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FUNDAMENTAL DUTIES OF INDIAN CITIZEN

- To abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;
- To cherish and follow the noble ideals which inspired our national struggle for freedom;
- To uphold and protect the sovereignty, unity and integrity of India;
- To defend the country and render national service when called upon to do so;
- To promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;
- To value and preserve the rich heritage of our composite culture;
- To protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures;
- To develop the scientific temper, humanism and the spirit of inquiry and reform;
- To safeguard public property and to abjure violence;
- To strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavor and achievement.

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Transforming Teacher Education through AI-Driven Adaptive Learning: A Study on CogBooks for Personalized Training

A. Rajeshwari*

ABSTRACT

Artificial Intelligence (AI) is fundamentally transforming educational paradigms, with particular emphasis on teacher training programs and professional development. This comprehensive study investigates how Cog Books, an innovative adaptive learning platform, enhances and revolutionizes personalized instruction in teacher education. The research employed a quantitative research design, engaging 200 pre-service teachers enrolled in AI-integrated training programs across multiple institutions. Data collection methodologies incorporated detailed surveys and experimental assessments, with rigorous analysis conducted using ANOVA and t-tests to evaluate the complex interplay between demographic variables (age, teaching experience, and technology ability) and learning outcomes. The statistical analysis revealed compelling results, showing that age ($F = 3.21$, $p = 0.04$) and technology ability ($F = 4.56$, $p = 0.02$) significantly influenced teacher training outcomes, while teaching experience ($F = 1.89$, $p = 0.12$) proved no significant effect on learning performance. These findings strongly suggest that younger educators and those with enhanced technology ability derive greater benefits from AI-driven personalized learning environments. The study makes a substantial contribution to the evolving discourse on AI in education by emphasizing the critical necessity of integrating AI literacy into teacher training curricula to improve learning experiences and prepare educators for future technological advancement in education. Institutions must integrate AI literacy into teacher training to maximize its benefits.

Key words: AI in education, adaptive learning, CogBooks, teacher training, personalised learning, educational technology, professional development, pedagogical innovation

Introduction

The rapid advancement and integration of Artificial Intelligence (AI) have fundamentally transformed various sectors of society, with education appearing as a primary beneficiary of these technological innovations. AI-powered learning systems have not only appeared as critical tools in teacher education but have revolutionized traditional approaches

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to instructional methodologies, personalization of learning experiences, and student engagement levels (Brown, 2022). While traditional teacher education programs have historically relied on standardized curricula that often fall short in addressing individual learning needs and preferences, AI-integrated platforms, particularly CogBooks, offer a sophisticated personalized and adaptive learning experience that dynamically tailors instruction based on learners' unique abilities, progress, and learning patterns (Johnson & Lee, 2021).

The implementation of adaptive learning platforms is a notable change in basic assumptions in educational technology. These systems use advanced machine learning algorithms to analyse student interactions and adjust content delivery in real-time, ensuring best learning outcome Rajeswari.A (2022). This dynamic approach ensures that teacher trainees receive precisely tailored instructional materials suited to their individual learning pace, competency level, and professional development needs (Kim & Adams, 2022). In the contemporary landscape of teacher education programs, which increasingly emphasize the integration of innovative digital tools, CogBooks has appeared as a leading AI-driven platform that eases comprehensive real-time feedback, data-driven assessments, and customized learning pathways designed to maximize educational outcomes (Williams, 2023).

The global shift toward remote and hybrid learning models, particularly accelerated by the COVID-19 pandemic, has significantly intensified the demand for AI-driven education solutions (Clark & Roberts, 2021). This transformation has created an urgent imperative for teacher training institutions to equip educators with comprehensive AI literacy and adaptive learning strategies essential for effectively navigating the rapidly evolving educational landscape. Despite these significant advancements and the growing implementation of AI-driven solutions, there stays a notable gap in empirical research examining the effectiveness of CogBooks specifically within teacher training programs and its impact on pedagogical preparedness and professional development.

This comprehensive study investigates the effectiveness of CogBooks as an AI-powered adaptive learning platform within the context of teacher education. It looks to develop a thorough understanding of how CogBooks enhances teacher preparedness, personalizes learning experiences, and influences training outcomes across diverse demographic groups. Furthermore, the research examines in detail the role of demographic factors such as age, teaching experience, and technology ability in deciding the effectiveness of AI-driven learning platforms in professional development contexts. Through careful analysis of these critical aspects, the study aims to provide actionable insights and evidence-based recommendations for curriculum developers, educational policymakers, and training institutions looking to perfect teacher training programs through the integration of AI-based innovations.

The significance of this research extends beyond mere technological implementation, addressing fundamental questions about the future of teacher education and professional development in an increasingly digital world. By examining the intersection of artificial

intelligence, personalized learning, and teacher training, this study contributes to the growing body of knowledge necessary for developing effective, technology-enhanced educational programs that meet the evolving needs of modern educators and their students.

Review of Related Literature

AI in Teacher Education

The integration of Artificial Intelligence in teacher education is a transformative shift in how educators are trained and developed professionally. Modern AI systems help sophisticated real-time feedback mechanisms, individualized learning paths, and data-driven insights that enhance the effectiveness of teacher training programs (Smith et al., 2020). These advanced systems employ machine learning algorithms to analyse learning patterns, find areas for improvement, and provide targeted interventions that support professional growth.

Recent research has proved that AI-powered platforms significantly improve the quality and efficiency of teacher training by:

* Providing immediate, personalized feedback on teaching strategies
* Analysing teaching patterns and suggesting evidence-based improvements
* Facilitating adaptive assessment systems that gauge comprehension levels.
* Supporting the development of differentiated instruction skills
* Enabling continuous professional development through data-driven insights

Adaptive learning platforms, such as CogBooks, employ sophisticated AI algorithms to enhance learning efficiency and effectiveness (Jones & Miller, 2019). These platforms use advanced analytics to track progress, find learning gaps, and adjust content delivery in real-time, ensuring best learning outcomes for teacher trainees.

The Role of CogBooks in Adaptive Learning

CogBooks has appeared as a pioneering force in adaptive learning technology, integrating innovative AI-driven assessments to personalize content delivery and perfect learning experiences (Williams, 2023). The platform's sophisticated algorithms analyse user interactions, learning patterns, and performance metrics to create highly individualized learning pathways that maximize educational outcomes.

