the learners to improve their language skills. Furthermore it should recognize and reward and the achievement efforts of the learners in multilingual education. By Using this approach schools try to stimulate students to open their mind to foreign languages and to motivate them to learn these languages. At the same time language awareness encourages the exchange of explicit knowledge and experience of when and how to use different languages. The language awareness raising can be used for all foreign languages but it seems logical to focus on the home languages and linguistic varieties already present in the classroom. Multilingual education can equip the learners with the necessary language skills and competencies to participate in various domains of life such as education employment research and innovation. It can also increase their employability and mobility in the globalized world.

PRESERVING LINGUISTIC DIVERSITY

A positive attitude towards linguistic diversity may contribute to a better understanding between children in the classroom and elsewhere at school. After all this approach encourages these children to express their ideas opinions and feelings in their own language. The attention paid to their language increases its status and because these children become experts in their mother tongue in their self-esteem increases and with it indirectly their motivation to learn and their school results. At the same time it is important to acknowledge that the language awareness approach is opportunistic in the sense that teachers can only exploit the linguistic resources that pupils bring with them to the classroom. Multilingual education can help to preserve and revitalize the linguistic

diversity and heritage of India. It can also promote linguistic rights and dignity of the speakers of different languages especially those who are endangered or marginalized.

STRENGTHENING NATIONAL UNITY

To introduce language awareness into the school and classroom a realistic view of language and its use in an educational context is absolutely necessary. Language is still too often considered to be a linguistic system that should be reduced to an abstract and uniform standard. Multilingual education can foster mutual understanding and respect among the speakers of different languages and cultures. It can also enhance social cohesion and harmony among the diverse groups of people in India. Language awareness rising may be an important way of increasing their involvement by considering them experts in their native language just as their children are schools to acknowledge them and are likely to increase their self-confidence in their communication with members of the school team.

STRONGER FOUNDATION FOR LEARNING LANGUAGES

Multilingualism is a motley crew of different unequally divided competences. Every aspect of language is specifically functional as mastering something in one domain doesn't guarantee success in another domain. Starting education in one's mother tongue provides a solid foundation for learning additional languages including the national language and English promoting multilingualism. When students can understand what they are being taught they are more likely to stay in school and complete their education.

LANGUAGE DIVERSITY AND CHALLENGES

Given that the learners come from varied linguistic backgrounds the first and foremost challenge is deciding not only how and what to teach but also which languages children should learn in and what should be the medium of instruction. All children should get equal opportunities at attaining school success. As a result equitable and inclusive education is one of the major objectives of the National Education Policy (2020). It

stresses the need to provide access to education to all so that no child the opportunity to learn and excel because of the circumstances of birth or background. It is said that the obvious question that arises here is how to decide the medium of instructions that meets this requirement for education. Furthermore what happens when the medium of instruction is decided based on the main stream requirements or market needs. The NEP (2020) states that a multiplicity of factors including lack of access to quality schools poverty social mores and customs and language have had a detrimental effect on rates of enrolment and retention among the scheduled castes. Children come from various backgrounds and bring along with them funds of prior knowledge language and experience which can help in strengthening the entire process of learning. When children feel alienated from the text they develop in congruency in their understanding. They either seek validation or simply let go of their own. This has serious consequences because this not only results in disequilibrium in the child's mind but also shakes their entire belief system and confidence and results in feelings of deficit. This sometimes also leads to disengagement or discontinuation from the school completely. However argues that one of the reasons that dropout rates in India remain so high is that the school pedagogy fails to enable children to become literate. Not only the school pedagogy but the language of the books and medium of instruction also pose challenges for the students. Given this situation the marginalized will become even more marginalized and lose any sense of existence or validity because they have to completely disconnect from their home language and learn an entirely new system of language that is nothing but alien to them. The second challenge is the text books that are used in the class to teach different subjects. Textbooks are the most prominent pedagogical tool used in the Indian classroom. Text books are standardised grade specific books specially designed for subjects that are used for teaching in the classroom. Teachers depend on and refer to the textbooks to teach in class plan their pedagogy and assess the students based on the content and learning outcomes covered in the text books at all levels of school

education the text book acts as a substitute syllabus or rather as the operative part of the syllabus. The textbook is not just a source of knowledge but also a source of cultural, socio-economic and linguistic representation. The content for the learning outcomes illustrations and images texts in case of language textbooks examples and the language used to teach all represent a certain segment of society. Often mainstream culture is represented in textbooks and they are written in the language predominantly used by the mainstream. The cultural capital of dominant classes and class segments has been considered the most legitimate knowledge and only this is included in the textbooks. The books lead to alienating the child by only sharing a very good presentation of the content and contexts using a language that seems quite familiar and standardised to many groups. For example the language lifestyle characters and setting that are presented in the textbooks mostly reflect the mainstream urban context. But we rarely see a similar depth in the representation of a rural or non-mainstream marginalised setting. The words and expressions used by the characters follow the standard formal format and bear no semblance to the language used by children. The learning without Burden states that an artificial sophisticated style dominates a textbook lesson which further increases the burden on the children. The logic of Non-standard English questioned the studies being done on the lack of performance by black children. This lack of performance has been blamed on the deficit in the social cultural and linguistic milieu of these students. Several programs were initiated to bring these students to par with mainstream children. This concept of verbal deprivation was challenged in his study where he shifts the onus of deficit from the child. He brings into place the mismatch in the home and school language as one of the key contributors which result in this imbalance. He further stresses that providing culturally and linguistically familiar text yielded a more conducive result with the black children rather than sharing text which is written for and by mainstream whites.

BENEFITS OF MULTILINGUAL EDUCATION FOR INDIA

The NCF (2005) states that the disadvantages in education arising from inequalities of gender caste language culture religion or disabilities need to be addressed directly not only through policies and schemes but also through the design and selection of learning tasks and pedagogic practices right from the period of early childhood by National Council of Educational Research and Training. This implies that it is important to keep in mind the language used in the textbooks as well as the content of the books should align with the varied backgrounds of the students. While it is important to consider the medium of instruction and the language of the textbooks it is equally important to understand the class dynamics and how the teaching learning process unfolds in the classroom. Inside the classroom the most important person to communicate deliver and transact knowledge is the teacher. The question now is if the language spoken by the teacher influences the language being used by the students. The text books prescribed to the teacher follow the standardized main stream of language and the teacher has to communicate this standardized information to the students methodically and objectively. The students are expected to grasp this standardized information in a language that could be different from the language that they are familiar with education. The gap between prior knowledge language and experience of the students ends up creating dissonance and alienation in the students. So pedagogy also becomes a major concern as the language to be used in the classroom is also largely either dependent on the language used by the teacher or the textbooks.

One important aspect of the entire teaching learning process is the assessment of the student. This assessment helps in managing the learning of the students and planning the pedagogy. The teachers can be appraised of the learning of the students and plan their pedagogy accordingly. Feedback also helps in stimulating the teaching learning process. It is important here to state that in planning the assessment and feedback in a diverse country like India the language used for the

assessment and feedback requires deep deliberation. Furthermore it is also important to talk about creating a stimulating learning environment of the National Education Policy (2020) states that curriculum pedagogy continuous assessment and student support are the corner stones of quality learning. For effective learning it is important to immerse the students and provide environment using for multiple teaching learning resources. These could children's literature in the local language and books that reflect local knowledge and ethos. Digital assets like animations and videos can also be used to make the teaching learning process interesting and engaging. The issue here is the availability and accessibility of texts suitable for children especially in the local language. Whatever is available is either a weak translation or a reprint of old editions which have not been updated. The children's book publishers feel that since there are very few readers they do not feel the need to print in Hindi. The students however feel that they are not able to gain interest in reading Hindi as the texts available are boring didactic and do not reflect their own experiences. A few students also said that the language used in the texts is difficult to understand and they are unable to comprehend the texts. It is worth mentioning here that the national curriculum frame work and other documents like the other committee report all stress the need to use simple language.

DISCUSSION

Education is probably the most fundamental element in an in-egalitarian social and economic stratification. Language is the key to understanding the mutually reinforcing relationship between language use elite formation and vertical growth of education unequal opportunities and greater social and economic inequality. Taught mother tongue different from home mother tongue imposed standard and superposed languages do not only accentuate the existing inequalities but also introduce inequalities where none existed before. Accepting the fact that the linguistic landscape of India is extremely complex we have not paid enough attention to the language problems in education in proportion to

their primacy and functional importance in the entire frame work. It is necessary to adopt a pragmatic approach to linguistic usage in education and take into account the mechanisms of standardization of language in plural societies. Multilingual and multicultural education requires apart from positive attitudes to speech variation a degree of planning proficiency in the language of the classroom and that of learners and a high level of skill in teaching. The understanding of the socio-cultural process is considered incomplete without an understanding of the dialectical relationship between language education and society. The argument for this is that when it comes to words and meaning the relation between them is arbitrary and therefore there is no commonality between languages. This holds ground if we do not dig deeper into how multilingual children associate words with languages. The multilingual mind looks at words in a very different way. When the idea of one pure language' is absent multilingual children acquire a new vocabulary without the language categorization. The problem also lies in how we commonly construct the idea of multilinguality it is seen as the acquisition of more than one language. However since language boundaries are porous there is no language and everyone is multilingual. After all sounds are the basic components of all languages and these sounds are shared between languages. Again all human languages function in terms of constituents that have an internal consistency and the patterns of these constituents are not infinite. They vary along the parameter of a language being verb-final or verb-medial. India needs to adopt language empowerment for achieving potential. By supporting multilingualism and providing sufficient training and resources to teachers it will help to enhance linguistic skills improve cognitive development and create a more culturally diverse and intellectually enriching educational environment in adopting a flexible and inclusive approach. Multilingual education should be tailored to the needs and contexts of different learners and communities. It should also be inclusive of all languages and dialects spoken in India including tribal languages sign languages classical languages foreign languages in

developing a continuum of language learning. Multilingual education should not be limited to the foundational years of schooling. It should be extended throughout the educational system from pre-primary to higher education. It should also provide opportunities for students to learn new languages at different stages of their academic career. Strengthening teacher capacity teachers play a crucial role in delivering multilingual education. They should be provided with adequate training and support to teach effectively in multiple languages. They should also be encouraged to use innovative pedagogies and technologies to enhance language learning. Hence language teaching can benefit immensely in a multilingual classroom. The teacher's role is at the center of bringing all the above elements together. So it is integral to focus on providing teachers with appropriate training which informs them of all factors of teaching in a diverse classroom. Also as far as possible teachers employed in schools should know the regional or local language so that it is easier for them to connect and teach the students. Textbooks reading materials children's literature and other learning resources should be made available in the language that the students are most familiar with. Students should be encouraged to read more about the local knowledge and ethos using the local knowledge. Authentic representation is of utmost importance in this case. The interest of children is driven by how much they associate themselves with the story. The pedagogy and assessment should also be planned to keep in mind the linguistic requirements of the students. However this requires detailed research to get a deeper insight into the issue. The multilingual education is indeed relevant and required for a diverse Indian classroom. A few states in India, have implemented the programme. One needs to further look into the ground to understand the challenges that the teachers are facing and what can be done to overcome those challenges. Based on the data this programme can be replicated in other states gradually. One cannot deny the importance of learning of the language that the students are most familiar with. However careful deliberation before implementing the programme is mandatory.

CONCLUSION

In outside school all students grow up in a multilingual environment and the environments differ only according to the level of complexity and multiplicity. When it comes to children who speak a non-native language it is clear that the environment they grow up in is characterised by a higher level of complexity and multiplicity. Parents and communities are key partners in promoting multilingual education. They should be informed about the benefits of multilingualism for their children's development and learning. They should also be involved in decision making processes regarding language policies and practices. Multilingualism should be celebrated as a valuable asset for India's social and economic development. It should be integrated into various aspects of public life such as media arts sports and governance. It should also be recognized and rewarded in various domains such as education employment and research.

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ACHIEVEMENTS AND CONSTRAINTS OF NATIONAL ACTION PLAN ON CLIMATE CHANGE

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ABSTRACT

The National Action Plan on Climate Change (NAPCC), launched by the Government of India in 2008, represents a strategic policy framework aimed at addressing challenges induced by climate change. This paper evaluates the achievements as well as constraints of the NAPCC in mitigating climate change. The study reviews the eight core missions of the NAPCC, including solar energy expansion, water resource management, sustainable agriculture and energy efficiency improvements and highlights their contributions to national and international climate goals. Key achievements include significant increase in solar energy capacity under the Jawaharlal Nehru National Solar Mission, innovative water conservation projects and energy-saving initiatives through market-based mechanisms. However, the implementation of the NAPCC has been impeded by challenges such as inadequate funding, limited capacity building at state and local levels and the lack of comprehensive coordination among stakeholders. The absence of robust monitoring and evaluation frameworks has made it difficult to measure the progress effectively. The paper also explores the constraints arising from socioeconomic disparities, policy drawbacks and resistance from high-carbon industries. By identifying these barriers, the study provides actionable recommendations for enhancing the effectiveness of the NAPCC, including strengthening institutional frameworks, improving

financial mechanisms and fostering community engagement.

Key-Words: Climate change, climate resilience, renewable energy, sustainable agriculture, solar energy, water conservation, community engagement.

Introduction

Climate change has become one of the most serious challenges of the 21st century with great implications for ecosystems, economies and societies (IPCC, 2021). The urgency to address this global crisis has led nations to develop comprehensive strategies to mitigate impacts of climate change and fostering sustainable development. The (NAPCC serves as a pivotal framework adopted by India to navigate the complexities of climate governance while pursuing ecological resilience and socio-economic progress (Government of India, 2008). NAPCC has been launched in 2008 as part of India's commitment to the United Nations Framework Convention on Climate Change (UNFCCC). The NAPCC seeks to integrate sustainable development principles into national policies and actions related to climatic implications. It comprises eight core missions, each targeting key sectors such as renewable energy, water conservation, energy efficiency and sustainable agriculture. These missions aim to reduce greenhouse gas emissions, enhance adaptive capacity, and promote the equitable and sustainable use of resources (Dubash et al., 2013; Mittal, 2022). Notably, initiatives like the Jawaharlal Nehru National Solar Mission and the National Mission for Enhanced Energy Efficiency have garnered global recognition for their role in advancing India's renewable energy capacity and energy-saving practices (Shukla et al., 2020; Ghosh & Ghosh, 2019). For instance, India's installed solar power capacity surged to over 60 GW by 2022, reflecting significant progress under the solar mission (MNRE, 2022).

While the NAPCC has achieved significant milestones, at the same time its implementation has also become challenging. Financial constraints, institutional inefficiencies, insufficient coordination between central and state-level policies and the lack of proper monitoring mechanisms have impeded its overall effectiveness (Singh et al., 2016; Dubash et al., 2013). Moreover, experts have noted the limited involvement of local communities in policy execution, which is essential for fostering climate resilience at the grassroots level (Chaturvedi & Somanathan, 2021).

These barriers remind the importance of proper assessment of the achievements and addressing its limitations to refine India's climate action framework.

This research paper critically evaluates the achievements and constraints of the NAPCC over the past decade. It explores its contributions to greenhouse gas mitigation, climate resilience and sustainable development. It also tries identify the factors that hinder its success. By analyzing the interplay of policy design, institutional capacity and stakeholder engagement, the study provides insights into enhancing the effectiveness of the NAPCC. In doing so, this paper aims to contribute valuable insights for policymakers, researchers and practitioners seeking to improve related to mitigation strategies of climate change. Understanding the successes and shortcomings of the NAPCC is crucial for mitigating climate change, ensuring that India remains a proactive participant in global climate governance.

Materials and Methods

This study employs both qualitative and quantitative analyses to evaluate the achievements and constraints of the NAPCC in India over the past decade. Primary data were obtained from NAPCC reports, mission-specific updates and publications from the Ministry of Environment, Forest and Climate Change (MoEFCC). Articles, case studies and reviews were sourced from academic databases such as Scopus, Web of Science and Google Scholar as well as form news reports. Quantitative data on renewable energy capacity, emission reductions, and economic indicators were collected from government repositories (e.g., Ministry of New and Renewable Energy, Central Electricity Authority) and international climate databases like the UNFCCC and World Bank.

Metrics such as installed renewable energy capacity, water conservation project outcomes, and energy efficiency improvements were analyzed against NAPCC targets. Challenges such as funding gaps, institutional barriers and stakeholder coordination issues were identified through document reviews and expert opinions. Key missions, including the Jawaharlal Nehru National Solar Mission and the National Mission for Enhanced Energy Efficiency, were selected for detailed analysis to highlight both successes and challenges.

Missions of NAPCC

The NAPCC has specific eight National Missions which are designed to promote sustainable development and mitigate climate change by focusing on key sectors:

1. **National Solar Mission**: This mission aims to increase the share of solar energy in India's energy mix, with a target of 100 GW of solar power capacity by 2022. Later the target was revised to 280 GW by 2030 under the Paris Agreement commitments. Solar energy could become a vital source of clean energy, as India is one of the sunniest countries in the world, receiving an average of 5-7 hours of sunlight per day. As of 2023, India has achieved 70 GW of solar capacity, making it the fifth-largest solar power producer globally. Various Initiatives like solar parks, rooftop solar systems and off-grid solar solutions have been implemented under this mission.
2. **National Mission for Enhanced Energy Efficiency**: The goal is to improve energy efficiency across various sectors, reducing energy consumption and emissions. India has a growing energy demand, and improving energy efficiency can lower costs, reduce carbon emissions and improve economic productivity. This mission has a target to enhance energy efficiency across industries and reduce energy intensity by 20-25% by 2030 by promoting of energy-efficient appliances. Implementation of LED lighting under UJALA (Unnat Jyoti by Affordable LEDs for All) can reduce energy consumption by 48 billion kWh annually.
3. **National Mission for Sustainable Habitat**: This mission focuses on promoting sustainable urban development, including the adoption of energy-efficient building practices and improving public transportation to reduce emissions and energy consumption in urban areas, which are home to over 35% of India's population. Implementation of the Energy Conservation Building Code (ECBC) and promotion of waste management technologies and recycling can contribute to a significant reduction in carbon emissions.
4. **National Mission for Sustainable Agriculture**: Agriculture, accounts for about 17-18% of India's GDP and employs more than 60% of the workforce but it is highly vulnerable to climate

change. This mission promotes climate-resilient agricultural practices to ensure food security and livelihoods. It promotes integrated farming systems for better water use efficiency, issue soil health cards to over 250 million farmers and encourages organic farming.

5. **National Mission for Green India**: India is home to diverse ecosystems and this mission seeks to restore degraded ecosystems and increase forest cover, aiming for an increase of 33% forest cover in the country. Forests are crucial for carbon sequestration, water retention and biodiversity conservation. Its goal is to increase forest cover by 5 million hectares and improve ecosystem quality across another 5 million hectares. Afforestation projects under this mission resulted in the sequestering of 100 million tons of CO_2 between 2015-2023. Community participation in forest management increased through Joint Forest Management Committees (JFMCs).
6. **National Mission for Sustainable Water Management**: India's per capita water availability fell from 1,816 cubic meters in 2001 to 1,486 cubic meters in 2021. This mission focuses on improving water use efficiency by 20% and ensure sustainable water resource management. India's water demand is expected to exceed supply by 2050 due to population growth and climate change. Initiatives have been taken to promote of micro-irrigation techniques such as drip and sprinkler systems as well as strengthening of the National Water Mission's "Catch the Rain" campaign to recharge aquifers and revive water bodies.
7. **National Mission for Himalayan Ecosystem**: The aim of this mission is to protect and preserve the Himalayan ecosystem, which supports 10% of India's population. The Himalayan region is highly vulnerable to climate change. Studies show that glaciers in the Himalayan region are receding at an average rate of 10-15 meters annually due to climate change. This mission focuses on understanding the impact of climate change on the Himalayan ecosystem and developing strategies for its conservation and adaptation. Monitoring and modeling the effects of glacial retreat on river systems like the Ganga and Brahmaputra have mapped. Initiatives have been taken for capacity building of local communities for biodiversity conservation.

8. **National Mission for Strategic Knowledge for Climate Change**: This mission focuses on building the scientific and technical knowledge base required to address climate change challenges, including research into new technologies, models for climate change adaptation and climate data systems. The National Institute of Climate Change Studies and Actions (NICCSA) has been established for intensive research on climate-resilient technologies for industries, agriculture and to promote infrastructure and development of advanced climate modeling systems for accurate predictions.

Constraints of NAPCC

The NAPCC in India is a comprehensive strategy developed to address the challenges of climate change in the country. It aimed at both mitigating greenhouse gas emissions and adaptation to the impacts of climate change. While NAPCC has several positive aspects and goals, it also faces various constraints and challenges:

1. Financial Constraints

One of the most significant constraints of NAPCC is the limited availability of financial resources for its implementation. Many of the proposed actions, particularly in the areas of renewable energy, energy efficiency, and sustainable agriculture, require substantial investments. India requires approximately $2.5 trillion by 2030 to meet its climate targets under the Paris Agreement. However, as of 2023 only about $14 billion annually is being invested in climate-related initiatives, leaving a significant funding gap. Despite commitments, India has received only about $380 million from Green Climate Fund (GCF) since its inception, which is inadequate for large-scale projects. Securing adequate funding for these initiatives is a major challenge, especially in a developing country like India.

2. Coordination and Implementation

NAPCC involves multiple ministries and departments, making coordination and effective implementation a complex issue. Ensuring that all key stakeholders work together cohesively is a significant challenge. The decentralized nature of India's government structure also poses obstacles to seamless coordination and implementation at the state and local levels. According to the 2023 Indian Climate Policy Review, only 60% of the planned activities under the NAPCC's eight missions were completed by 2022 due to coordination gaps. With 28 states and 8

Union Territories, achieving uniform implementation across India is difficult. For example, the progress of the Solar Mission is faster in states like Rajasthan and Gujarat but lags in northeastern states due to geographical and logistical challenges.

3. Capacity Building

Implementing NAPCC effectively requires building the capacity of government agencies, research institutions, and other stakeholders to assess and address climate change impacts. This capacity-building process can be time-consuming and resource-intensive. A study in 2021 by MoEFCC found that only 35% of local government officials are trained in climate-resilient planning. India ranks low in climate research output compared to countries like the US and China, contributing just 3% of global climate research papers in 2022.

4. Data and Information Gaps

Accurate and up-to-date data and information are crucial for developing and implementing effective climate change policies. India faces challenges in collecting and disseminating climate-related data, which can hinder evidence-based decision-making. In 2020, the Indian Government launched the National Data Repository for Climate Change, which is a step forward. However, vast data gaps still exist, particularly in local-level climate change impacts, which makes precise forecasting and planning difficult. A 2020 study revealed that only 40% of Indian districts have updated climate vulnerability maps.

5. Technological Constraints

Some mitigation and adaptation strategies in NAPCC depend on advanced technologies and innovation, which might not be readily available or affordable. The adoption of such technologies can be slow, further delaying progress. For instance, the deployment of solar energy technologies faces challenges in terms of cost, land availability and grid integration. Moreover, technology transfer from developed countries can be a contentious issue. India's renewable energy sector, however, has seen significant advancements, with India becoming the 3rd largest producer of renewable energy globally, generating over 150 GW of renewable capacity by 2023. Despite India’s growth as the world's third-largest renewable energy producer, the cost of land acquisition for solar farms has increased by 30% since 2018 and it became the main factor delaying projects. Dependence on imported technologies, particularly

from China for solar panels, also become a major challenge of NAPCC. As of 2023, India imported over 80% of its solar modules.

6. Socioeconomic Factors

India has a diverse socioeconomic landscape, with different regions facing varying challenges related to climate change. Implementing uniform policies that cater to these diverse needs can be challenging. Additionally, some strategies, such as transitioning to renewable energy, might lead to job displacement in traditional sectors. India's coal sector, which employs over 7 million people, is particularly vulnerable to such transitions.

7. Political and Bureaucratic Hurdles

Political and bureaucratic interests and inertia become the major obstacle for effective implementation of climate policies. Balancing economic growth with climate goals is challenging. For instance, India approved over 50 new coal mining projects in 2022, despite its renewable energy targets. Policy stability can also be affected by changes in government. Changes in government often result in shifts in priorities. In 2023, a report highlighted that 20% of NAPCC projects were delayed due to bureaucratic red tape.

8. Public Awareness and Engagement

The success of NAPCC also depends on public awareness and participation. Raising awareness about climate change and motivating individuals and communities to adopt sustainable practices can be challenging. In some cases, public apathy or a lack of understanding about the urgency of climate action can impede progress. According to a 2022 report by the National Council for Climate Change, Awareness and Sustainable Development, only about 30% of the Indian population is aware of the country's climate change goals and the NAPCC itself.

9. Adaptation Challenges

India's vast and varied geography means that adaptation strategies must be region-specific. Tailoring measures to suit different ecosystems, climatic conditions and communities is a complex task. Approximately 60% of India's agriculture is rain-fed, making it highly susceptible to erratic monsoons caused by climate change. Identifying the most vulnerable communities and ecosystems and providing them with the necessary resources can be challenging. The National Disaster Management Authority (NDMA) has estimated that over 10% of India's

population lives in coastal areas, making them highly vulnerable to sea-level rise and extreme weather events, which require specific adaptation measures. By 2050, cities like Mumbai and Chennai could face annual losses of over $50 billion due to climate risks.

10. Monitoring and Evaluation

Monitoring and evaluating the progress and impact of NAPCC initiatives can be challenging due to resource constraints and the need for a robust, standardized monitoring system. A 2023 audit found that 50% of state-level climate action reports were delayed by more than a year, which undermines accountability. In 2023, India launched a dedicated climate action monitoring framework to improve reporting and accountability, but challenges remain in real-time data collection and timely feedback loops but in reality, India lacks a real-time emissions tracking system, making it harder to quantify progress towards its carbon intensity reduction target of 33-35% by 2030.

11. International Commitments

NAPCC is linked to India's international commitments to combat climate change, including its contributions to the Paris Agreement. India's target is to reduce its carbon intensity by 33-35% by 2030 compared to 2005 levels. Under the Paris Agreement, India has committed to installing 500 GW of non-fossil fuel capacity by 2030, but current projections indicate a shortfall of 20-30% due to slow implementation. While renewable energy has grown, sectors like transport and industry continue to account for over 40% of India’s emissions, highlighting the need for diversified strategies.

Conclusion

The NAPCC has been a pivotal framework for addressing the challenges of climate mitigation and adaptation in India. Over the past decade, the NAPCC has achieved significant milestones, particularly in advancing renewable energy capacity, improving energy efficiency and promoting water conservation. Initiatives like the Jawaharlal Nehru National Solar Mission and the Perform, Achieve and Trade (PAT) mechanism have demonstrated India's commitment to the global climate goals. However, the analysis reveals that the NAPCC's impact has been constrained by several systemic and operational challenges. Financial limitations, fragmented policy coordination, gaps in capacity building and inadequate monitoring mechanisms have hindered the full realization of its potential. The complex socioeconomic fabric of India, coupled with political and

institutional hurdles, highlights the need for inclusive and region-specific strategies. To overcome these barriers and enhance the NAPCC's efficacy, actionable steps are required. Strengthening institutional frameworks, mobilizing adequate financial resources, fostering technology transfer and raising public awareness are essential for bridging the gap between policy formulation and implementation. Integrating state-level action plans with the NAPCC, supported by robust monitoring and evaluation systems, can ensure accountability and transparency in achieving climate objectives. The future success of the NAPCC lies in its ability to adapt to emerging climate challenges while ensuring equitable and sustainable development. By addressing its constraints and focusing greater stakeholder engagement, the NAPCC can serve as a blueprint for comprehensive climate governance, reinforcing India's role as a proactive participant in global climate action.

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EMPOWERING ROLE OF TECHNICAL AND VOCATIONAL EDUCATION FOR TRAINING (TVET) IN SUSTAINING QUALITY EDUCATION

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ABSTRACT

Since the first Industrial Revolution in the 18th century the gap for technical talent began to widen and the concept of large scale technical and vocational education training (TVET) began to be advocated. The formal TVET system also gradually took shape. TVET helps students to develop or enhance their knowledge, skills and abilities for specific occupations. Unlike general education vocational education is job oriented. Vocational education cultivates a group of students with high professional quality TVET includes technical education vocational education vocational training on the job training and apprenticeship training. In every stage of the Industrial Revolution TVET has been entrusted with the important role of talent cultivation. Therefore the implementation and sustainable development of technical and vocational education and training have received attention from educational experts and governments world-wide. To embrace the new changes in technical and vocational education and training research and exploration in this field are particularly important. At the same time as a significant branch of psychological theories based on vocational education should also be given due attention. This is closely related to talent cultivation formal vocational education informal vocational education career development and career planning. In addition over the past century the establishment of the TVET system has been widely regarded as crucial for the industrial and

economic development of countries and cities promoting employment addressing livelihood issues and implementing educational equity. India is known as pool of youngest and largest technical resources in the world. However relating to its population this number is trivial. In fact after obtaining the required formal and traditional graduation also the people remained unemployed. In any management hierarchy more work force is expected at lower operational level however in reality the number of graduates are more in number than the diploma or certificate holders at higher level. To decrease this imbalance and necessity is the mother of inventions there is a pressing need that the conventional education and training to focus on technical and vocational aspects of the system for sustaining and enhancing the quality of education. The competition in economic markets becoming more intense for skilled work force is the key to prosperity. The technical and vocational education and training are able to contribute for the change on the inside. It provides social competency in terms of knowledge and skills required for employment as well as for entrepreneurs. Since the world is coming closer and becoming increasingly competitive the job opportunities getting shifted across counties and continents only because of cost and competence requirements. The availability of economic resources such as skilled labors power transportation and raw materials determines the location of setup and thereby create job opportunities and support services.

Key Words: Empowering, TVET, Sustaining, Quality Education.

INTRODUCTION

Sustainable development goal for emphasizes creating lifelong learning opportunities through high quality technical and vocational education and imparting the necessary practical skills. Today vocational education is no longer as simple as the technical education as it was at its inception. With the call for lifelong education and competency based education in

addition to cultivating high level vocational skills TVET also focuses on how to help learners to develop into well rounded individuals. Expert's scholars and educators are dedicated to exploring how to cultivate 21st century competencies in vocational school students. However in TVET critical thinking is difficult to cultivate because acquiring practical skills is often considered the primary focus in technical and vocational education and training. However professional competence can be divided into knowledge skills emotions attitudes and values. Therefore in modern TVET while teaching students emphasis is placed not only on knowledge retention and comprehension but also on knowledge application knowledge transfer and the integration of interdisciplinary knowledge. Additionally how teachers design effective instruction for students to engage in effective learning as well as discussions on interdisciplinary learning for multi modal learning technology assisted learning and meaningful learning in vocational education are also important. Besides deliberate practice another key educational characteristic is meaningful error based learning which allows TVET students to reflect on internalize and adjust from their error experiences. In addition continuous technological innovation and transformation have changed human society and the development of civilization further promoting the high quality development of productivity across various industries. The intelligent upgrading of industries automation robotics artificial intelligence and other technologies are bringing transformative changes to industries. This has led to the disappearance of some traditional jobs with many labor intensive occupations being replaced or having their original job content altered. Consequently there have been ground breaking changes in the demand for talent. The digital era has had a profound impact on industry positions. People's anxiety about their jobs being replaced is becoming increasingly evident. It is also evident that intelligent manufacturing and digital transformation are strongly driving the development and change of vocational education and training. This not only accelerates the high quality construction of higher vocational education but also makes the cultivation of high level skilled person and

innovative talents as required for the 21st century a new goal for TVET. This has also led to significant attention being paid to such as the development of emerging professions digital literacy talent cultivation mechanisms for digital occupations in the core competencies for vocational school students and career development pathways. At the same time exploring how digital technologies can promote the modernization of education and how TVET can advance educational equity and lifelong learning practices are crucial ones. This includes research on online vocational education continuing education the integration of different educational stages educational transition mechanisms lifelong qualification and frame works which are also important global research hot spots of this century. In addition continuous technological innovation and transformation have changed human society and the development of civilization further promoting the high quality development of productivity across various industries. This not only accelerates the high quality construction of higher vocational education but also makes the cultivation of high level skilled and innovative talents as required for the 21st century a new goal for TVET. This has also led to significant attention being paid to such development of emerging professions. The digital literacy talent cultivation mechanisms for digital occupations in the 21st century core competencies for vocational school students and career development pathways. The high quality development of TVET cannot be achieved without the teacher work force. Teachers as frontline workers in the educational field are the closest individuals to students within the school environment. As education evolves in response to new demands the role of teachers is also changing. Therefore teacher training and the development of the teaching work force are also crucial topics. This includes the preparation of pre service teachers the professional development of in service teachers and the progression from novice to experienced teachers and from novice to expert teachers. Issues such as teachers' career development leadership skills professional adaptability well-being 21st century competencies educational spirit industry internships for teachers industry academia co-

operation enhancement of teaching and academic skills communities for teachers and the development of teaching capabilities for enterprise based teachers also require our attention. A teacher who is genuinely interested in promoting technical and vocational education and training TVET will provide opportunities and positive influence on students who are interested in skill training from an early stage preparing them for the future job market. This is because students are already prepared to work using the skills they have acquired from as early as the lower secondary level. In relation to this it can be linked to the state that the current industry relies on the latest technology.