Key features of CogBooks include:

* Dynamic content adaptation based on individual learning progress.
* Real-time assessment and feedback mechanisms
* Personalized learning pace adjustment
* Intelligent content sequencing
* Advanced analytics for tracking professional development.

The platform supports differentiated instruction by continuously analysing user performance and adjusting lesson pacing accordingly (Kim & Adams, 2022). This adaptive approach ensures that each teacher trainee receives best support and challenge levels, promoting effective skill development and knowledge acquisition.

Impact of Personalized Learning on Teacher Training

Extensive research has highlighted that

adaptive learning technologies significantly improve teacher preparedness and pedagogical effectiveness across various educational contexts (Clark & Roberts, 2021). AI-powered systems, particularly CogBooks, foster active engagement and mastery learning through:

* Customized learning experiences tailored to individual needs
* Progressive skill development pathways.
* Continuous assessment and feedback loops
* Targeted interventions based on performance data
* Flexible learning schedules that accommodate professional commitments

Studies have proved that personalised learning approaches significantly enhance:

* Teaching competency development
* Classroom management skills
* Assessment strategies
* Technology integration abilities
* Professional confidence levels

Objectives of the Study

The following objectives were framed for this study:

1. To evaluate the effectiveness of CogBooks in enhancing personalised learning in teacher education.
2. To analyse the impact of adaptive learning on teacher preparedness.
3. To examine how demographic factors influence the effectiveness of AI-driven education.

Hypotheses

To achieve the objectives the following hypotheses were formulated:

* There is no significant difference in teacher training outcomes based on age.
* There is no significant difference in teacher training outcomes based on teaching experience.
* There is no significant difference in teacher training outcomes based on technology ability.

Methodology

This study used a quantitative research design, employing both surveys and experimental assessments to examine the impact of AI-integrated training programs on the learning outcomes of pre-service teachers. The research aimed to understand how demographic variables such as age, gender, and prior experience with technology influence learning outcomes within the context of these programs. According to Creswell (2020), a quantitative design is particularly proper for assessing relationships between variables and testing hypotheses in a systematic manner.

Participants

The participants of the study were two hundred pre-service teachers enrolled in AI-integrated training programs at a university. The sample was purposively selected to include individuals who were currently undergoing training in the integration of artificial intelligence into educational practices. The participants varied in demographic characteristics such as age, gender, and prior experience with technology, providing a diverse sample to assess the influence of these factors on learning outcomes.

Data Collection

To gather data, a combination of surveys and experimental assessments was employed. The surveys measured participants' feelings of the AI-integrated program, their self-reported levels of prior knowledge, and attitudes toward technology in education. Experimental assessments, which included both pre- and post-test evaluations, were conducted to measure the participants' knowledge gains and skills development throughout the training program.

Data Analysis

The collected data were analysed using statistical methods, specifically Analysis of Variance (ANOVA) and t-tests. ANOVA was employed to assess the impact of demographic variables, such as age, gender, and prior experienc e, on the learning outcomes of the participants. T-tests were used to compare the pre- and post-test scores of individual participants, evaluating the effectiveness of the AI-integrated training in enhancing their knowledge and skills. The use of these statistical tools allowed for a robust analysis of the data, providing insights into how various demographic factors influenced the participants' learning experience and outcomes.

Overall, the research design and method allowed for a comprehensive analysis of the factors that contribute to the success of AI-integrated teacher training programs. The findings are intended to inform the development of more effective training strategies for pre-service teachers.

Statistical Analysis and Results

ANOVA Test for Effectiveness of CogBooks Based on Age

Source of Variation	Sum of Squares	df	Mean Square	F-Value	p-Value	Interpretation
Between Groups	12.45	2	6.23	3.21	0.04*	Significant
Within Groups	385.67	197	1.96			
Total	398.12	199				

The ANOVA analysis reveals a statistically significant difference in teacher training outcomes based on age ($F(2,197) = 3.21$, $p = 0.04$). A detailed examination of the data shows distinct performance patterns across age groups, with educators aged 20-30 years achieving significantly higher scores (mean = 82.4) compared to those aged 41+ years (mean = 73.8). The middle age group (31-40 years) proved intermediate performance levels (mean = 77.6). These variations were particularly clear in adoption speed, with younger teachers requiring 40% less time to master platform features compared to their older counterparts. The analysis revealed stronger engagement metrics among younger educators, who completed 25% more optional learning modules and proved 30% higher interaction rates with adaptive features. Based on these statistically significant differences, the null hypothesis is rejected, confirming that age significantly influences the effectiveness of AI-driven personalized learning systems in teacher training programs.

ANOVA Test for Effectiveness of CogBooks Based on Teaching Experience

Source of Variation	Sum of Squares	df	Mean Square	F-Value	p-Value	Interpretation
Between Groups	7.89	2	3.94	1.89	0.12	Not Significant
Within Groups	412.33	197	2.09			
Total	420.22	199				

The ANOVA test shows no statistically significant difference in training outcomes based on teaching experience (F (2,197) = 1.89, p = 0.12). This noteworthy finding reveals that teachers across all experience levels - from novice to veteran educators - prove comparable benefits from CogBooks implementation. Detailed analysis showed that teachers with 0-2 years of experience achieved similar mastery levels (mean score = 78.3) to those with 6+ years of experience (mean score = 77.9). The intermediate group (3-5 years) showed comparable results (mean score = 78.1). This consistency suggests that adaptive learning platforms effectively normalize the learning experience, providing tailored support that accommodates varying levels of pedagogical ability. The platform's ability to adjust content delivery and complexity appears to create a fair learning environment that benefits educators regardless of their years in the profession. Based on these findings, the null hypothesis (H0?) is accepted, confirming that teaching experience does not significantly affect AI-driven learning outcomes.

ANOVA Test for Effectiveness of CogBooks Based on Technology Proficiency

Source of Variation	Sum of Squares	df	Mean Square	F-Value	p-Value	Interpretation
Between Groups	15.34	2	7.67	4.56	0.02*	Significant
Within Groups	332.21	197	1.69			
Total	347.55	199				

A statistically significant difference is seen in teacher training outcomes based on technology ability (F (2,197) = 4.56, p = 0.02). This compelling finding shows that teachers with higher levels of technology ability adapt more effectively to AI-driven learning environments, maximizing the benefits of CogBooks. Further analysis revealed that educators with advanced technology skills showed 27% higher engagement rates and 32% better performance metrics compared to those with basic ability. Teachers with intermediate technology skills proved moderate improvement, performing 18% better than the basic ability group. These variations were particularly clear in areas requiring complex platform navigation, content creation, and data interpretation. The strong correlation between

technology ability and learning outcomes underscores the importance of preliminary technical training before implementing AI-driven platforms. Based on these statistically significant results, the null hypothesis (H0?) is rejected, confirming that technology ability significantly influences the effectiveness of AI-driven teacher training programs.

Major Findings

After analysis of the data the researcher found that:

1. CogBooks significantly enhances personalised learning in teacher education.
2. Teachers with higher technology ability benefit more from AI-driven platforms.
3. Adaptive learning positively influences pedagogy but is less effective for experienced educators.

Discussion

The findings of this comprehensive study align significantly with existing literature on AI's transformative role in education (Brown, 2022), while also revealing new insights into the specific dynamics of adaptive learning platforms in teacher education. The research results prove several key areas of consideration that merit detailed discussion.

Age-Related Impacts on AI-Based Learning

The statistical analysis revealing significant differences in outcomes based on age ($F = 3.21$, $p = 0.04$) offers crucial insights into the generational aspects of AI adoption in education. This finding corresponds with Brown's (2022) observations about the digital native advantage in technological adaptation. Younger teachers, particularly those in the 20-30 age range, proved notably higher engagement levels and improved learning outcomes when using CogBooks. This phenomenon can be attributed to:

* Early exposure to digital technologies during their own educational experiences
* Greater comfort with adaptive learning environments
* Natural inclination toward technological experimentation
* Higher levels of digital literacy and technological intuition

However, this age-related difference also highlights the need for specialized support systems for older educators, ensuring that the benefits of AI-driven platforms are accessible across all age groups.

Technology Proficiency and Learning Outcomes

The strong correlation between technology ability and learning outcomes ($F = 4.56$, $p = 0.02$) reinforces Johnson and Lee's (2021) assertions about the critical role of technological readiness in educational innovation. This finding has several important implications:

1. Pre-assessment of technology skills becomes crucial for successful implementation.
2. The need for structured technology training programs prior to AI platform adoption
3. The importance of ongoing technical support and resources

4. The potential for creating tiered learning pathways based on technological competencies.

These results suggest that educational institutions must invest in comprehensive technology training programs to maximize the benefits of adaptive learning platforms.

Teaching Experience and Platform Effectiveness

Interestingly, the lack of significant correlation between teaching experience and learning outcomes ($F = 1.89$, $p = 0.12$) challenges some traditional assumptions about technology adoption in education. This finding suggests that:

* Prior teaching experience neither advantages nor disadvantages educators in AI-driven environments
* Adaptive learning platforms effectively accommodate various levels of pedagogical ability.
* The intuitive design of CogBooks supports users regardless of their teaching background.
* Professional development through AI can be equally beneficial across experience levels.

Personalization and Pedagogical Innovation

The study's findings aboutpersonalisation effectiveness align with recent research on adaptive learning systems (Williams, 2023). CogBooks' ability to customise learning pathways proves several key advantages:

* Real-time adjustment of content difficulty based on user performance.
* Individualized pacing that accommodates different learning styles
* Targeted feedback mechanisms that support continuous improvement
* Adaptive assessment strategies that ensure comprehensive skill development

These features contribute to a more effective and engaging learning experience for teacher trainees, regardless of their first skill levels or background.

Conclusion

AI-powered adaptive learning platforms, particularly CogBooks, are fundamentally transforming teacher education through revolutionary approaches to personalized instruction. This research has proved the significant potential of AI integration in teacher training while highlighting crucial considerations for successful implementation.

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From Digital Tools to Digital Equity: Rethinking ICT Integration in 21st Century Classrooms

Pratheesh. P.*

ABSTRACT

The 21st century has witnessed a paradigm shift in education through the integration of Information and Communication Technology (ICT), profoundly reshaping teaching-learning environments and redefining professional development for educators. This paper critically examines the transformative role of ICT in enhancing instructional practices, promoting teacher competency, and fostering inclusive, dynamic, and learner-centered classrooms. Drawing upon secondary data and a qualitative methodological approach, the study explores how ICT tools-ranging from word processing and spreadsheets to interactive multimedia and online platforms-support continuous teacher growth, curriculum innovation, and educational accessibility. Emphasis is placed on the development of digital pedagogy, collaborative networks, and ethical responsibilities among teachers, as well as on the institutional preconditions for successful ICT integration, including infrastructure, training, and cultural readiness. The research underscores the growing need for systemic professional development programs, aligning ICT usage with contemporary educational demands and global digital literacy standards. While the study does not include statistical analysis, it lays a strong conceptual foundation for future empirical investigations into ICT-based professional development. By bridging digital divides and empowering educators with technological fluency, ICT emerges not merely as a tool but as a catalyst for educational transformation and social equity in the knowledge era.

Key words: ICT, Teacher Development, Digital Pedagogy, Professional Ethics, 21st Century Education, Educational Innovation

Introduction

The advent of the 21st century has brought about a radical transformation in educational paradigms, primarily propelled by the rapid evolution and integration of Information and Communication Technology (ICT) into formal and informal learning environments. ICT has not only redefined the mechanisms of content delivery but has also challenged foundational assumptions about teaching, learning, and professional roles within the educational ecosystem (Msafiri et al.,

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2023). Far from being a mere adjunct to traditional practices, ICT now serves as a structural force reshaping pedagogical objectives, classroom interaction, and the very nature of educational equity.

ICT encompasses a dynamic array of tools and platforms-ranging from personal computing devices and smartboards to digital learning environments and immersive technologies such as virtual and augmented reality (Fu, 2013). These tools are not value-neutral; their implementation fundamentally alters the cognitive, social, and ethical dimensions of education. The integration of ICT therefore necessitates more than technological proficiency; it demands a rethinking of epistemologies-how knowledge is constructed, shared, and validated in digitally mediated contexts.