EMPOWERING TECHNICAL AND VOCATIONAL EDUCATION

Educational institutions serve as platforms used to enhance skills and produce skilled workers who contribute to the country's economy. According to study there are constraints from the industry regarding hiring employees. Their research found that students from higher and secondary education institutions still lack the competence to meet current job requirements. The graduate marketability is a significant element in explaining the importance of technical and vocational education and training TVET. They also stated that this issue has become a global debate among scholars to refine the importance and implications for the education system and graduate marketability. The role of educators in implementing assessments based on established curricula is a matter of concern for those who will accredit skill certifications. Empowering TVET education requires continuous commitment from various stakeholders and is closely related to all levels of education in India. The components within technical and vocational education also involve elements of academic education to enhance the current TVET curriculum practices. The education development blueprint (2014-2025) has clearly stated a ratio of 70% in technical skills and 30% in academic learning.

TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET)

Although TVET is considered an important and irreplaceable educational system research on TVET internationally still constitutes a relatively small proportion of research within the entire field of education. Considering the important role of TVET in the education society economy and industrial development of various countries or regions analyzing how to effectively cultivate practical and applicable skilled talents technical experts that meet the needs of nation's enterprises and society has always been a focal point of scholarly attention. Therefore research on vocational education in specific countries or regions is also very important. The implementation and effectiveness of vocational education based on ideological and political education and development of the teaching academic skills of vocational school teachers. the Three educations teachers teaching materials teaching methods reform national strength construction for rural vocational education special vocational education and the role of vocational education in rural revitalization of the development of technological universities graduate training within the TVET system the integration of industry and education. The integration work learning in the workshop regional area is specific educational practices for international co-operation and development in vocational education for cultivation of master craftsmen and their labor awareness spirit. The definition of TVET used by UNESCO as those aspects of the educational process involving in addition to general education the study of technologies and related sciences and the acquisition of practical skills attitudes understanding and knowledge relating to occupation in various sectors of economic life. In technical education and vocational education and training on the job training and apprenticeship training. The major drivers for the TVET includes the growing technical awareness of customers increasing requirements for far greater precisions in manufacturing demand for weight reduction economic material strengthening and manufacturing cycle time reduction. The intrusion of information and communication technology

and computers in various sectors changed the skills requirement canvas totally for all the workers in the majority of technologies. Today's entrepreneurs use continuous innovation to create radically successful business. TVET is instrumental not only for getting appropriate jobs but also to create the successful entrepreneurs.

SUSTAINABLE AND QUALITY EDUCATION

Additionally how vocational education can effectively implement the United Nations' sustainable development goals will require further exploration of TVET practices and future development directions across different regions countries or areas. This includes education policies vocational teacher training career orientation education educational systems education regulations the talent cultivation mechanisms school enterprise co-operation in technological empowerment technological inheritance and innovation social evaluation of the vocational education curriculum and design in educational ecosystems and knowledge frame works. The aim is to develop TVET theories to ensure sustainable and high quality development of vocational education. Of course educational philosophy underpins educational theory guiding our perspectives on the ideas and goals of TVET education. Therefore exploring the philosophy of TVET can help stake holders in vocational education deepen their understanding of the essence purpose value process and evaluation of TVET thereby promoting the development of higher quality vocational education. Therefore research on the philosophy of TVET should be continuously conducted in conjunction with changes in the contemporary context. Although vocational education and training VET reforms are becoming more common and there is more evidence regarding in designing these reforms than implementing them. Therefore we call for future research on TVET to be strengthened and deepened from the perspectives of education economics management psychology sociology behavioral science policy studies and other disciplines or multidisciplinary interdisciplinary fields. Education is the key that will allow many other sustainable development goals to be achieved. When

people are able to get quality education they can break from the cycle of poverty. Education therefore helps to reduce the inequalities and to reach gender equality. The huge challenges of climate breakdown inequality conflict poverty hunger biodiversity loss and the unsustainable consumption in individuals and communities across the globe must be equipped to respond positively.

Additionally there is a need to explore the traditional apprenticeship systems the cognitive apprenticeships modern apprenticeships the development of new teaching materials vocational competency assessment social identity social evaluation transformation gender imbalance in vocational fields competency gap analysis vocational identity career choice career confidence career preparation job substitution career development and career adaptation as well as industry skills digital skills interdisciplinary knowledge internship quality internship learning balance academic distress academic counseling competition coaching bridging the gap between learning and application of the impact of the development of education teachers and students international vocational education exchanges and artificial intelligence in TVET. It is suggested to treat the student's natural energy for learning as renewable resource. According to this tremendous source of energy should be diverted and used towards learner development rather than wasting it in other things such as frustration irritation absenteeism school drop outs and failures. Effective implementation of technical and vocational education and training TVET plays an important role in sustaining and enhancing the quality of education which results in not only to increase the employability but mechanism to create the entrepreneurs.

INSTRUCTIONAL LEADERSHIP MODEL IN SHAPING SKILL TRAINING

The industry based education can have a positive impact on students in skill based fields. The process of delivering skills and disseminating knowledge should involve effective theories and models. The 21st century

has shown that there is a constant demand for human resources that keeps changing in line with the rapid use of technology which involves a skilled work force. To each time there is technological advancement in developed countries and there is a high demand for human resources skilled in implementing the latest technology. The impact of this rapid technological advancement is closely related to the development of knowledge and skill levels. Additionally it can be linked to the demand for a work force with competencies aligned with current technology usage. Educational institutions that aim to produce skilled workers in the future need to be led by leaders who are always ready to face challenges and understand the goals and directions of the organization. The instructional leadership model among institutional leaders can be used as an instrument in governing educational institutions that provide skill certification. The positive educational planning and development climate will have an impact on instructional leadership exhibited by the management of an organization. The government has taken the initiative to increase the number of TVET institutions to produce highly skilled workers. Therefore it is appropriate for every leader in TVET institutions to use the instructional leadership model to lead their organization to achieve the goal of producing experts in the TVET field at the same time it helps the government to produce skilled workers in the future. In addition to the instructional leadership model TVET institutions can also utilize the Taba Model (1962) as an approach to strengthen TVET education. According to the development of a foundational curriculum that starts from the grass roots should be built by teachers. A good curriculum will yield good outcomes. This model clearly states that only teachers who are actively involved in teaching are qualified to develop the curriculum because the teaching sessions will be conducted by teachers themselves. The stakes countenance model can also be related to TVET education. This model is better known as the contingency congruence assessment model. It is a process for assessing the current curriculum. The connection between these three models involves leadership. The instructional leadership model the Taba model (1962)

aligns with the development of TVET education curriculum and the Stakes Countenance Model is referred to the suitable model for assessing the developed TVET curriculum. To strengthen TVET institutions all stake holders must play a crucial role in aligning with government requirements and policies. Additionally leadership teams and implementation groups are vital in collaborating to help the government to produce a skilled work force for the advancement of the country's economy.

IMPORTANCE OF EMPOWERING TECHNICAL AND VOCATIONAL EDUCATION

Empowering TVET involves not only the Ministry of education but also the participation of other agencies and ministries. In the (2020) budget presentation the government allocated funds specifically for technical and vocational education and training (TVET) programs. The funding allocated to TVET institutions also involves collaboration between the industry and public education institutions. The skills can be defined as abilities competencies and knowledge used in the technical and vocational sectors closely related to psychomotor cognitive and resource utilization. In implementing TVET education in India the department of skills development has emphasized the importance of developing and accessing students' competencies as a critical element in TVET. It is essential to produce graduates who meet the competency levels required by industries to ensure their employability in the future. The quality expected by employers is a crucial asset that impacts an organization. They also state that the quality of work exhibited is a determinant of educational institution achievement. To meet industry demands curriculum development and assessment in every agency that produces TVET graduates need to be aligned. The under lying curriculum of TVET education should have a clear focus on achieving mastery in a specific skill area.

ROLE OF COMMUNITY FOR TECHNICAL AND VOCATIONAL EDUCATION

Empowering TVET should begin within educational institutions. It involves the process of educating and understanding the importance of TVET from the early stages through secondary education and to higher education. When there is a lack of knowledge about the current industry conditions it can hinder the learning process in the classroom. This is the result of administrators and educators not being aware of the current industry needs. Creating a positive image of TVET educational institutions also requires the involvement of parents and the community to have an economic impact on future trainees. They explain the role of leaders in establishing a professional learning community where educators continuously strive to improve their skills and competencies. This is their responsibility in the tasks assigned to them. Therefore community leaders must always contribute to the TVET empowerment agenda as it will produce skilled workers who will contribute to support the local economy. As seen, having skilled workers can help local residents repair damage caused by disasters. This is part of the outcome of TVET education. We can solve problems quickly without waiting for assistance from external parties. To realize the desire to establish a relationship between the community and TVET institutions the ministry should also organize various programs that require community involvement.

PROBLEMS IN TECHNICAL AND VOCATIONAL EDUCATION

The implementation of TVET education also faces the main challenge of curriculum mismatch between the current industry job requirements and the established curriculum guide lines. The curriculum underlying TVET education changes every five years. The rapid development of technology necessitates the need for curriculum programs to change quickly. This system aims to provide recognition to workers in the industry who have expertise in their field to certify the results of their industry experience. These principles include in providing technical and

career development training that aligns with academic based certification for emphasizing lifelong learning skills and technical skill enhancement. It emphasizes the production of highly competent and certified workers by adding value to existing TVET implementations to improve the quality of knowledge and skills. By providing a training platform that includes both public and private institutions and enhancing the corporate image of TVET and the status of skilled workers.

DISCUSSION

Society needs to be prepared for the transformation of education in our country. When a country has a large number of skilled workers the unemployment rate will decrease the economy will grow and the currency value will increase. The country can also control the outflow of its currency. This is because people will no longer need to seek employment abroad. Technical and vocational education and training TVET also contribute to success through the employability rate of graduates. This implication clearly impacts the implementation of policies and training methods by educational institutions. The needs of employers are also among the elements considered by the government in shaping the concept of technical and vocational teaching and learning. This results in more skilled industrial experts being produced to meet the current human resource demands. The implementation of TVET in India is not a new thing. It is a unique and planned educational revolution but it also requires continuous improvements that align with the employability of current skill graduates. The initial stages in the technical and vocational field had negative implications initially due to the difficulty in performing technical tasks. The impact of this situation led the government to make changes in developing the TVET curriculum. Positive implications for TVET education include the production of skilled workers with critical thinking and high level thinking skills. Financial implications can be both positive and negative in the implementation of new things in a country. The rapid pace of technology involves the addition of new and advanced equipment that

requires experts to train instructors in educational institutions. It is important to remember that TVET education is national and needs to be aligned in its implementation across all institutions. Financial allocation for different institutions makes it challenging for each institution to provide equipment for the skills programs they run. The rapid pace of current technology also has a positive impact. It involves making all work easy and quick saving time. In the future skilled trainers in technology can work from home. Trainees who learn technical skills are also able to earn high incomes with the ICT applications they have learned in TVET institutions. Negative implications may be limited but workers who work from home and engage in full time ICT work will be confined to their own world and potentially creating a communication gap. Health factors may also decline as the focus is entirely on technology use. Work life balance is crucial to produce individuals who will advance the country and make a fast growing nation with high moral values among its people.

The promotion and strategy to expand learning opportunities in TVET and disseminate TVET education should start with educational institutions. Ministries should also allocate the available financial resources to intensify promotion efforts related to the importance of the TVET. Additionally research on opportunities and the job market for TVET graduates should be intensified. A curriculum frame work that supports teaching and learning in leading to employability is also crucial. The ministry of education has emphasized that TVET education involves the integration of technical and academic education. There is also a need to streamline the TVET curriculum. This is due to the diversity of programs being implemented simultaneously. The government should continuously collaborate with industries that provide current job opportunities to understand job requirements when trainees enter the work force in the future. The existence of apprenticeship programs involving training institutions and employers is a positive impact on skill development. This provides trainees with a real world work environment.

IMPLEMENTATION AND ISSUES OF TVET EDUCATION

The youths will be trained in skills based on their interests in designated institutions. The programs organized will be conducted by trained instructors. To ensure that the trained youths remain relevant to the job market is responsible for the instructed curriculum of TVET to be realigned according to the latest industry requirements. It is clear that this is a way to address the mismatch between the institutions and the current job requirements in the industry. TVET is often associated with financial allocation for equipment maintenance at institutions for trainees' use. To address this issue regular equipment maintenance should be carried out to ensure that all equipment used is always in good and safe working condition. Regular maintenance can also prevent equipment from breaking down quickly. Damaged equipment would force educational institutions to purchase new equipment but with regular maintenance it can save funds for repurchasing equipment in the future. Industry based curriculum and sustainable TVET are topics that are often discussed and they encompass teaching and learning involvement of skills from the industry. Financial resources are the most crucial aspect of infrastructure development at educational institutions. The process of building and improving skilled equipment takes a considerable amount of time. Furthermore with the rapid pace of current technology the use of the latest technology is also necessary. The suggestion to address this issue is to involve private agencies and government companies to work together with educational institutions in providing infrastructure resources that align with current industry needs.

CONCLUSION

Realizing competent workers to obtain employment is the responsibility of educational institutions. It also involves providing competent academic staff. Fundamentally every educator should understand industry based curriculum first. The main goal of TVET is to produce competent workers in line with industry requirements. The education development is currently in its third wave. The emphasis on an industry

based curriculum is a fundamental pillar in preparing students to meet industry needs. Instructors also need to act as facilitators in the learning process. Institutions should establish industry partnerships or memoranda of understanding (MOU) with the private sector to create a relationship or skills partnership in specific technologies. TVET education has the potential to boost the country's economy and impact communities. TVET learning is based on current industry needs. The foundation for strengthening TVET begins with training institutions that provide infrastructure training and competent instructors to realize the aspiration of making India an advanced nation.

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EXPLORING CULTURAL INTELLIGENCE IN SHAPING STUDENT SATISFACTION IN HIGHER EDUCATION

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ABSTRACT

Purpose: This research paper embarks on a multifaceted exploration of the intricate relationship between metacognition, cognition, behavior, motivation, cultural intelligence (CQ), and student satisfaction. Recognizing the significance of CQ in a globally interconnected world, the study aims to uncover how these cognitive, behavioral, and motivational factors collectively influence not only students' cultural intelligence but also their overall satisfaction with their educational experiences.