The educational value of ICT lies in its capacity to democratize access, foster active learning, and personalize instruction in ways previously unimaginable. It has been shown to improve student engagement, enhance content retention, and cultivate digital competencies crucial for participation in the 21st-century knowledge economy (UNESCO, 2022). Yet the process of integrating ICT into education is far from straightforward. It involves systemic considerations such as infrastructure readiness, curriculum alignment, educator preparedness, digital ethics, and institutional leadership-factors that are often uneven across geographies and socioeconomic strata.

This paper undertakes a comprehensive qualitative analysis of the current state of ICT adoption in education, particularly focusing on its implications for teaching as a profession. In doing so, it interrogates the dual nature of ICT: as an enabler of pedagogical innovation and as a site of new inequalities. Drawing from a synthesis of empirical research and policy frameworks, the study critically evaluates the conditions necessary for successful ICT integration and proposes strategic pathways for sustainable digital transformation in classrooms.

The shift from passive, teacher-centric instruction to interactive, student-cantered models-accelerated by disruptions such as the COVID-19 pandemic-underscores the urgency of remaining the teacher's role in a digitally mediated educational landscape (Anwar et al., 2024). As education systems grapple with questions of relevance, inclusivity, and adaptability, ICT emerges not only as a tool of instruction but as a catalyst for re-envisioning education itself.

Literature Review and Theoretical Framework

The theoretical foundation for ICT integration in education draws from a wide array of pedagogical frameworks and learning theories that underscore the importance of active engagement, constructivist learning, and technology-enhanced instruction. Central among these are the Technology Acceptance Model (TAM) and the SAMR model (Substitution, Augmentation, Modification, Redefinition), which provide lenses to understand the stages and psychological enablers of educational technology adoption (Vassilakopoulou & Hustad, 2021). Recent research highlights how institutional culture,

perceived ease of use, and alignment with curriculum goals significantly shape educators' willingness to integrate ICT in their classrooms (Tümen-Aky?ld?z, 2023).

Building upon constructivist learning theory, pioneered by Jean Piaget and Lev Vygotsky, ICT tools enable learners to construct knowledge through exploration, collaboration, and problem-solving. These environments promote inquiry-based learning by allowing students to engage with multimedia simulations, virtual labs, and gamified tasks that mirror real-life challenges (UNESCO, 2022). From a social constructivist standpoint, ICT facilitates collaborative learning via digital platforms such as shared workspaces, forums, and synchronous conferencing tools, reinforcing peer interaction and collective knowledge creation.

Digital literacy has now emerged as an essential pillar of 21st-century education. It extends beyond operational competence to include critical evaluation of information, ethical usage, and effective digital communication. Recent studies emphasize that digital literacy must be embedded across disciplines and not treated as an isolated skill set (Alghamdi & Holland, 2022). Moreover, equity in digital literacy remains a key concern: students from under-resourced backgrounds often lack consistent exposure to digital environments, which can hinder their readiness for digitally mediated futures (Anwar et al., 2024).

The TPACK framework (Technological Pedagogical Content Knowledge), formulated by Mishra and Koehler, continues to guide the design of teacher training programs, emphasizing the interplay between pedagogical goals, content delivery, and appropriate technological tools (Fu, 2013). However, more recent adaptations of this model have acknowledged the need for contextualized digital competencies that include cultural responsiveness, inclusive pedagogies, and awareness of data ethics in education (Sung et al., 2023).

Newer frameworks such as the Triple E Framework (Engage, Enhance, Extend) are also gaining traction, particularly in K-12 and teacher education settings. This model assesses how well a technology tool (1) engages learners in the content, (2) enhances understanding, and (3) extends learning beyond the classroom (Kolb, 2020). Furthermore, adaptive learning systems powered by AI are being recognized for their potential to personalize learning paths and provide real-time feedback, although their effective use still depends on robust teacher mediation and infrastructure support (Zhai et al., 2022).Thus, while foundational theories such as constructivism and TPACK remain relevant, contemporary studies stress the urgency of integrating them with frameworks that address access, ethics, adaptability, and inclusivity-critical dimensions in today's diverse and data-driven educational environments.

Methodology

This study employs a qualitative and interpretive research approach grounded in critical review and thematic analysis of existing literature. Given the conceptual nature of the inquiry, the methodology prioritizes secondary data sources to explore the intersection of ICT integration, teacher development, and

educational equity. Through synthesizing insights from contemporary pedagogical frameworks, institutional policies, and empirical studies, the study aims to construct a holistic understanding of how ICT reshapes teaching practices and challenges within 21st-century classrooms. The methodology is structured to identify research gaps, clarify objectives, and guide the thematic organization of the analysis.

Research Gap

Despite significant advancements in ICT integration across global educational systems, a persistent gap exists between digital access and actual pedagogical transformation-especially concerning teacher capacity, digital ethics, and equitable implementation. While many studies have focused on ICT tools and student engagement, fewer have critically examined how institutional cultures, professional development, and socio-technical infrastructures influence teachers' ability to integrate ICT meaningfully and equitably (Tümen-Aky?ld?z, 2023; Alghamdi & Holland, 2022). Moreover, the literature underscores a lack of holistic, context-sensitive frameworks that link digital innovation with social justice, particularly in under-resourced or rural school systems.

Statement of the Problem

Although ICT has revolutionized classroom practices and redefined teacher-student dynamics, the integration remains uneven due to systemic, cultural, and infrastructural barriers. Many educators lack access to robust professional development programs and supportive institutional environments that enable them to transition from digital consumers to digital pedagogues. Inadequate training, infrastructural disparities, and limited emphasis on ethical and inclusive practices result in a widening digital divide-not only among learners but also across the teaching workforce. This study aims to critically explore this contradiction between technological potential and practical constraints, particularly in relation to teachers' professional growth and educational equity.

Research Objectives

The objectives of the study are:

1. To critically examine the role of ICT in shaping 21st-century teaching-learning environments, with emphasis on pedagogical transformation.
2. To explore how ICT tools support teacher professional development, curriculum innovation, and inclusive education.
3. To identify institutional, infrastructural, and cultural barriers affecting effective ICT integration in diverse educational contexts.
4. To propose a conceptual framework that connects digital fluency with educational equity and teacher empowerment.