Design/Methodology/ Approach: Survey was conducted with 102 students of seven public colleges in the Jammu and Kashmir Union Territory, India. Partial Least Square technique is used for data analysis and hypotheses testing.

Findings: The results establish behavioural factor positively contribute to cultural intelligence, however metacognition and cognition factor are not significantly influencing cultural intelligence. The result further indicates that cultural intelligence is a mediator between motivational factor and satisfaction.

Originality: The relationship between metacognition, cognition, behavior, motivation, cultural intelligence (CQ), and student satisfaction is a multifaceted one. Understanding how these factors interact can provide insights into fostering better educational experiences for students, particularly in culturally diverse settings.

Keywords: Cultural Intelligence (CQ), metacognition, cognition, behavior, motivation, satisfaction

1. Introduction

Cultural intelligence, or cultural quotient (CQ) is a relatively new construct, conceived at the turn of 21st century and this concept was introduced by Earley and Ang in their Stanford University Press book published in 2003 (Ang et al., 2011) more fully developed later by David Livermore in the book, Leading with Cultural Intelligence. Cultural intelligence refers to an individual's ability to survive and cope in a cross-cultural environment (Earley and Ang, 2003). The term cultural intelligence has been used in business, education, government, and academic research contexts (Hitesh Bhasin, 2020). Number of scholars suggests that intercultural competence relates to cultural intelligence (Yari et al. 2020; Ang and Leung et al. 2014; Matsumoto and Hwang 2013; Van Dyne 2008), including work-related results, such as satisfaction related to job, adjustment in working environment, performance in job (Schlaegel et al. 2021; Zhao et al. 2020; Akhal and Liu 2019; Baluku et al. 2019; Rockstuhl and Van Dyne 2018; Henderson et al. 2018), and knowledge sharing (Stoermer et al. 2021). The notion of

cultural intelligence is grounded on the concept general astuteness and its various subfactors are required more when behaving thoughtfully within diverse cultural settings (Ang et al. 2020). Conceptually, cultural intelligence is how an individual act effectively in culturally diverse contexts (Earley and Ang 2003; Ang and Van Dyne 2008). Cultural intelligence refers to a person's ability to navigate diverse intercultural contexts effectively (Ang et al., 2015). Yari et al. (2020) define it as the capability to succeed in complex cross-cultural environments through cognition, motivation, and behavior. It also involves the flexibility to understand different cultures, continuously learn through interactions, and adapt one's thinking to be more empathetic and skillful in engaging with others. (Thomas and Inkson 2017). With the rapid increase in globalization, it has opened gates for more opportunities but also pose challenges in many terms by increasing cultural diversity, thus providing demand for preparation to interact in cross-cultures (Brancu et al., 2016). Studying and understanding the different cultures in context of globalization is a current matter and needs to be focused (Ang et al., 2012). The rapid growth of globalization where the world has shrunk, it has direct impact on educationsystem (Yousaf et al., 2017). Now a days' the education sector isn't restricted to territorial limits and welcome understudies from across the world wherethey intermingle with different culture understudies, so bestowing the information about social knowledge in the school and college students is crucial. Cultural diversity can act difficulties for understudies like well as college authorities, it is consequently, fundamental for understudies to flourish in a continually impacting world and this incorporates the turn of events and leveling up of social knowledge abilities. It is necessary to impart diverse cultural knowledge in students because the ability to interact successfully in multiple cultures is not a skill possessed by all (Crowne, 2008). India is a culturally rich and vertaile. Hence, it is vital for the college and university students to learncultural intelligence skills so as to better understand the different cultures and developunderstanding within them and also, it opens the gate for new opportunities in front of them.

The authors have developed cultural intelligence (CQ) as a multifactor concept (Earley and Ang, 2003). Thus, CQ comprises of four different, yet linked dimensions, namely Metacognition, Cognition, Motivation, and Behavior (Early and Soon, 2003; Ang et al., 2011; Livermore, 2015; MacNab, 2012; Wang, Heppner, Wang, & Zhu, 2015). College and university students of today willbe the global managers of tomorrow (Laura Brancu, Valentin Munteanu, and Ionut Golet,2016), they do not only have to master about finances, marketing, or human resourcemanagement they must be skilled in interacting in cross-culture environment (Brancu, 2016).This research paper focused on cultural intelligence among university students in Jammu region of JK (UT). Numerous research studies do not consider the effect of cultural intelligence on students' satisfaction. Therefore, the current study aspires to understand the cultural intelligence of students, factors affecting CQ and which dimension is more or less developed among students and finally to check the impact of cultural intelligence on university students studying in Jammu region. It also reviews existing literature on cultural intelligence of students, uncover the research gaps in the area and show directions for future research.

1. Review of Literature and Hypothesis development

Cultural Intelligence (CQ) is a person's capability to intermingle with others effectively inflowing in a multicultural environment (Van Dyne et al., 2008). Individuals can only be considered culturally intelligent when the four factors are all engaged and working and improved over time (Earley and Ang 2003). The proposed multifactor framework of cultural intelligence comprises of four factors.

2.1. Drivers of Cultural Intelligence

2.1.1 Metacognition factor

Metacognition means the awareness and understanding of an individual's own thought processes (Ng et al., 2012). The metacognitive factor of cultural intelligence has been found to have a positive relationship with satisfaction in various contexts. This dimension of cultural intelligence

involves an individual's ability to plan, monitor, and adjust their cognitive strategies when interacting with people from different cultural backgrounds (Che Tu et al., 2019). Research suggests that individuals with higher metacognitive cultural intelligence are better equipped to navigate cross-cultural situations, leading to more positive experiences and increased satisfaction (Majda et al., 2021). These individuals are more likely to anticipate potential cultural misunderstandings, reflect on their interactions, and adapt their behavior accordingly. As a result, they tend to experience smoother communication, build stronger relationships, and achieve their goals more effectively in diverse cultural settings (Wang et al., 2021). This enhanced ability to manage cultural interactions contributes to greater overall satisfaction in both personal and professional spheres, highlighting the importance of developing metacognitive cultural intelligence in today's globalized world (Brancu et al., 2016).

H1a: Metacognitive factor of Cultural intelligence is positively related to satisfaction.

2.1.2 Cognition factor

Cognition factor includes having deep and more specific cultural knowledge acquired through education and personal experiences (Ang et al., 2007; Ng et al., 2012). The cognitive factor of cultural intelligence (CQ) is theorized to have a positive relationship with satisfaction, particularly in cross-cultural contexts. Cultural intelligence encompasses an individual's capability to function effectively in diverse cultural environments. The cognitive component specifically refers to knowledge about different cultures, including their norms, values, and practices. Universities should provide more instructions and opportunities to help students adapt to cultural diversity and boost their cultural intelligence by including curricular cultural activities experience sharing, from practice oriented to cognition oriented, improving teaching methods etc. (Wu et al., 2022). This enhanced understanding may reduce misunderstandings, conflicts, and culture shock, potentially leading to more positive

experiences and higher satisfaction levels in diverse cultural settings (Rana et al., 2020). Beneroso and Alosaimi (2020) found relationship between higher cognitive cultural intelligence and knowledge sharing, interactions among millenials in cross-cultural scenarios. Cognitive CQ renders into real models and procedures through which information is procured, characterizing the manner by which the subject of the instructive interaction (the students) learns" more about the individual he communicates with and corresponding to which he experiences explicit social contrasts; these cognitive procedures are worked through the data transfer systems (Brancu et al., 2016).

H1b: Cognition factor of Cultural intelligence is positively related to satisfaction.

2.1.3 Motivational factor

Motivation includes willingness and self determination to learn and engage in intercultural interactions (Ang et al., 2007; Bandura, 2002; Ng et al., 2012). Individually students should engage themselves in cultural development events more proactively to build a close connection with cross-cultural environment (Wu et al., 2022). The motivational component of CQ is very much sensitive to cultural education in universities (Wang et al., 2021). The students living in their home country showed high motivational cultural intelligence and they remain able to direct their attention towards cross-cultural settings (Beneroso and Alosaimi, 2020). Motivational CQ is connected with the individual factors that decide the communication course; to the things that empower the student to interface; this aspect includes the affecting job of instruction, worked through its invigorating systems (Brancu et al., 2016).

H1c: Motivational factor of Cultural intelligence is positively related to satisfaction.

2.1.4 Behavioral factor

Behavioral factor includes exhibiting appropriate verbal and non-verbal actions (Ang et al., 2007;Ng et al., 2012). In-class cultural learning is just

about lectures on cultural knowledge, hence does not contribute to behavior CQ directly (Wang et al., 2021). Behavioral CQ refers to an individual's ability to exhibit appropriate verbal and non-verbal behaviors in different cultural contexts. It involves adapting one's behavior to communicate effectively, manage relationships, and navigate cultural differences. When individuals demonstrate high behavioral CQ, they are better able to interact with people from diverse cultures, which often leads to greater interpersonal satisfaction and comfort in multicultural settings (Rana et al., 2020). Students living abroad have high behavioral cultural intelligence and exhibit appropriate verbal and non-verbal actions while intercultural interactions (Beneroso and Alosaimi, 2020). Behavioral CQ decides the activity and communication pattern of the student, the manner by which he acts in circumstances where social contrasts are showed; this aspect is connected with training's applied job, worked through its cooperation systems (Brancu et al., 2016). Hence its hypothesized that:

H1d: Behavior factor of Cultural intelligence is positively related to satisfaction.

2.2 Cultural intelligence and satisfaction

In today's increasingly interconnected world, marked by global migration, international commerce, and multicultural workplace settings, the aptitude to succeed and adapt in culturally diverse environments has become crucial. Cultural intelligence, often referred to as cultural quotient (CQ), represents an individual's capability to understand, adapt to, and interacting people of different cultural backgrounds including cultural awareness, empathy, communication skills, and cultural adaptability. Satisfaction, on the other hand, can be understood in various contexts, such as job satisfaction, satisfaction with intercultural relationships, or overall life satisfaction. Job satisfaction, in particular, is a critical element in the place of work, as it influences employee motivation, commitment, and performance. The hypothesis suggesting that cultural intelligence positively influences individual satisfaction

proposes that people with greater cultural intelligence are more inclined to feel satisfied across various dimensions of life, including their work, relationships, and overall well-being. This idea is supported by multiple theoretical frameworks.

One relevant framework is the concept of cultural adaptation, which posits that individuals with higher cultural intelligence are more adept at adjusting to and navigating unfamiliar cultural settings, thereby minimizing the likelihood of misunderstandings and conflicts. As a result, they may experience greater satisfaction in intercultural interactions. Furthermore, social identity theory posits that people with higher cultural intelligence are more likely to develop positive relationships and a sense of belonging with people from other cultural backgrounds, which in turn increases satisfaction in these relationships. Previous research has provided evidence to support this hypothesis. For example, studies have shown that people with higher cultural intelligence tend to report higher levels of job satisfaction in multicultural work environments. Others have found that cultural intelligence is certainly correlated with satisfaction in intercultural relationships and overall life satisfaction.

H2: Cultural intelligence is positively related to satisfaction.

2.3 Cultural intelligence as mediator

The study proposes a study of metacognition, cognition, behavioral factors, motivational factors, cultural intelligence, and satisfaction. Appreciative how these factors interact can provide valuable acumens into the mechanisms through which cultural intelligence impacts an individual's satisfaction in various contexts, such as cross-cultural interactions, workplace diversity, and intercultural relationships.

Metacognition significantly influences an individual's cultural intelligence, which, in turn, impacts their satisfaction. This hypothesis is based on the idea that people with strong metacognitive skills may be better able to recognize and overcome their own cultural biases and adapt their behavior in cross-cultural situations, which may ultimately lead to higher satisfaction.

Cognitive factors significantly influence cultural intelligence, which in turn influences satisfaction: individuals with advanced levels of cultural knowledge and cognitive understanding may be more adept at interpreting and responding to cultural cues, thereby improving their ability to navigate intercultural situations and leading to greater satisfaction.

Behavioral factor significantly influences cultural intelligence, which subsequently impacts satisfaction. Individuals who exhibit adaptive behaviors, cultural sensitivity, and effective intercultural communication skills are likely to build positive relationships and reduce misunderstandings, contributing to satisfaction in cross-cultural contexts. This research aims to intricate relationships between metacognition, cognition, behavioral factors, motivational factors, cultural intelligence and satisfaction.

H3: Metacognition (hyp3a), Cognition factor (hyp3b), Behavioural factor (hyp3c), Motivational factor (hyp3d) impact Satisfaction through Cultural intelligence.

2. Research methodology and data analysis

2.1 Measurement items development

The existing literatures were used for scale items, and the phrasing was changed to fit the highlights of cultural intelligence. In order to bring the logical consistency, simplicity of understanding, question succession and setting reasonableness, the pilot test was conducted of 50 students from different universities in Jammu region. On the basis of their feedback, the scale was refined for all the variables. All items were assessed by using a five-point Likert scale, on which the responses ranged from1 (strongly disagree) to 5 (strongly agree).

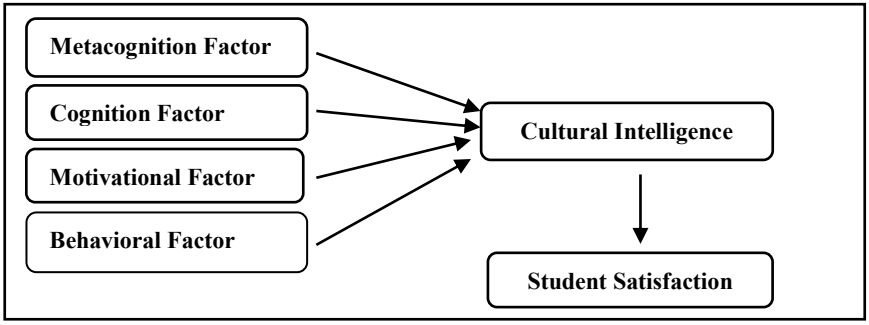


Figure: 1 Cultural Intelligence Framework

2.2 Sample Data Collection

The data was collected through online survey method from the months of March to June 2024 from the university students. To check the quality of data and get attention of the respondents, some question to check the attention of the respondents was also added to the questionnaire. The primary data was collected from one hundred ten university students. Out of which only one hundred two questionnaires were utilized for the further analysis. The demographic information of the samples is shown in Table 1. Out of 102 respondents, there were 48.04% are male and 51.96%. 41.17% of respondents belongs to 18-21years age category and 34.32% respondents belong to 21-25 years and rest belongs to 25 and above. In terms of their educational qualification, 41.17% were Undergraduate, 34.32% were Graduate, 9.8% were Postgraduate, 4.9% had a Doctorate degree, while 9.8% had completed a Professional Diploma or Degree course.

Table: 1 Demographic Profile of the Respondents

Particulars	Name	Frequency	Percentage (%)
Gender	Male	49	48.04
	Female	53	51.96
	Total	**102**	**100.0**
Age	18-21	42	41.17
	21-25	35	34.32
	25 and above	25	24.51
	Total	**102**	**100.0**
Qualification	Undergraduate	42	41.17
	Graduate	35	34.32
	Postgraduate	10	9.800
	Doctorate	5	4.900
	Professional Diploma/Degree Course	10	9.801
	Total	**102**	**100.0**

2.3 Data analysis and results

The data was analyses and testing of research hypothesis done by using Smart PLS 3. The primary purpose of using PLS-SEM technique is as its more suitable to assess small sample sizes (Chin et al., 2003). To assess the measurement and structural models, two-step procedure was adopted.

3.3.1 Cronbach alpha: To find the dimensions and factor wise reliability, Cronbach alpha and composite reliability values are examined. The recorded alpha values as 0.628 (Meta Cognition Factor) and 0.814 (Cognition Factor), 0.778 (Motivational Factor), 0.83 (Behavioral Factor), 0.624 (Cultural Intelligence) and 0.656 (Students Satisfaction) which are above the threshold value of 0.6 (Raharjanti et al, 2022).