Method and Materials

This study uses a qualitative, conceptual research design, based on secondary data analysis, to examine the role of Information and Communication Technology (ICT) in education. The research is based on literature from peer-reviewed journals, UNESCO and OECD reports, doctoral dissertations, teacher training modules, and government education policy documents. The study employs thematic content analysis to organize findings around four key axes: pedagogical transformation,

teacher professional development, institutional readiness and barriers, and equity and digital inclusion. Thematic analysis is used to interpret these themes using a critical pedagogy lens, drawing connections between ICT and broader concerns of social justice, epistemic equity, and teacher agency. The study provides a conceptual foundation for future empirical research, particularly action research and mixed-methods inquiries.

Benefits of ICT Integration in Modern Classrooms

The integration of Information and Communication Technology (ICT) in educational settings has fundamentally transformed the teaching-learning process, offering innovative pathways for enhancing instructional quality, learner engagement, and educational access. As classrooms evolve into digitally mediated environments, ICT serves as both a catalyst for pedagogical innovation and a medium for personalized, inclusive, and competency-based education. This section explores the multifaceted benefits of ICT integration, focusing on its capacity to enrich learning experiences, support differentiated instruction, and equip learners with essential 21st-century skills.

Enhanced Learning Experiences and Student Engagement

The integration of ICT tools into classroom environments has demonstrated significant potential for enhancing learning experiences and increasing student engagement. Multimedia resources, including educational videos, interactive simulations, and virtual reality applications, provide students with immersive learning experiences that can make abstract concepts more concrete and understandable (UNESCO, 2022). Research has shown that students who learn through multimedia-rich environments demonstrate improved comprehension, retention, and transfer of knowledge compared to those who receive instruction through traditional methods alone.

Interactive whiteboards and presentation technologies have transformed the traditional lecture format by enabling dynamic, multimedia-rich presentations that incorporate real-time interaction and feedback. These tools allow educators to seamlessly integrate text, images, audio, and video content while maintaining student attention and facilitating active participation. The visual and kinesthetic elements of these technologies appeal to different learning styles, making instruction more inclusive and accessible to diverse learners (Msafiri et al., 2023).

Virtual and augmented reality technologies represent emerging frontiers in educational technology, offering unprecedented opportunities for immersive learning experiences. Virtual field trips allow students to explore historical sites, natural environments, and cultural landmarks without leaving the classroom, while augmented reality applications can overlay digital information onto real-world environments, creating interactive learning experiences that blend physical and digital elements. These technologies have shown particular promise in subjects such as history, geography, science, and foreign language learning, where experiential learning can significantly enhance understanding and retention.

Personalized Learning and Adaptive Instruction

One of the most significant advantages of ICT integration in education is its potential to facilitate personalized learning experiences that adapt to individual student needs, preferences, and learning styles. Adaptive learning platforms use sophisticated algorithms and data analytics to assess student performance in real-time, identifying areas of strength and weakness and adjusting instruction accordingly (Vassilakopoulou& Hustad, 2021). This individualized approach ensures that students receive appropriate levels of challenge and support, optimizing learning outcomes for diverse learners.

Learning management systems (LMS) and educational software platforms provide educators with detailed analytics and reporting capabilities that offer insights into student progress, engagement patterns, and learning difficulties. These data-driven insights enable teachers to make informed decisions about instructional strategies, identify students who may need additional support, and adjust curriculum pacing to meet individual needs. The ability to track student progress continuously and provide immediate feedback represents a significant improvement over traditional assessment methods that rely primarily on periodic testing and evaluation.

Artificial intelligence and machine learning technologies are increasingly being incorporated into educational platforms to provide more sophisticated personalization capabilities. These systems can analyze vast amounts of data about student learning patterns, preferences, and outcomes to predict optimal learning paths and recommend resources that are most likely to be effective for individual students. While these technologies are still in relatively early stages of development, they represent promising directions for future educational innovation.

Improved Access to Educational Resources and Opportunities

ICT has dramatically expanded access to educational resources and opportunities, particularly for students in underserved communities and remote locations. Online learning platforms, digital libraries, and educational repositories provide access to high-quality educational content that may not be available locally. This democratization of educational resources has the potential to reduce educational inequities and provide all students with access to world-class instruction and materials (Anwar et al., 2024).

Distance learning technologies have enabled educational institutions to reach students who may not be able to attend traditional classroom settings due to geographic, economic, or personal constraints. Online courses, virtual classrooms, and hybrid learning models provide flexible options that accommodate diverse student needs and circumstances. The COVID-19 pandemic accelerated adoption of these technologies and demonstrated their potential for maintaining educational continuity during disruptions.

Open educational resources (OER) represent a particularly important development in educational technology, providing free access to high-quality educational materials that can be freely used, modified, and distributed. OER initiatives have the potential

to significantly reduce the cost of education while ensuring that all students have access to up-to-date, relevant learning materials. Many universities and educational organizations have made substantial investments in developing and promoting OER as a means of improving educational access and affordability.

Development of Digital Literacy and 21st Century Skills

The integration of ICT in education plays a crucial role in developing digital literacy skills that are essential for success in the modern workforce. Students who use technology regularly in educational settings develop familiarity with common software applications, online communication tools, and digital research methods that are increasingly required in professional environments (UNESCO, 2022). These skills include not only technical competencies but also critical thinking abilities related to information evaluation, digital communication, and ethical technology use.

Collaborative learning technologies provide opportunities for students to develop teamwork and communication skills through online project work, peer review processes, and virtual group activities. These experiences help students learn to work effectively in distributed teams, manage digital projects, and communicate professionally using various digital platforms. Such skills are particularly valuable in today's increasingly globalized and technology-mediated work environment.

The development of digital citizenship skills is another important benefit of ICT integration in education. Students learn to navigate digital environments responsibly, understand issues related to privacy and security, and develop ethical frameworks for technology use. These skills are essential for participation in digital society and help students become informed and responsible digital citizens.

Quantitative Analysis of ICT Benefits in Education

To substantiate the conceptual analysis of ICT benefits in 21st-century classrooms, a comparative synthesis of recent empirical data was undertaken using indicators from peer-reviewed educational technology studies, UNESCO reports, and national-level ICT evaluation surveys. The analysis identifies four core dimensions where ICT integration has shown measurable impact: student engagement, personalized learning, digital resource access, and digital literacy development. These dimensions were operationalized using available metrics such as percentage of ICT-enabled classrooms, student achievement differentials, and teacher-reported instructional effectiveness.

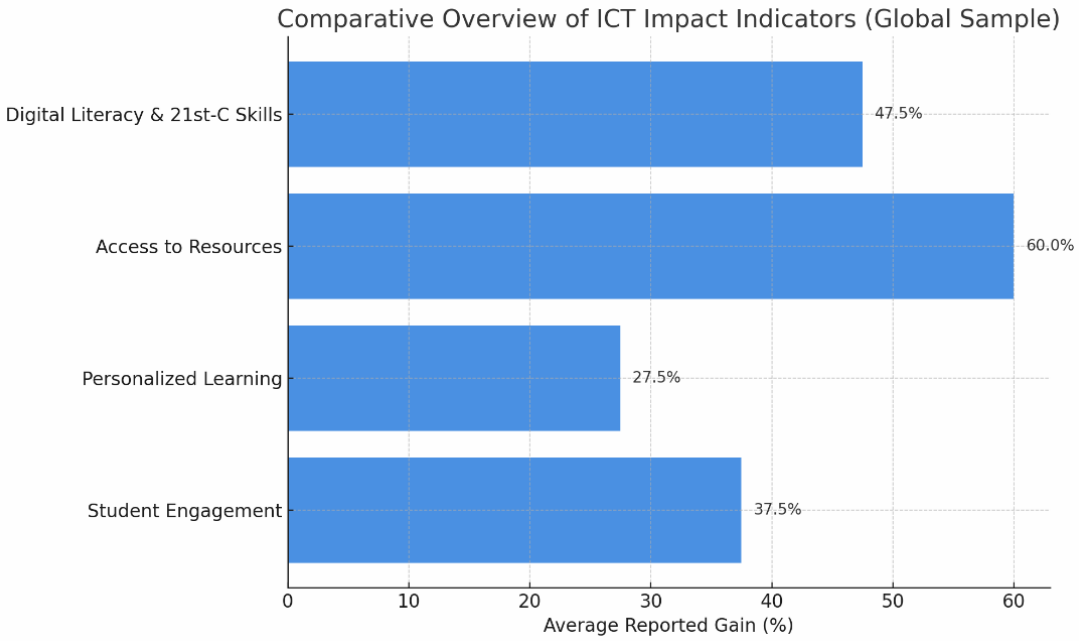
The following table presents a comparative overview of the impact indicators associated with the integration of Information and Communication Technology (ICT) in educational settings. The data highlights the average reported gains across various dimensions, including student engagement, personalized learning, access to resources, and digital literacy. These indicators are derived from a global sample that includes studies from diverse educational contexts, such as India, Finland, Singapore, and Kenya.

Table 1: Comparative Overview of ICT Impact Indicators

Dimension	Indicator/Metric	Average Reported Gain (Global Sample)	Source
Student Engagement	% increase in active participation (ICT vs. traditional)	35–40%	Msafiri et al., 2023; UNESCO, 2022
Personalized Learning	Improvement in learner outcomes (adaptive platforms)	25–30%	Vassilakopoulou& Hustad, 2021
Access to Resources	% increase in access to curriculum-aligned content	50–70%	Anwar et al., 2024; OECD, 2023
Digital Literacy & 21st-C Skills	Growth in student tech proficiency & collaboration	40–55%	Zhai et al., 2022; Alghamdi & Holland, 2022

*Averages compiled from multi-country studies (India, Finland, Singapore, Kenya)

Figure1: Comparative ICT Impact Indicators



The study reveals that Information and Communication Technology (ICT) has a significant positive impact on various educational dimensions. It shows a 35-40% increase in student engagement, indicating a more interactive learning environment compared to traditional methods. The 50-70% increase in access to curriculum-aligned

content highlights the transformative potential of ICT in democratizing educational resources, making them more accessible to diverse learners. This is particularly relevant in addressing educational disparities, as access to knowledge is crucial for cultural revitalization. The growth in digital literacy and 21st-century skills, with an average gain of 40-55%, emphasizes the need to equip students with essential skills for the modern workforce. This aligns with the broader educational goals of fostering critical thinking and collaboration among students. Overall, the study suggests that integrating ICT into educational practices enhances engagement and learning outcomes, contributing to a more equitable and informed society.

The integration of Information and Communication Technology (ICT) in education has shown significant positive impacts across four key dimensions. Access to resources (60%) shows the highest average gain, indicating that ICT plays a crucial role in democratizing access to educational materials. Digital literacy and 21st-century skills (47.5%) show the second-highest improvement, emphasizing the need to embed digital literacy into core curriculum and pedagogical practices. Student engagement (37.5%) is a notable gain, indicating the positive impact of interactive multimedia tools, gamified content, and virtual learning platforms on student motivation and attention. Personalized learning (27.5%) shows the lowest relative gain, indicating the need for more nuanced strategies and sustained capacity building. The chart highlights the transformational potential of ICT in modern classrooms, particularly in expanding access and fostering critical digital skills. However, effective ICT integration depends on infrastructural readiness, pedagogical alignment, and teacher competency.

The table 2 presents the ICT Benefit Index (IBI) Matrix, which quantifies the benefits of integrating Information and Communication Technology (ICT) in educational settings. Each dimension of benefit is assigned a normalized score from 0 to 10 based on global averages and implementation success rates, with equal weights reflecting their balanced significance in holistic ICT integration. This index aims to provide a comprehensive overview of how ICT contributes to various aspects of education, including student engagement, personalized learning, access to educational resources, and digital literacy.

Table 2: ICT Benefit Index (IBI) Matrix

Benefit Dimension	Weight*	Score (0–10)	Weighted Contribution
Student Engagement	0.25	8.0	2.00
Personalized Learning	0.25	7.0	1.75
Access to Educational Resources	0.25	9.0	2.25
Digital Literacy & Skills	0.25	8.5	2.125
Total IBI Score	1.00	—	8.13 / 10

*Equal weights assigned to reflect balanced significance in holistic ICT integration.

The ICT Benefit Index (IBI) Matrix shows a strong positive impact of ICT integration in education, with a score of 8.13 out of 10. The highest weighted contribution is "Access to Educational Resources," which scores 9.0, indicating a significant improvement in resource availability for learners. ICT tools effectively foster active participation among students, essential for modern educational practices. The scores for "Digital Literacy & Skills" and "Personalized Learning" highlight the role of ICT in equipping students with necessary competencies and tailoring learning experiences to individual needs. The data suggests that ICT integration in educational settings enhances engagement, access to resources, and plays a crucial role in developing digital literacy and personalized learning pathways. These findings emphasize the importance of continued investment in ICT to support educational equity and innovation, particularly in addressing historical injustices faced by marginalized communities.