3.3.2 Common method variance testing

To test the common method bias i.e to identify common method variance, harman's one-factor technique was used. All variables are associated with the factor the common variance explained was 43.39%, which does

not exceed 50%. Therefore, the common method bias was insignificant for the data set (Podsakoff et al., 2003).

3.3.3 Measurement model analysis: The Partial Least Squares (PLS) technique was employed to evaluate the measurement and structural model areas. This method is preferred for its ability to maintain theoretical parsimony and reduce model complexity (Wetzels et al., 2009). Additionally, it offers flexibility in analyzing both reflective and formative constructs (Zheng et al., 2013). According to Chin et al. (2003), the minimum required sample size for using the PLS technique is at least 10 times the number of items in the largest construct. With a sample size of 102, this study satisfied the requirement for conducting the PLS analysis. The number of statements retained in each dimension was metacognition factor (5), cognition Factor (6), motivational factor (6), behavioral factor (5), cultural intelligence (3), and student satisfaction (3).

Convergent validity is evaluated using item factor loadings, Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach's alpha. Commonly accepted thresholds for these measures include an AVE of 0.50 and factor loadings, CR, and Cronbach's alpha values of 0.60 or higher. Table 2 demonstrates that the constructs in this study meet these criteria, as all CR values and Cronbach's alpha coefficients exceed 0.7, item factor loadings are greater than 0.7, and the AVE for each construct is above 0.5, confirming acceptable convergent validity.

Discriminant validity, on the other hand, ensures that each construct in the study is distinct and not excessively correlated with others. This is assessed by analyzing factor correlations to verify that the correlation between any two constructs is lower than the square root of the AVE for each construct (Chin et al., 2003).

Table: 2 Measurement Model Results

Dimensions	Indicators Loadings	VIF	Factor	Composite Reliability (CR)	Cronbach's Alpha	Average variance extracted (AVE)
MC1	0.458	1.102	**Metacognition factor (MF)**	0.770	0.628	0.405
MC2	0.622	1.125				
MC3	0.676	1.268				
MC4	0.691	1.295				
MC5	0.704	1.281				
CF1	0.617	1.335	**Cognition factor (CF)**	0.864	0.814	0.517
CF2	0.68	1.413				
CF3	0.79	1				
CF4	0.748	1.528				
CF5	0.671	1.564				
CF6	0.79	1				
MF1	0.647	1.473	**Motivational factor (MF)**	0.843	0.778	0.475
MF2	0.641	1.458				
MF3	0.802	1.874				
MF4	0.587	1.43				
MF5	0.692	1.682				
MF6	0.745	1.61				
BF1	0.679	1.541	**Behavioral factor (BF)**	0.882	0.830	0.600
BF2	0.732	1.681				
BF3	0.861	1				
BF4	0.861	1				
BF5	0.723	1.445				
CI1	0.674	1.194	**Cultural intelligence (CI)**	0.788	0.624	0.556
CI2	0.701	1.336				
CI3	0.85	1.227				
SS1	0.732	1.359	**Student satisfaction (SS)**	0.809	0.656	0.586
SS2	0.822	1.262				
SS3	0.74	1.252				

Table: 3 Discriminant Validity

Dimensions	BF	CF	CI	MC	MF	SS
BF						
CF	0.961					
CI	0.627	0.933				
MC	1.137	1.18	0.83			
MF	0.842	1.015	0.754	1.223		
SS	0.882	0.917	0.7	1.022	1.157	

To confirm the discriminant validity of the scale, the square roots of the AVEs for all constructs were greater than their correlations with other constructs. Additionally, the heterotrait–monotrait (HTMT) ratio of correlations was examined to further assess discriminant validity. The results indicate that all construct values met the threshold limits of 0.85 (Kline, 2010) or 0.95 (Gold & Malhotra, 2001). The study also evaluated multicollinearity in the formative constructs of metacognition, cognition, motivation, behavior, and cultural intelligence. All VIF values were below the threshold of 10 (Petter et al., 2007), confirming that multicollinearity was not an issue in this study.

Table: 4 Hypothesis testing results (Direct effects)

Hyp	Relationships	R^2	f^2	SRW	T statistics	P values	Class Interval	
							LLCI	ULCI
H1	Metacognition -> Cultural intelligence	0.061	0.077	0.27	0.227	0.825	-0.445	0.61
H1b	Cognition factor-> Cultural intelligence	0.014	0.019	0.161	0.084	0.936	-0.34	0.303
H1c	Motivational factor -> Cultural intelligence	0.448	0.457	0.203	2.211	0.626	0.021	0.806
H1d	Behavioral factor -> Cultural intelligence	0.091	0.081	0.18	0.507	0.05	-0.283	0.424
H2	Cultural intelligence -> Satisfaction	0.515	0.53	0.055	9.289	0	0.369	0.603

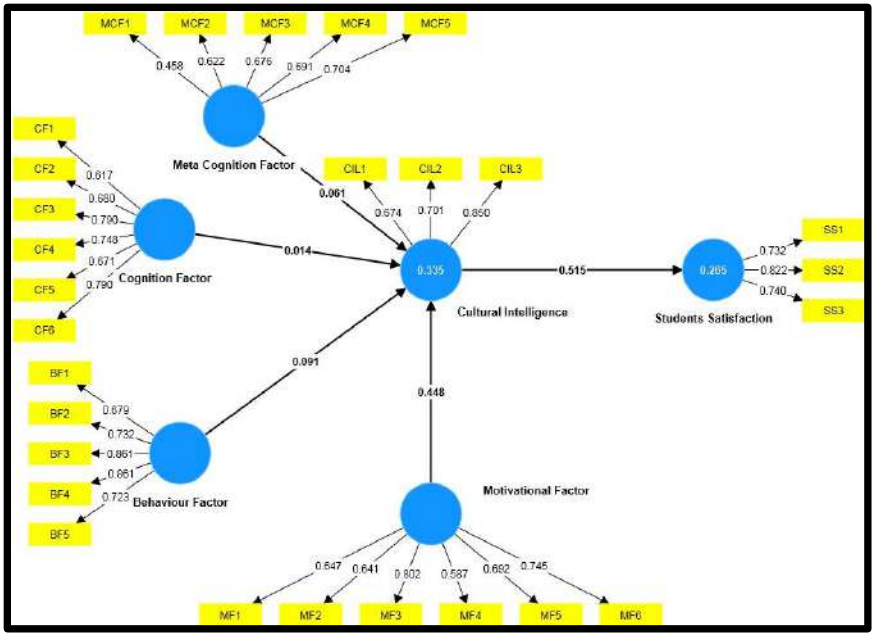
3.3.4 Testing Structural (measurement) model analysis: Bootstrapping techniques were employed to assess the statistical significance of the weights of first-order constructs and path coefficients (Chin et al., 2003). As shown in Table 4, all path coefficients are significant at the 1% level, supporting the hypothesized relationships. The direct relationship

between Meta cognition and cultural intelligence (SRW= 0.27, p value= 0.825); cognition and cultural intelligence (SRW= 0.161, p value = 0.936), Motivational and cultural intelligence (SRW= 0.203, p value= 0.626) are not significant. Hence H1a, H1b and H1c are rejected. However, behavioral factor and cultural intelligence (SRW= 0.180, p value= 0.05) are showing significant relationship hence hypothesis H1d is accepted. The result further shows that cultural intelligence is impacting student satisfaction (SRW= 0.055, p value= 0). Hence H2 is accepted.

Table: 5 Mediation Analysis Results

Hypothesis		Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Hyp3a	Meta Cognition Factor -> Cultural Intelligence -> Satisfaction	0.031	0.038	0.142	0.221	0.825
Hyp3b	Cognition Factor -> Cultural Intelligence -> Satisfaction	0.007	0.01	0.086	0.081	0.936
Hyp3c	Behavioral Factor -> Cultural Intelligence -> Satisfaction	0.047	0.043	0.096	0.487	0.626
Hyp3d	Motivational Factor -> Cultural Intelligence -> Satisfaction	0.231	0.246	0.118	1.961	0.05

3.3.5 Testing of the mediating effect: Baron and Kenny's (1986) procedures is used to assess the mediating role of cultural intelligence. Firstly, the direct impacts of meta cognition, cognition, behavioral and motivational factor was tested on satisfaction. Secondly, cultural intelligence was considered as the mediator, we tested the incidental impact of meta cognition, cognition, behavioral and motivational factor on satisfaction. As shown in Table 5, indicating that cultural intelligence is not showing mediation between meta cognition factor and satisfaction (0.825), cognition factor and satisfaction (0.936), behavioural factor and satisfaction (0.626). However only one path motivational factor, cultural intelligence and satisfaction (0) are found to be significant.



Source: Authors' Finding

4. Discussion and Implications:

4.1 Discussions and Findings:

By investigating the complex interrelationships between metacognition, cognition, behavior, motivation, cultural intelligence and student satisfaction study provide a holistic understanding of how these factors converge to shape students' experiences in culturally diverse educational environments. The findings of the study may offer valuable insights for educators, institutions, and policymakers aiming to cultivate culturally intelligent and satisfied student populations.

Higher levels of cultural intelligence enable students to navigate cross-cultural interactions more effectively. When students can communicate, collaborate, and relate to peers and instructors from diverse backgrounds, they are more likely to have positive educational experiences. Cultural intelligence helps reduce misunderstandings and conflicts arising from cultural differences. Fewer misunderstandings can lead to a more

harmonious and satisfying learning environment. Cultural intelligence is a valuable skill in today's globalized world. Students who develop this competence are better equipped for future career opportunities. The result of the study has also established that cultural intelligence and satisfaction of students is positively related.

Motivational factor develop their cultural intelligence which influence satisfaction. The results of the existing study also confirmed cultural intelligence as mediator between motivational factor and student satisfaction. If cultural intelligence fully mediates the relationship, it suggests that students' motivation affects their satisfaction primarily through its influence on cultural intelligence. Understanding this mediation model can help educational institutions design interventions or programs that foster cultural intelligence, which, in turn, may enhance student satisfaction.

Metacognition and Cognition factor is not contributing significantly to cultural intelligence in our study. The relationship between metacognition and cultural intelligence is a complex one and may not always be positively related in all circumstances. While metacognition can be a valuable cognitive skill in various aspects of learning and problem-solving, including cultural intelligence.

Further, behavioral factors play a crucial role in shaping both cultural intelligence (CQ) and student satisfaction in a diverse educational environment. Understanding the relationships between behavioral factors, CQ, and student satisfaction is essential for institutions aiming to create a positive and inclusive learning atmosphere. Behavioral factors refer to the actions, attitudes, and interpersonal behaviors exhibited by students in cross-cultural interactions and within the educational setting. These behaviors can include open-mindedness, active listening, respectful communication, adaptability, and intercultural competence. Our study indicate that behavioural factor also influence cultural intelligence positively. Futher, to assess the mediation effect, which involves examining whether the link between behavioral factors and

student satisfaction becomes weaker (partial mediation) or non-significant (full mediation) when cultural intelligence is included as a mediator in the model. The cultural intelligence partially mediates the relationship, it suggests that cultural intelligence plays a role in the relationship between behavior and student satisfaction, but other aspects may also be at play.

4.2 Managerial Implication

Metacognition involves thinking about one's own thinking processes. People with high metacognitive skills are more likely to reflect on their cultural biases, recognize the need for cultural adaptation, and actively seek opportunities for intercultural learning. Metacognition can enhance CQ by enabling students to self-regulate their learning strategies in cross-cultural contexts. They can assess their understanding of different cultures and adjust their approaches accordingly.

Cognitive factors encompass intellectual abilities and knowledge. Students with strong cognitive skills are better equipped to understand and adapt to cultural differences. Cognitive skills like empathy, perspective-taking, and cultural awareness facilitate the development of CQ. They enable students to grasp cultural nuances, communicate effectively, and solve intercultural conflicts.

Behavioral factors involve actions, attitudes, and interpersonal skills. Students who exhibit culturally sensitive behaviors engage positively in cross-cultural interactions. Adapting one's behavior to align with cultural norms and expectations is central to CQ. Culturally sensitive behavior fosters trust and facilitates constructive cross-cultural relationships.

Motivation is the driving force behind students' engagement with different cultures. Intrinsic motivation, arising from a genuine interest in other cultures, can significantly boost CQ development. Extrinsic motivation, such as academic or career goals, can also influence students to invest in CQ development, but intrinsic motivation tends to lead to deeper and more sustainable growth. CQ positively correlates with student satisfaction in culturally diverse educational environments.

Students with higher CQ tend to feel more comfortable and capable in cross-cultural interactions, leading to satisfaction with overall educational experience.

Enhanced CQ can contribute to greater classroom engagement, a sense of belonging, and positive academic outcomes leads to higher satisfaction levels.

These factors are interconnected and can mutually reinforce each other. For example:

Metacognitive awareness can lead to better cognitive strategies for understanding and adapting to cultural differences. Motivation can drive students to exhibit culturally sensitive behaviors in real-life situations. Culturally sensitive behavior can positively impact student satisfaction, reinforcing their motivation to further develop their CQ.

Educators and institutions leads to CQ and student satisfaction by incorporating metacognitive training, cognitive skill development, culturally sensitive behavior modeling, and motivation-building strategies into their curricula and programs.

In conclusion, the relationship between metacognition, cognition, behavior, motivation, CQ, and student satisfaction is intertwined and dynamic. Fostering CQ development through the cultivation of metacognition, cognitive skills, culturally sensitive behavior, and intrinsic motivation can contribute to increased student satisfaction in culturally diverse educational settings. This holistic approach create more enriching and rewarding educational experiences for students.

5. Limitation and Future Research

Each research study has limitations that should be acknowledged to provide a clear and honest assessment of the findings. In existing study on the association between metacognition, cognition, behavior, motivation, cultural intelligence (CQ), and student satisfaction, here are some probable limitations to consider. The study may rely on a specific sample of students, such as those from a particular institution or with

specific demographic characteristics. This could limit the generalizability of the findings to a broader population of students. The study might depend on self-report measures to assess factors like motivation, behavior, and satisfaction. Self-report data can be subject to biases, such as social allure bias, where participants respond in ways they believe are socially acceptable. Respondents may have difficulty in recalling their past experiences, particularly if the study involves asking them about historical behavior or changes in motivation. While the study may establish correlations between metacognition, cognition, behavior, motivation, CQ, and satisfaction, it may be challenging to definitively establish causality. Other unmeasured variables or reverse causation could be at play. The effectiveness of the measurement instruments used to assess factors like metacognition, cognition, and CQ can impact the study's validity. If the instruments are not well-validated or reliable, this could introduce measurement error. Findings may not be easily transferable to different educational settings, institutions, or cultural contexts. The study's results may be highly context-specific. Student satisfaction is a subjective measure influenced by various factors beyond those explored in the study, such as personal expectations and prior experiences. The study may not capture the long-term effects of factors like metacognition and motivation on CQ and satisfaction. Recognizing and addressing these limitations ensure that the study's conclusions are appropriately qualified and that future research can build upon these findings while considering these constraints.

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EFFECT OF GAME BASED LEARNING ON WRITING SKILL IN ENGLISH LANGUAGE AMONG 3rd GRADE LEARNERS

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ABSTRACT

The present study investigates the Effect of Game Based Learning on Writing Skill in English Language among 3rd Grade Learners. Students were selected randomly through simple random sampling technique. There were two groups in the Experimental research design: the experimental group and the control group. The sample included of One hundred students of 3rd grade which were taken from two separate CBSE schools of Gurdaspur city. Fifty students were assigned to the experimental group, while the remaining fifty were assigned to the control group. In this study, pre and post-test design was used to assess the Writing skill in English language. The collected data was statistically examined using Mean, SD, T-Test, and ANOVA. The results of this study demonstrated that game-based learning had a significant impact on Self-Expression Writing skill in English Language of those children whose parents exhibited higher level of Education which was post-graduation and above. In addition to this, game-based learning influenced achievement in Self-Expression

Writing skill in English Language of those children who had uneducated parents and parents with lower levels of education such as Primary, middle and Secondary levels of Parent's Education.

Keywords: Game based learning, English Language, Writing Skill, Parent's Education, English language & Preparatory stage learners.

Introduction

Writing is a crucial ability for success in the classroom and in employment. Writing offers a cognitive learning tool that people can use to express their thoughts and interact with one another. Their knowledge and abilities will consequently be enhanced. According to empirical data, pupils learn best when they write. According to Montelongo and Herter (2010), writing helps kids learn, comprehend, and create new knowledge. Nonetheless, writing is thought to be a challenging process that calls for people to use a range of cognitive techniques and information sources (Hayes, 1996). Additionally, because they lack lower-level language abilities like vocabulary and grammar, students writing texts in a second language encounter greater difficulties than those who write in their home tongue. (Schoonen et al., 2009). Proposing educational strategies that assist students in developing their writing skills is therefore crucial. One of the main challenges that students commonly face when learning to write is a lack of motivation to write (Sherafati et al., 2020). Students learn and practice writing skills through laborious tasks like composing essays on teacher-provided subjects in traditional writing classrooms, which primarily employ a teacher-centred approach to instruction. These traditional approaches fail to foster students' functional ideas about writing, give them a good emotional environment, or successfully facilitate their involvement with authentic writing activities, all of which reduce students' motivation to write (Bruning & Horn, 2000). Thus, in order to boost students' writing enthusiasm and engagement as well as their writing proficiency, researchers have been investigating powerful

teaching techniques including flipped learning (Challob, 2021), virtual reality, and augmented reality (Koc et al., 2022). One effective strategy for boosting student motivation is the use of games or game aspects into educational procedures (Jackson & McNamara, 2013).

Students can solve issues in a variety of ways in a highly engaging game-based learning environment. A game-based learning environment is just one more way that teachers can integrate learning into the teaching process. Another method of integrating learning into the teaching process is through game-based learning. It has Nonetheless, educators must keep looking for methods to address the learning styles of their students. The teacher can enhance a range of educational activities by including game-related activities. Teachers need to keep looking for strategies to address the learning styles of their students. A range of instructional enhancers can be enhanced by the teacher through the use of game-related activities. Teachers can encourage and include students in their own learning by using game-based gadgets in conjunction with efforts to improve literacy across disciplines. Students are more motivated in a game-based learning environment, particularly when they are engaged in competitive activities. Through the acquisition of skills and knowledge to enhance literacy, game-based learning aims to assist the student in interacting within an organizational experience. Students can interact affectively, cognitively, behaviourally, and socially in this setting.

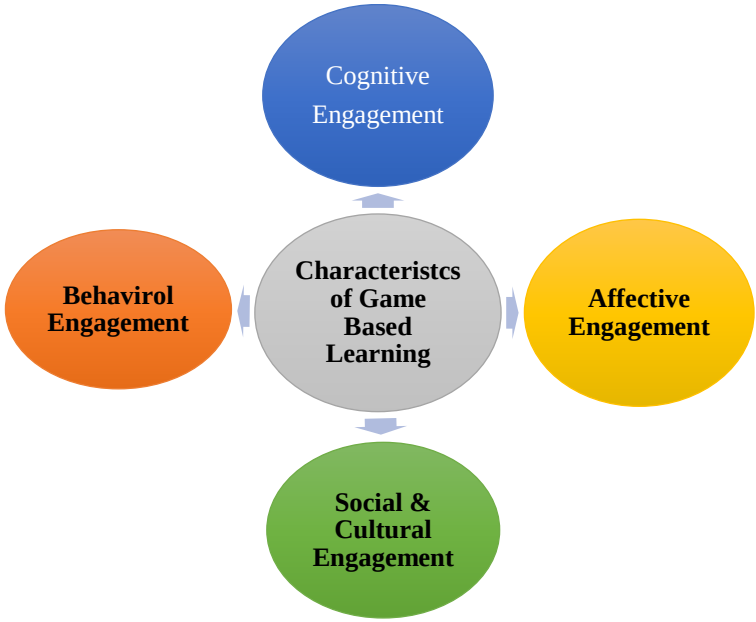

Figure: 1 Characteristics of Game Based Learning (Boyle, Hainey, Connolly, Gray, Earp, Ott, & Pereira, 2016).

Another method of integrating learning into the teaching process is through game-based learning. It has Nonetheless, educators must keep looking for methods to address the learning styles of their students. The teacher can enhance a range of educational activities by including game-related activities. The instructor can employ games to help the student acquire a range of literacy experiences in a number of areas or disciplines across the curriculum in an engaging way as part of the literacy improvement endeavour (Kebritchi et al., 2010). When their work has purpose, relevance, and a connection to real-world application, students are more interested and driven to study. Teachers can now provide pupils with a wider selection of instructional offerings. With the help of game-based learning tools, educators can enhance students' learning, retention, and decision-making skills (Sousa & Rocha, 2017). It is impossible to learn a language and then use it. You have to use it to learn it. Four main conclusions were drawn from Krashen and Terrell's (1983) study on

second language learning: the more comprehensible the content, the more understanding aids offered, the more speaking and listening exercises, and the less drudgery and worry, the better. These four principles make reference to learning and teaching through games. At every stage of language learning growth, games are a useful tool for language acquisition. Games provide students objectives to accomplish and guidelines to follow; they are entertaining and can be a crucial component of any language program. A book on language learning through game-based learning was edited and contributed to by (Reinders et al. 2015), a proponent of game-based learning for language acquisition. Reinders et al. (2015) investigated the pedagogical potential of game-based learning and its advantages for language acquisition in collaboration with eighteen other subject-matter experts. As they engage with the language, classmates, and topic, students are compelled to actively participate in their education through gaming. Levine (2006) also noted that games require kids to make decisions, which is a crucial part of learning, more than books, movies, or music do. Marzano (2009) agreed that using games to teach explicit vocabulary was a good idea. Excellent outcomes were found in the study of 24 elementary instructors who used the six-step vocabulary teaching strategy. It came to the conclusion that playing games with students that reviewed words in non-threatening ways had a significant impact. Students can practice and review word definitions, pronunciation, spelling, different word forms, sentence placement, connotations, and collocations in a secure environment with this contemporary approach.

Game based learning and Writing Skills

One of the four essential language macroskills that every person must acquire is writing. Since it arises from the three other abilities—speaking, listening, and reading—it cannot be comprehended in isolation. Students are ready for the basics of writing for a variety of determinations, regardless of their grade level. It claims that frameworks for language acquisition have a critical role in determining how well kids

do in school and in the job. In terms of their learning levels, communicative skill levels, and the status of English usage in their nations, countless students face writing challenges. Define writing difficulties as those related to the target language's grammar, syntax (sentence structure), and application; they are separated into global dilemmas, which relate to expressing, cohesiveness, and system, and surface obstacles, which lead to grammar (Ramos, 2020). It is difficult to escape the difficulties that pupils face when writing. The existence of language acquisition barriers is only confirmed by the analysed substantive writing quandaries and self-reported writing problems. There are several factors to take into account while evaluating students' writing experiences. The difficulties the students outlined and the rater noted demonstrate how others may occasionally disregard or undervalue their writing abilities. Assessing your own writing can be a great approach to see how your writing has improved. To lessen these challenges, more useful evaluation instruments under the guidance of language instructors could be created (Alinsunod, 2014). Giving students comments on their written work has received a lot of attention in language education studies over the past 20 years. Additionally, research has already determined the advantages and disadvantages of using peer correction techniques while teaching writing. Research on the viewpoints, experiences, and provocations of ESL teachers in using the method in their individual courses is still lacking, despite the fact that it includes learners' attitudes and design proficiency. In order to speculate and create educational processes, teachers' attitudes, beliefs, and practices are essential. They are intimately linked to teachers' coping mechanisms for everyday work-related challenges and general well-being. They influence students' motivation and achievement and establish their learning environment (Torres and Robles, 2020). Furthermore, even though they are knowledgeable about the subject and its issues, most teachers were forced to teach because it is a different subject. As a result, they only use their knowledge and limited teaching resources, which leads to disparate concepts and inconsistent classroom management. This occurred in

teachers powerless to present better education and paramount far higher quality feedback on the students' tasks and activities. The idea of using game mechanics to encourage and involve students in their education is known as gamification. To put it another way, games have become an integral part of students' daily lives. Playing games takes up a lot of their time. The gamification technique, which incorporates game elements and design techniques in a non-gaming context, was used to further improve student learning. Additionally, using this approach can support the development of learner engagement, accommodate different learning styles, and provide more flexible instruction. According to these data and requirements, digital gamification is considered necessary for students to be engaged with writing assignments both inside and outside of the classroom and to feel satisfied with the educational process. It is thought to be helpful in terms of the development of writing skills. In addition, it is believed that gamification will be advantageous for students to feel fitting to the lesson while expanding and amplifying their writing skills (Jaca et al., 2019).

Review of Related Literature

Any research project must include a thorough review of the relevant literature since it provides background information and covers all previous studies conducted on the variables chosen for the current study. It gives the conditions and context for the study problem and aids the researcher in gaining understanding of previous work. In addition to allowing the individual to learn about past performance and advancements in the relevant field, it also improves the individual's capacity to add to the prior body of knowledge by either developing the existing body of knowledge with a fresh perspective or adding something completely new. This part deals with the review of related literature wherein the research studies related to Game based learning and the variables of this study writing skills which include the dimension of Self-Expression have been presented.

First, Proske et al. (2014) conducted a study to look at the motivational aspects of various practice settings. Four experimental conditions—game-based, question-based, model-based, and writing-based practice—were randomly allocated to the students. First, every student learnt how to compose an essay introduction. The findings indicated that compared to question-based practice, students found game-based practice to be far more engaging and fascinating. Only model-based and question-based practice had a favourable effect on students' ability to use the writing skills, despite the fact that game-based practice was seen more favourably. Then, in a different study, Karadag (2015) looked at how pre-service teachers felt about using game-based learning in a course on primary reading and writing instruction. The study employed mixed method research. A total of 189 pre-service teachers enrolled in the Primary Reading and Writing Instruction course made up the participants. Pre-service teachers had favourable attitudes on the use of game-based learning scenarios in Primary Reading and Writing Instruction courses, according to the findings of both the qualitative and quantitative data. Another significant study by Benoit (2017) examined the significant obstacles that English language learners (ELLs) in America encounter in middle school. Despite their rapid social language development and cultural assimilation, many English Language Learners nevertheless face academic challenges. Effective explicit learning procedures are clearly needed, as research has demonstrated that ELLs do not absorb implicit vocabulary as well. When a game-based curriculum was implemented instead of traditional workbook instruction, this study found no statistically significant difference in academic vocabulary results. Given how common games are among teenagers in today's culture, educators ought to think about incorporating this love of gaming into the classroom to improve student learning and achievement. The impact of a game-based writing environment on raising students' engagement, output, and enthusiasm for writing was examined by Liao et al. (2018). To examine the efficacy of two writing strategies in language arts at an elementary school, an experiment was carried out. During the

course of a year, 245 third-grade kids took part in the experiment. The empirical findings demonstrate how well the game-based writing environment may support students' writing engagement, writing proficiency, and enthusiasm for writing, as well as how they view the use of educational self-management games. A different study by Samosa, Policarpio, Canamaque, Camocamo, and Clavito (2021) looked at gamification as a creative way to help students get better at writing. The perspective and experiences of third-graders are the researcher's primary focus. To gather pertinent data and information regarding the primary issue and objective of the study, an interview was conducted. In order to analyse the present use of gamification as a cutting-edge and effective strategy to improve the learners' writing abilities, the researchers will ascertain the efficacy and varying viewpoints of Grade 3 students when they are questioned about a structured series of questions. Boyle & Connoly et al. (2023), another researcher, looked at the study on the impact of online games on learning English. The motivational benefits of incorporating online gaming into traditional learning environments are argued in this research. After reviewing the definition of game-based learning, it considers Bloom's taxonomy and components of good game design. Next, present Flytrap Vocab, a self-designed game with learning objectives, exercises, and a screes design. Show how the game helps students develop their four primary competencies—reading, writing, speaking, and listening. Lastly, this study examines the five primary affordances of this online game—playfulness, accessibility, multimodality, motivation, and engagement—that support learning. In order to boost students' enthusiasm and interests, this research concludes by suggesting that more media and online games be incorporated into the conventional teaching style. An additional contribution by Ibrahim, Nasaruddin, Zakaria, and Mohamad (2024) concentrated on the application of gamified learning strategies to enhance writing skills results. This systematic review's goal is to perform a thorough study of the body of research on gamification strategies, interventions, and concepts used to educate and improve a range of writing abilities. The

review examines interventions that use either full gamification or specific game elements to help students become better writers. It also identifies the different kinds of gamification strategies that can help students become better writers and looks at the age group that is most frequently exposed to gamification strategies for writing improvement. The study intends to shed light on how well gamification techniques might improve writing abilities and pinpoint the best approaches for various students and situations.

After reviewing all of the literature, the researcher found that very few studies of Proske et al. (2014), Karadag (2015), Ismaizam (2016), Benoit (2017), Liao et al. (2018), Samosa, Policarpio, Canamaque, Camocamo, & Clavito, (2021), Boyle & Connoly et al. (2023) and Ibrahim, Nasaruddin, Zakaria, Mohamad (2024) have been done on writing skills related to Game-based learning. According to the various studies, after all these literatures, we were finding that the research gaps. Firstly, very few studies were done on the writing skills through game-based learning in Indian perspectives. Most of the studies were conducted in foreign perspectives through digital game-based learning. Secondly, studies were conducted mainly on the secondary and university level and not on foundational and preparatory stage of school education. However, National Education Policy (2020) gives more stress to increase students Reading and Writing Skills at the Foundational and Preparatory stage of school education. NIPUN BHARAT MISSION (National Initiative for Proficiency in Reading with Understanding and Numeracy) has been started by Ministry of Education under the guidelines of National Education Policy (2020). According to National Education Policy (2020) Foundational learning is the basis of all future learning for a child. Not achieving basic foundational skills of being able to read with comprehension and writing leaves the child unprepared for the complexities of the curriculum beyond grade III. So, by keeping in mind, the above-mentioned reasons this study has been conducted to improve students Self-Expression in Writing Skill in English Language among 3rd

Grade learners by adopting engaging and innovative pedagogical strategies of learning.

Statement of the Problem

EFFECT OF GAME BASED LEARNING ON WRITING SKILL IN ENGLISH LANGUAGE AMONG 3RD GRADE LEARNERS

Delimitations of the Study

1. The study was delimited to the Gurdaspur city only.
2. The study was delimited to CBSE schools of Gurdaspur city only.
3. The study was delimited to Preparatory Stage learners of 3rd grade only.
4. This study was confined to one component of Writing Skill (Self-Expression) in English language only.

Objectives of the Study

1. To prepare the Game Based Learning Lesson Plan for Self-Expression writing skill in English Language.
2. To study the effect of Game based learning on Self-Expression writing skill of 3rd grade learners.
3. To study the difference in Self-Expression writing skill among 3rd grade learners taught through Game based learning with respect to different levels of Parent's Education (Illiterate, Primary, Middle, Secondary and Post Graduation & above).
4. To study the interaction effect of treatment and Parental Education on the gain scores of Self-Expression writing skill among 3rd grade learners.

Hypotheses of the Study

1. There exists no significant difference in the mean gain scores of Self-Expression writing skill among 3rd grade students taught through Game based learning and Conventional learning method.
2. There exists no significant difference in the mean gain scores of Self-Expression writing skill in English language among 3rd grade

students taught through Game based learning with respect to different levels of Parent's Education (Illiterate, Primary, Middle, Secondary, Post-Graduation & above).