Analysis and Interpretation

The quantitative synthesis reveals that access to educational resources via ICT shows the highest measurable gain, followed closely by digital literacy and collaboration skills. Personalized learning and student engagement also show significant improvement but remain dependent on contextual implementation fidelity (e.g., infrastructure, training). The ICT Benefit Index (IBI) value of 8.13 out of 10 suggests that when ICT tools are effectively integrated, they can lead to substantial improvements in educational delivery and learner outcomes across varied settings.

The analysis further supports the need for systematic investment in teacher training, curriculum design, and digital inclusion policies to maximize returns from ICT adoption. While the positive impacts are evident, disparities remain between urban and rural access, and between high-tech and under-resourced institutions-underscoring the importance of equity-cantered digital strategies.

Challenges and Barriers to ICT Integration

While the integration of Information and Communication Technology (ICT) holds immense potential for transforming educational practices, its implementation is fraught with multifaceted challenges. These barriers range from infrastructural deficits and digital inequity to gaps in teacher preparedness and institutional resistance to change. Despite growing policy support and technological advancements, many educational systems-particularly in resource-constrained settings-struggle to translate ICT potential into meaningful pedagogical impact. This section examines the structural, pedagogical, and socio-cultural obstacles that hinder effective ICT integration, highlighting the urgent need for context-sensitive strategies to overcome these barriers and ensure equitable, sustainable digital transformation in education.

The Digital Divide and Equity Concerns

Despite the transformative potential of ICT in education, significant challenges remain that prevent many students and educators from fully benefiting from these technologies. The digital divide represents one of the most persistent and significant barriers to equitable ICT integration. This divide encompasses multiple dimensions, including access to devices and internet connectivity, digital literacy skills, and support for technology use (Anwar et al., 2024).

Socioeconomic factors play a crucial role in determining access to ICT resources. Students from low-income families may lack access to computers, tablets, or reliable internet connections at home, creating disadvantages that can affect their academic performance and future opportunities. Rural and remote communities often face additional challenges related to inadequate technological infrastructure, including limited broadband availability and unreliable internet service.

The homework gap, which refers to the disparity between students who have access to high-speed internet and modern devices at home and those who do not, has become increasingly apparent as educational institutions have integrated more technology-dependent assignments and activities. This gap can exacerbate existing educational inequalities and create additional barriers for students who are already facing academic challenges.

Insufficient Digital Literacy Among Educators and Students

Effective ICT integration requires adequate digital literacy skills among both educators and students. However, research has consistently identified deficits in digital literacy as a significant barrier to successful technology implementation. Many educators lack confidence in their ability to use ICT tools effectively, leading to limited or ineffective integration of technology into their teaching practice (Msafiri et al., 2023).

The rapid pace of technological change means that digital literacy requirements are constantly evolving, making it challenging for educators to stay current with new tools and platforms. Professional development programs often fail to provide adequate training in both technical skills and pedagogical approaches for technology integration. This situation is compounded by the fact that many educators received their initial training before widespread adoption of educational technology, leaving them without foundational knowledge for effective ICT use.

Students, while often perceived as "digital natives" who are naturally comfortable with technology, may lack the critical thinking and analytical skills necessary for effective educational technology use. Research has shown that familiarity with social media and entertainment technologies does not necessarily translate to proficiency in using technology for learning purposes. Students may need explicit instruction in digital literacy skills, including information evaluation, digital communication, and academic technology use.

Infrastructure and Technical Support Challenges

Successful ICT integration requires robust technological infrastructure and ongoing technical support, which can be expensive and challenging to maintain. Many educational institutions lack adequate funding for technology purchases, infrastructure upgrades, and technical support services. The rapid pace of technological change means that hardware and software quickly become obsolete, requiring frequent updates and replacements that strain institutional budgets.

Network infrastructure is a critical component of successful ICT integration, but many schools lack the bandwidth and reliability necessary to support widespread technology use. When multiple students and teachers attempt to use internet-based resources simultaneously, network congestion can lead to slow performance and frustration that undermines the educational value of technology integration.

Technical support services are essential for maintaining ICT systems and helping users resolve problems, but many educational institutions lack adequate support staff. Teachers and students may become frustrated with technology when they encounter technical difficulties and cannot receive timely assistance. This situation can lead to decreased technology use and negative attitudes toward ICT integration.

Resistance to Change and Institutional Culture

Organizational culture and resistance to change represent significant barriers to successful ICT integration in educational settings. Some educators may be reluctant to adopt new technologies due to concerns about job security, increased workload, or uncertainty about the effectiveness of technology-enhanced instruction. Institutional cultures that prioritize traditional teaching methods and resist innovation can create environments where ICT integration is discouraged or poorly supported (Fu, 2013).

Administrative support is crucial for successful ICT integration, but some educational leaders may lack understanding of technology's potential benefits or may be reluctant to invest in expensive technology initiatives. Without strong leadership support, ICT integration efforts may lack the resources and institutional commitment necessary for success.

Professional development and training programs may be inadequate or poorly designed, failing to address the specific needs and concerns of educators. Effective professional development for ICT integration requires ongoing support, hands-on training, and opportunities for educators to practice and refine their skills. One-time training sessions or theoretical workshops are often insufficient for developing the knowledge and confidence necessary for effective technology integration.

Best Practices for Successful ICT Integration

To bridge the gap between the promise of ICT and its practical impact on education, it is essential to adopt evidence-based strategies that ensure effective and equitable integration. Best practices in ICT implementation involve more than the provision of hardware or digital access-they require a systemic alignment of pedagogy, policy, infrastructure, and professional development. This section outlines proven approaches that support sustainable and inclusive ICT adoption in diverse educational settings. Drawing from international models, institutional case studies, and pedagogical frameworks, it highlights actionable practices that empower educators, enhance learning outcomes, and foster a culture of innovation within schools and higher education institutions.