(a) There exists no significant difference in the mean gain scores of Self-expression writing skill among 3rd grade learners taught through Game based learning with respect to Illiterate level of Parent's Education.

(b) There exists no significant difference in the mean gain scores of Self-expressions writing skill among 3rd grade learners taught through Game based learning with respect to Primary level of Parent's Education.

(c) There exists no significant difference in the mean gain scores of Self-expressions writing skill among 3rd grade learners taught through Game based learning with respect to Middle level of Parent's Education.

(d) There exists no significant difference in the mean gain scores of Self-expressions writing skill among 3rd grade learners taught through Game based learning with respect to Secondary level of Parent's Education.

(e) There exists no significant difference in the mean gain scores of Self-expressions writing skill in English language among 3rd grade learners taught through Game based learning with respect to Post Graduation & above level of Parent's Education.

3. There exists no interaction effect of treatment and different levels of Parent's Education on the mean gain scores of Self-Expression writing skill in English language among 3rd grade learners.

Tools to be used in the Study

The following tool to be used in the study

- Lesson plans on Game Based learning was prepared by the investigator.
- Writing Skill test based on the component of Self Expression was prepared by the investigator.

Sample

The sample size for this study was 100 students approximately, which were taken from two CBSE schools of Gurdaspur city of 3rd grade. The investigator used the Random Sampling technique to select a sample of students for this purpose.

Statistical Analysis

The data was evaluated using the relevant statistical techniques such as Mean, SD, T-test and ANOVA (Analysis of Variance).

Results & Discussions

HYPOTHESIS – 1

"There exists no significant difference in the mean gain scores of Self-Expression writing skill in English language among 3rd grade learners taught through Game based learning and Conventional learning method."

TABLE 1.1: SHOWING MEAN GAIN SCORE, SD, AND T-VALUE OF EXPERIMENTAL AND CONTROL GROUP WITH RESPECT TO SELF-EXPRESSION WRITING SKILL IN ENGLISH LANGUAGE

Group/Method	N	Mean Gain Score	S. D	df	t-Value	Remarks
Experimental Group	50	8.54	4.58	98	8.23	Significant at 0.05 level
Control Group	50	2.12	1.78			

Significant at 0.05 level**

Above mentioned table depicts that the mean gain scores in Self-Expression writing skill in English language of the Experimental and Control Group were 8.54 and 2.12 and the value of SD for the two groups was 4.58 and 1.78 respectively. It is further indicated that the t-value of the two groups was 8.23, which was higher than the table value (1.97) at 0.05 level of confidence. Hence, there was a significant difference between the Experimental group (taught through Game based

learning) and Control Group (taught through conventional learning method) on their Self-Expression writing skill in English language. Thus, our Null Hypothesis *"There exists no significant difference in the mean gain scores of Self-Expression writing skill among 3rd grade learners taught through Game based learning and Conventional learning method"* was rejected.

HYPOTHESIS – 2

"There exists no significant difference in the mean gain scores of Self-Expression writing skill in English language among 3rd grade learners taught through Game based learning with respect to different levels of Parent's Education (Illiterate, Primary, Middle, Secondary, Post-Graduation & above)."

TABLE 1.2: SHOWING MEAN GAIN SCORE, SD, AND T-VALUE OF EXPERIMENTAL AND CONTROL GROUP OF SELF-EXPRESSION WRITING SKILL IN ENGLISH LANGUAGE WITH RESPECT TO DIFFERENT LEVELS OF PARENT'S EDUCATION

Levels of Parent's Education	Groups	N	Mean Gain Score	SD	t-value	Remarks
Illiterate	**Experimental**	10	10.5	1.2	**2.27**	Significant at 0.05 level
	Control	10	5.47	0.89		
Primary	**Experimental**	10	6.5	5.72	**2.87**	Significant at 0.05 level
	Control	10	0.6	0.76		
Middle	**Experimental**	10	7.2	3.87	**4.05**	Significant at 0.05 level
	Control	10	0.7	1.08		
Secondary	**Experimental**	10	8.9	4.78	**6.92**	Significant at 0.05 level
	Control	10	1.1	1.08		
Post-Graduation & above	**Experimental**	10	11.0	3.52	**8.92**	Significant at 0.05 level
	Control	10	0.8	0.96		

Significant at 0.05 level**

Main conclusions from Table 1.2

(a) From the table 1.2, it is found that the mean gain scores of experimental and the control group were 10.5 and 5.47 respectively. Following of this, standard deviation for the experimental group was 1.2 and 0.89 for the control group. It was found that the t-value for the both groups was 2.27, which was greater than the table value (1.97) at 0.05 level of confidence. So, our Null Hypothesis *"There exists no significant difference in the mean gain scores of Self-expressions writing skill in English language among 3rd grade learners taught through Game based learning with respect to Illiterate level of Parent's Education"* was rejected. It can be concluded that game-based learning played a significant role in developing Self-Expression writing skill in English language of children, because the students of experimental group gained higher mean gain scores than control group. However, it was found that the t-value for this group of children, whose parents were illiterate found to be (2.27), which was very low in comparison to other levels of parent's education. It can be analyzed with the help of supporting study of Hill et al. (2022) that parents who are illiterate or with lower levels of education may not feel capable of assisting their child or playing a role in his academic life as they may not understand the material or feel comfortable with their abilities.

(b) Further, the above-mentioned table revealed that the mean gain score of Experimental 7.2 and the control group were 0.7. It was found that the t-value was 4.05, which was greater than the table value (1.97) at 0.05 level of confidence. So, our Null Hypothesis *"There exists no significant difference in the mean gain scores of Self-expressions writing skill among 3rd grade learners taught through Game based learning with respect to Primary level of Parent's Education"* was rejected. It can be concluded that game-based learning put a significant impact on Self-Expression writing skill of those children whose parents were studied up to primary level of Education,

because the students of experimental group gained higher mean gain scores than control group. Furthermore, the t-value of this group of children was 2.87, which was higher than those group of children, who had uneducated parents. Certain studies revealed that the main reason behind this was that although some parents exhibit lower educational qualification but their children are better in their academics as their parents involved for the upliftment of their education because of a desire for their child to have upward mobility in the World and so their child achieves things they themselves could not (Gardner et al. 2019).

(c) It is crystal clear from the given table (1.2) that the mean gain score of Experimental and the control group were 6.5 and 5.72 respectively. It was found that the t-value was 2.87, which was greater than the table value (1.97) at 0.05 level of confidence. So, our Null Hypothesis *"There exists no significant difference in the mean gain scores of Self-expressions writing skill among 3rd grade learners taught through Game based learning with respect to Middle level of Parent's Education"* was rejected. It can be concluded that game-based learning increased the performance of children in Self-Expression writing skill in English language significantly, who had parents with middle level of Education, because the students of experimental group gained higher mean gain scores than control group. A study examined the influence of parents' education on students' academic achievements found a positive correlation between parental education and students' grade points. The research revealed that 50.5% of the variance in students' academic performance could be attributed to parental education levels. This suggests that even middle-level parental education can substantially affect children's academic success (Azhar et al., 2014). Additionally, research on family literacy emphasizes that literate parents are better equipped to support their children's learning. Parents with middle-level education often engage in educational activities with their

children, fostering an environment conducive to academic success (Khan et al. 2015).

(d) From the table 1.2, it is found that the mean gain score of Experimental 7.2 and the control group were 0.7. It was found that the t-value was 6.92, which was greater than the table value (1.97) at 0.05 level of confidence. So, our Null Hypothesis *"There exists no significant difference in the mean gain scores of Self-expressions writing skill among 3rd grade learners taught through Game based learning with respect to Secondary level of Parent's Education"* was rejected. It can be analysed that game-based learning positively influenced Self-Expression writing skill in English language of those children whose parents studied upto Secondary level of Education, because the students of experimental group gained higher mean gain scores than control group. Moreover, the t-value for this group of children was 6.92, which was significantly more than the t-values of those groups of children, who had uneducated parents either their parents were passed only primary level or middle level of education. Research indicates that higher parental education is associated with better school achievement through mechanisms such as higher intelligence of the child and improved parenting practices (Chen C, 2010).

(e) While analyzing and interpreting the last hypothesis, it can be said that the mean gain scores of Experimental and the control group were 11.0 and 0.8 respectively. It was found that the t-value was 8.92, which was greater than the table value (1.97) at 0.05 level of confidence. So, our Null Hypothesis *"There was no significant difference in the mean gain scores of Self-expressions writing skill among 3rd grade learners taught through Game based learning with respect to Post Graduation & above level of Parent's Education"* was rejected. It depicts from the above-mentioned table that game-based learning method proved to be effective for Self-Expression writing skill in English language of those children who had

graduated parents or parents had a master's degree, as the students of experimental group gained higher mean gain scores than control group. In addition of this, the t-value of this group of children was 8.92, which was comparatively higher than other children, who had parents with lower levels of parent's education. Studies have shown that parents with higher educational attainment are more familiar with educational institutions and professional environments, which enables them to better support their children's educational and professional prospects. (Sammons et al. 2015). Furthermore, higher educated parents were more likely to provide more family routines, these routines partially mediated the association with child school achievement independently of child intelligence. Family routines including tasks related to education and cognition might help children achieve in school. Different aspects of family routines are beneficial for the child development, the repetitive nature of the activities provide predictability in the child's environment that may make them less prone to attention problems. Children master skills by repetitive learning, routines support them to acquire academic competencies. Additionally, shared family routines, like sitting together for meals, allow parents to monitor their children's behavior and promote the bond between family members, fostering a sense of belonging. (Rijlaarsdam et al. 2016).

HYPOTHESIS – 3

"There exists no interaction effect of treatment and different levels of Parent's Education on the mean gain scores of Self-Expression writing skill in English language among 3rd grade learners."

TABLE 1.3: SHOWING SUMMARY TABLE OF TWO-WAY ANOVA OF TREATMENT AND DIFFERENT LEVELS OF PARENTAL EDUCATION ON SELF-EXPRESSION WRITING SKILL IN ENGLISH LANGUAGE

Sources of Variance	Sum of Squares	df	Mean Sun of Squares	F	Significance
Intercept	408.11	1	77.90	4.60	.000
Levels of Parental Education (A)	606.10	5	209.21	4.87	.000
Treatment (B)	5412.206	1	200.98	10.67	.000
Levels of Parental Education * Treatment (AxB)	16.89	2	45.222	4.20	.002
Error	1789.78	91	44.71		
Total	8233.086	100			

Significant at 0.05 level**

The above-mentioned table revealed that f-value for the interaction effect of treatment and different levels of Parent's Education of students were .002, which was significant at 0.05 level of confidence. The strong interaction effect suggested that different levels of Parent's Education and treatment (taught through Game based learning) had major impact on Self-Expression writing skill of students in English language. Thus, our Null Hypothesis, *"There exists no interaction effect of treatment and different levels of Parent's Education on the mean gain scores of Self-expressions writing skill among 3rd grade learners in English language" was rejected.* A study by Pianta et al. (2012) demonstrated that an intervention focusing on enhancing teacher-student interactions led to significant gains in student achievement. The effectiveness of such interventions may be influenced by parental education levels, as parents with higher educational backgrounds might be more equipped to reinforce positive educational practices at home, thereby amplifying the intervention's impact (Yoon et al., 2007). A meta-analysis by Castro et al. (2015) highlighted that parental involvement positively affects children's academic achievement. The study found that different forms of parental

involvement, such as supporting learning at home and participating in school activities, are associated with improved academic outcomes. This suggests that interventions promoting parental engagement can enhance student performance, potentially interacting with the educational background of the parents.

Findings of the Study

The findings of this study indicate that game-based learning significantly enhances Self-expression writing skill in English Language among students, irrespective of their parents' educational background. Students exposed to game-based learning method demonstrated higher mean gain scores compared to those taught through conventional approaches. This suggests that interactive and engaging learning environments foster improved writing abilities. Alotaibi's (2024) systematic review supports these results, revealing that game-based learning positively impacts cognitive and social outcomes in early childhood education. Furthermore, McNamara's (2007) research emphasizes that educational games promote active learning and critical thinking, which are essential for developing self-expression skills. These innovative methods encourage students to engage deeply with content, facilitating the development of new concepts and social skills beyond traditional textbook learning. Consequently, game-based learning addresses the limitations of conventional teaching methods by increasing student involvement and providing a dynamic platform for skill enhancement.

Educational Implications of the Study

The findings of this study have several significant educational implications for improving Self-expression writing skill in English among 3rd-grade students through game-based learning. These implications highlight the potential of game-based learning as a transformative approach to improving writing skills in primary education. 1) Firstly, Game-based learning fosters an interactive and engaging classroom environment, making writing activities more enjoyable and reducing student anxiety related to written expression.

Since game-based learning accommodates different learning styles, educators can tailor writing tasks to suit students with varying cognitive abilities and language proficiencies. 2) The study highlights that students from diverse parental education backgrounds benefit from game-based learning. Schools can encourage parental participation in educational games at home to reinforce classroom learning. Writing games encourage students to think beyond structured textbook exercises, promoting creativity, problem-solving, and self-expression in written communications. 3) Educational policymakers and curriculum designers should consider incorporating structured game-based activities into English language syllabi to enhance writing instruction. Apart from this, Professional development programs should equip teachers with the necessary skills to implement game-based learning strategies effectively in writing instruction. 4) This study adds to our knowledge of how gamified environment settings affect students on the basis of their qualities and abilities. It led to a better understanding of how gamification promotes student engagement and learning enhancement. Future studies could look into the effects of gamification in different areas over a longer period of time. It could aid in determining whether gamification diminishes its effectiveness over time, as well as identifying potential saturation points and constraints in its utilization.

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TRANSFORMATIVE PEDAGOGY FOR ENVIRONMENTAL SUSTAINABILITY IN LIGHT OF THE NATIONAL CURRICULUM FRAMEWORK FOR SCHOOL EDUCATION 2023

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ABSTRACT

The transformation of learners towards sustainability through the traditional teaching learning process is not enough to inculcate the values and ethics towards the surrounding environment. It is evident from the United Nations Decade of Education for Sustainable Development Report,2017, that irrespective of all levels and all forms of Education, there is a need for transformation of education which can enable the societies towards sustainability. Transformative pedagogy is a kind of innovative practice when learning goes beyond the mere accumulation of knowledge and transforms the learners' attitude, knowledge, and thinking skills. It also emphasizes the procedural knowledge that is on inquiry-based learning, which is grounded in the constructivist approach. Thus, teachers should give enough freedom to share the ideas and experiences of the learners, liberate them from preconceived prejudices, and which is based on context-based and socially-based experiences. National Curriculum Framework for School Education 2023 discussed the importance of environmental education at all levels of school and its development in the Indian context. NCFSE 2023 discussed the different approaches to learning about the environment. Environmental education cannot be successfully implemented within the

classroom; rather, it needs experiential learning. The researcher analysed the different components of transformative pedagogy in the successful implementation of environmental education at different levels of school education.

Introduction

Pedological transformation and transformative pedagogy are relevant issues in today's teaching-learning scenario. While we're discussing social transformation, the transformation of the knowledge system, then it becomes obvious to accept the pedagogical transformation through which our next generation will transform into democratic citizens. In the words of Mahatma Gandhi "education as a means of awakening the nation's conscience to injustice, violence and inequality entrenched in the social order and also the use of immediate environment as a resource for socializing the child into a transformative vision of the society".

Transformative pedagogy can create an environment in which students feel responsible for contributing to society, feel empowered, think critically, raise questions about the present situation, and exchange their minds through dialogue with others.

The traditional teacher-centric classroom is not effective enough to transform the individual's mind towards the transformation of society. In the report "Transformative Pedagogy for Peace Building- A Guide for Teachers" published by UNESCO in 2017, (Tansformative Pedagogy for Peace-Building A Guide for Teachers, 2017) it is mentioned that "the goal of transformative pedagogy for peace building is to empower both learners and educators to become agents of change who are ready to stand up for peace and take action based on ethical values that uphold the dignity of all people". When we're talking about sustainable development, it is necessary to educate the masses as education is the path or tool through which we can achieve the sustainable development goals within 2030. As the United Nations Decade of Education for Sustainable Development Report (2005 to 2014) mentioned that "quality education for sustainable development is about what people learn, its

relevance to today's world and global challenges and how learners develop the skills and attitude to respond to such challenges and prosper now and for future generations" (DESD Final Report 2014, Page 21).

It is evident from the United Nations Decade of Education for Sustainable Development Report,2017, that irrespective of all levels and all forms of Education, there is a need for transformation of education which can enable the societies towards sustainability. In formal education, two kinds of transformation are broadly needed: reorientation of the curriculum and reorientation of pedagogy education. ESD mentioned that through the reshaping of curriculum and pedagogical practices, a teacher can build competent human beings rather than developing one through the transformative pedagogy, a teacher can create a conducive environment that enables the learners to think critically and act rationally. For this, teachers may adopt a collaborative approach, problem-posing education, and rational discourse of knowledge. For instance, in Bhutan, the government adopted the Green School for Green Bhutan program in 2009 as the part of Ministry of Education's nationwide reform initiative to promote quality education to enhance Gross National Happiness, ESD values, and processes. Green School is not just discussing environment and sustainability but broadly, it is a philosophy or belief to inculcate a sense of green minds, which is not rigid and which is open to access or accept innovations in learning and which in turn reflects the flexibility of the curriculum and teaching-learning procedures. Thus, it is a value-led approach which not only restricted to academic attainment but to the expansion of learners' minds.

Transformative Pedagogy

Transformative pedagogy is a kind of innovative practice when learning goes beyond the mere accumulation of knowledge and transforms the learners' attitude knowledge and thinking skills. It is commonly known as the whole school approach where the learner can find the interrelatedness of content with real-life experiences, which may be integrated in every subject domain and involves the entire school and

community. Thus, through transformative pedagogy, the learners get the opportunities to relate knowledge and discourse the knowledge to face challenges. It increases the applicability of theoretical knowledge to real-life situations. To achieve sustainability, the whole school approach is very useful to connect the knowledge into practice.

Transformative pedagogy also emphasizes the procedural knowledge that is on inquiry-based learning, which is grounded in the constructivist approach. Thus, teachers should give enough freedom to share the ideas and experiences of the learners, liberate them from preconceived prejudices, and which is based on context-based and socially-based experiences. To promote sustainability among the learners, it is necessary to create a sustainable, conducive and safe learning environment where the learners can discuss their experiences, beliefs, socio-political dynamics, learners' own context and social realities, ethnic discrimination, community experiences, and so on. Thus, Freedom, liberation, prejudice reduction, and sharing of experiences and beliefs allow the learners to understand the social realities, and can be able to distinguish between right and wrong as the concept of sustainability based on equal opportunity, inclusivity, and equity which may be promoted through transformative pedagogy.

The Arigatou International, 2008 (Transformative Pedagogy for Peace Building- A Guide for Teachers, UNESCO 2017, page 30) has given a graphical representation of transformative pedagogy where the elements of transformative pedagogy start from motivation to action which encompasses six steps i.e. motivation, exploration, dialogue, discovery, reflection, and action. The researcher here tries to explain the process of transaction of knowledge regarding sustainable development through transformative pedagogy with the help of this graphical explanation.

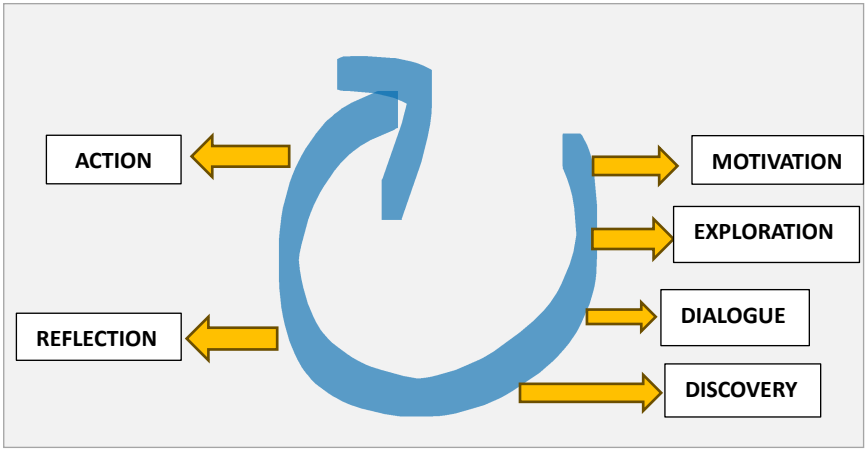
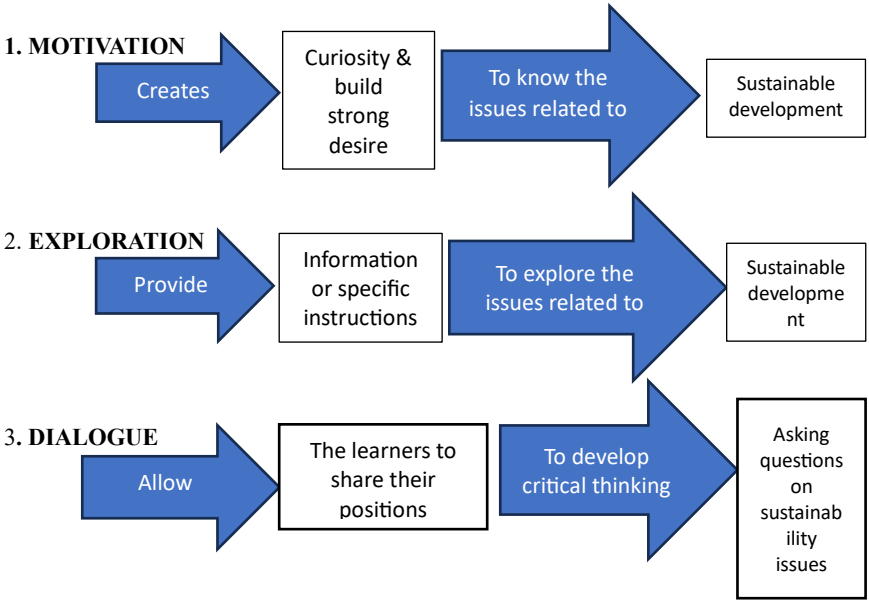
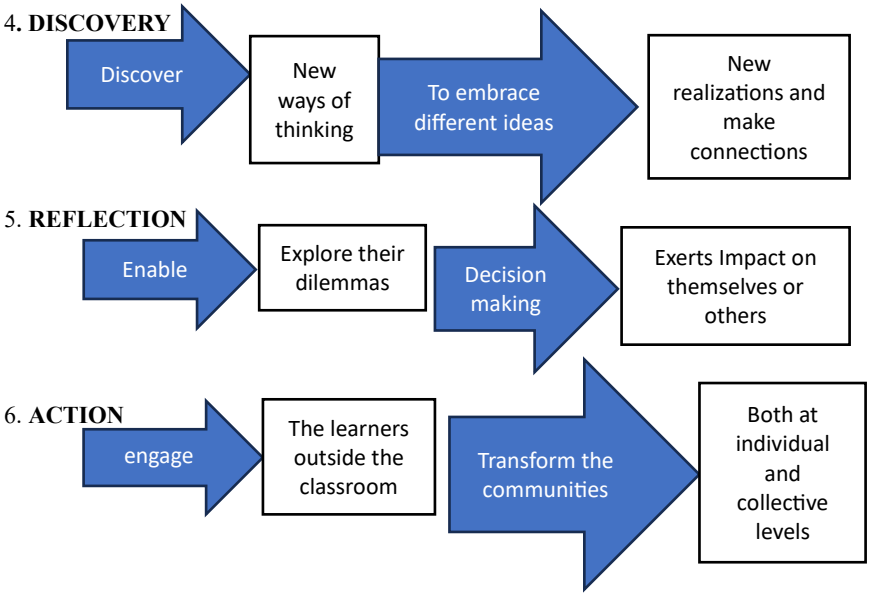


FIG: ELEMENTS OF TRANSFORMATIVE PEDAGOGY (ARIGATOU INTERNATIONAL, 2008)
Transformative Pedagogy for Peace Building- A Guide for Teachers, UNESCO 2017, p. 30





Environmental education across school stages as per National Curriculum Framework for School Education, 2023

The chapter 3 of the National Curriculum Framework for School Education 2023, discussed the importance of environmental education at all levels of school and its development in the Indian context. The concept of nature or natural environment and the relationship of humanity with nature is not new in Indian culture, as from ancient times there was ample of evidence found in the texts of Rigveda and Yajurveda. In Rigveda, the nature of the universe was compared with a '*thousand-branched tree'* which symbolized unity in diversity or endless diversities on Earth's surface. Moreover, the texts of Yajurveda emphasized the '*peaceful coexistence'* of various components of nature as well as the well-being of each other. In Indian culture, from its inception, worshiping nature through different rituals. Moreover, the branches of Ayurveda, Vrikshayurveda, increase the dependency on nature as the treatment of various diseases through the medication extracted from indigenous plants. Thus, in NCF SE 2023 emphasized on indigenous practices to promote environmental sustainability, values,

moral development, and respect for nature. The main aim of environmental education according to NCFSE 2023 focused on-

1. To develop environmental literacy
2. To inculcate a compassionate attitude towards the natural environment
3. To enhance action-oriented mindset and skill development

At the different stages of school education, the focus of curricular goals shifted manifold. As in the ***Foundational Stage*** the focus is on the development of a positive mindset towards their surrounding natural environment through caring for all life forms in nature, creating sensitivity towards the plants, animals, insects, as well as birds, and even the toys made up of surrounding local materials that do not harm nature. Through the storytelling method, the learner can relate to their surrounding environment with more imagination and innovations, which creates interest and motivation among the learners.

In the ***Preparatory Stage,*** the emphasis will be laid on the development of sensitivity towards their surrounding natural as well as social environment. The pedagogical process emphasized on the development of a caring attitude towards nature. At this stage, learners will be able to connect between cultural practices within the community and environment.

In the ***Secondary Stage***, the components of environmental education encompass across the disciplines at this stage the learners can deepen their knowledge through the processes of investigation, analysis, synthesis, critical questioning, and so on. Here the main focus is laid on the capacity building of individual to identify or systematically examine the issues or challenges related to the environment and understand their moral and ethical responsibilities to address those issues or challenges. The traditional indigenous practices also enhance the environmental values in the Indian context.

Role of Transformative Pedagogy to Achieve the Aims of Environmental Education at the school level as outlined by National Curriculum Framework for School Education, 2023

When we discuss transformative pedagogy, we are focusing on the transformation of learners toward achieving specific goals. In this context, "transformation" refers to behavioral changes in individuals, enabling them to become more aware and sensitive to their surroundings. These individuals will learn to identify, relate to, and care for the natural environment while being equipped to address challenges thoughtfully. Additionally, they will develop the ability to anticipate the future consequences of their current practices.

There are several components of transformative pedagogy as identified by the researcher from the content analysis of underlying theories such as the Critical Theory of Paulo Freire (1970), the Transformative Learning Theory for adults by Jack Mezirow (1978), the theory of Culturally Relevant Pedagogy by Gloria Ladson Billings (1995) and Critical Theory on the Struggle for Recognition by Axel Honneth (1995). From the derivation of these theories, the researcher identified six major components of transformative pedagogy such as-

I. Experiences and beliefs
II. Freedom and Liberation
III. Critical thinking and exchange of mind through dialogue
IV. Cultural competencies and multiculturalism
V. Socio-political consciousness and self-Identity
VI. Rational discourse to face challenges through problem-posing education

NCFSE 2023 discussed the different approaches to learning about the environment. Environmental education cannot be successfully implemented within the classroom; rather, it needs experiential learning. NCFSE 2023 suggests five different learning and teaching approaches through which the learners can internalize the essence of environmental

education. The researcher here analyzed these approaches with the applicability of different elements of transformative pedagogy.

Approach to learning environmental education as per NFCSE 2023	**Components of transformative pedagogy and its application to achieve desired learning outcomes**
Familiar: Content based on children's surroundings, which is accessible and familiar to them, allows them *experiential learning.*	As experiential learning is one of the bases of transformative learning, so if the learners can proceed from known to unknown, familiar to unfamiliar or tangible to intangible facts or concrete to abstract the ability to apply the knowledge in the actual scenario will enhance very much among the learners.
Cumulative: Present learning should be based on previous learning and should be designed in such a way that the elements taught in the foundational stage should be the base of the preparatory and middle stages and in the same way at the secondary stage with the continuous increase of breadth and depth of the content and increased complexities of the same concept.	Every new learning should be based on previous knowledge of the learners. Thus, in transformative pedagogy, the main aim is to give freedom to the learners to express their previous knowledge, ideas, and experiences regarding the content. Through the dialogue, learners can actually Exchange their minds and share their opinions related to preconceived ideas and beliefs.
Participative: Experiential learning, active participation of learners in teaching-learning processes, hands-on activities opportunities to explore, and ability to enhance critical thinking	This approach to environmental education reflects the basic components or elements of transformative pedagogy such as in this pedagogy Active participation of learners is the basis of learning where students can share their experiences and ask critical questions, exchange dialog which enhances the critical thinking abilities and teacher should create

	such an environment where learners get the freedom to explore new ideas, problem-solving procedures and so on.
Continuous/ integrated Environmental education should be connected with the outer world, with culture, society, and with different learning theories as through this lifelong attitude would be developed among the learners towards their surrounding environment.	Connecting with real-life experiences raises awareness regarding sociopolitical, cultural environmental issues which are not only restricted at the local or regional level but also at the global level is the main aim of transformative pedagogy as through this pedagogical approach the learners will be competent enough to identify analyze address the issues and challenges in their surroundings and can connect with the global context.
Diversified: Content should be designed in such a manner that expands across the cross-cutting themes of disciplines, and exposes the various perspectives on environmental issues.	Transformative learning is not restricted to a particular subject or discipline, but also beyond the subject or discipline, when learners can relate the issues with the content, and can apply different perspectives, this is not possible without integrating a transdisciplinary approach

From this table it is evident that as per NCFSE 2023, the approaches of teaching environmental education can be implemented through the transformative pedagogy through the application of its various components to get the desired learning outcomes.

The transformation of learners through this pedagogical approach to achieve a sustainable future in the Anthropocene epoch, which incorporates the path of transformations in the world view of thinking, perception of well-being orientation about life and moral circle (Salonen, 2019).

The perception of worldview transformed from self-centered through human centered to life-centered and finally ecosystem centered whereas thinking also transformed from atomistic thinking to systems thinking. Through transformative life orientation of the individual also transformed from individual to collective to planetary moral circles, also transformed many fold from 'I' to the planet Earth, encompassing the stages of my family, friends, and relatives, my nation, all people, human beings, animals, and planets to the ecosystem.

Conclusion

The research highlights the critical role of transformative pedagogy in fostering sustainable development by going beyond traditional knowledge acquisition and emphasizing experiential, inquiry-based learning. Drawing from the National Curriculum Framework for School Education (NCFSE) 2023, the study underscores the importance of environmental education at all school levels, integrating indigenous knowledge and contextual learning to instil environmental values.

Transformative pedagogy, rooted in constructivist principles, promotes critical thinking, active participation, and a sense of responsibility among learners, enabling them to address environmental challenges effectively. By implementing key elements such as dialogue, exploration, and reflection, educators can cultivate ethical awareness and socio-political consciousness. The study concludes that to achieve sustainability, a shift from a teacher-centric to a learner-centered, action-oriented approach is necessary. By aligning transformative pedagogy with the goals of environmental education, learners can develop a holistic perspective, equipping them to contribute to a sustainable and just society.

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