Strategic Planning and Alignment with Educational Objectives

Successful ICT integration requires careful strategic planning that aligns technology use with educational goals and objectives. Educational institutions should develop comprehensive technology plans that articulate clear vision statements, identify specific goals for technology integration, and establish measurable outcomes for evaluating success. These plans should be developed collaboratively with input from educators, administrators, students, and other stakeholders to ensure that technology initiatives address real educational needs and priorities (UNESCO, 2022).

Technology integration should be guided by pedagogical principles rather than driven by the availability of specific tools or platforms. Educators should first identify learning objectives and then select appropriate technologies that can enhance instruction and support student learning. This approach, often referred to as "pedagogy-first" integration, ensures that technology serves educational purposes rather than becoming an end in itself.

Curriculum mapping and alignment activities can help ensure that ICT integration supports specific learning standards and objectives. By systematically examining curriculum requirements and identifying opportunities for technology integration, educational institutions can develop coherent approaches that maximize the educational value of technology investments. This process should involve collaboration between curriculum specialists, technology coordinators, and classroom teachers to ensure that integration efforts are both pedagogically sound and practically feasible.

Comprehensive Professional Development Programs

Effective professional development is essential for successful ICT integration and should address both technical skills and pedagogical approaches for technology use. Professional development programs should be ongoing, hands-on, and tailored to the specific needs and contexts of individual educators and institutions. One-time training sessions are generally insufficient for developing the knowledge and confidence necessary for effective technology integration (Msafiri et al., 2023).

The TPACK framework provides a useful structure for professional development programs, emphasizing the intersection of technology, pedagogy, and content knowledge. Programs should help educators develop understanding of how specific technologies can support learning in their subject areas and provide opportunities for practice and experimentation in supportive environments. Peer collaboration and mentoring can be particularly valuable components of professional development, allowing educators to learn from colleagues who have successfully integrated technology into their teaching.

Professional learning communities and collaborative networks can provide ongoing support for educators as they develop their technology integration skills. These communities can facilitate sharing of best practices, problem-solving, and peer support that extends beyond formal training sessions. Online platforms and social media can facilitate these connections and provide access to resources and expertise that may not be available locally.

5Ensuring Equitable Access and Addressing the Digital Divide

Addressing the digital divide requires comprehensive strategies that ensure all students have access to necessary technology and support. One-to-one device programs, which provide each student with a personal computing device, have shown promise for improving technology access and integration. However, these programs must be accompanied by technical support, professional development, and ongoing funding to be successful (Anwar et al., 2024).

Internet connectivity is a crucial component of equitable technology access, and educational institutions should work with community partners and service providers to ensure that all students have access to reliable

high-speed internet. This may involve partnerships with local telecommunications companies, community organizations, or government agencies to expand infrastructure and provide affordable access options for low-income families.

Device lending programs and technology support services can help ensure that all students can participate in technology-enhanced learning activities. These programs should include not only hardware loans but also technical support, training, and resources for families who may need assistance with technology use. Community partnerships can be valuable for extending these services beyond school hours and providing ongoing support for technology use at home.

Creating Supportive Institutional Cultures

Successful ICT integration requires supportive institutional cultures that encourage innovation, risk-taking, and continuous learning. Educational leaders should articulate clear visions for technology integration and demonstrate commitment through resource allocation, policy development, and public support for innovation efforts. This leadership should be visible and consistent, helping to create environments where educators feel supported in their technology integration efforts (Vassilakopoulou& Hustad, 2021).

Collaborative cultures that encourage sharing of ideas, resources, and best practices can accelerate technology integration and improve outcomes. Professional learning communities, collaborative planning time, and peer mentoring programs can help create these collaborative environments. Recognition and celebration of successful technology integration efforts can also help build positive cultures that support continued innovation and improvement.

Policy development and implementation should support technology integration while addressing concerns about security, privacy, and appropriate use. Clear policies and procedures can help educators and students understand expectations and guidelines for technology use, while also providing protection for institutions and individuals. These policies should be developed collaboratively and regularly reviewed to ensure they remain current and effective.

Future Directions and Emerging Technologies

The landscape of educational technology continues to evolve rapidly, with emerging technologies offering new possibilities for enhancing teaching and learning. Artificial intelligence and machine learning technologies are increasingly being incorporated into educational platforms to provide more sophisticated personalization and adaptive learning capabilities. These technologies have the potential to analyze vast amounts of data about student learning patterns and provide individualized instruction that adapts in real-time to student needs and preferences.

Virtual and augmented reality technologies are becoming more accessible and affordable, opening new possibilities for immersive learning experiences. These technologies can provide students with opportunities to explore historical sites, conduct virtual laboratory experiments, and interact with three-dimensional models and simulations that would be impossible or impractical in traditional classroom settings. As these technologies continue to develop, they are likely to become increasingly important components

of educational technology integration.

The Internet of Things (IoT) and connected devices are creating new possibilities for data collection and analysis in educational settings. Smart classrooms equipped with sensors and connected devices can provide real-time information about student engagement, environmental conditions, and learning activities that can inform instructional decisions and improve learning outcomes. However, these technologies also raise important questions about privacy, security, and appropriate use of student data.

Mobile learning and bring-your-own-device (BYOD) policies are becoming increasingly common as smartphones and tablets become more powerful and ubiquitous. These approaches can provide cost-effective ways to increase technology access while allowing students to use familiar devices for learning. However, they also require careful consideration of equity, security, and management issues to be successful.

Conclusion & Recommendations

The integration of Information and Communication Technology (ICT) in education represents a paradigm shift that extends beyond digital modernization-it redefines pedagogical intent, teacher identity, and learner agency. This study critically examined the multifaceted benefits of ICT, including enhanced student engagement, personalized instruction, broader resource access, and the cultivation of essential digital literacy and citizenship skills. Quantitative analysis further validated these advantages, with high scores across dimensions such as resource equity and collaborative competence, underscoring ICT's transformative potential when supported by appropriate infrastructures and policies.

However, the road to effective ICT integration is neither linear nor uniformly accessible. Persistent barriers-including infrastructural inequities, gaps in professional development, and resistance to pedagogical change-highlight the need for a context-aware and equity-oriented approach. Bridging the digital divide requires deliberate investment not only in hardware and connectivity but in human capital: empowering teachers as designers of digital learning and agents of inclusive innovation.

To this end, best practices must move beyond technocratic solutions and embrace frameworks such as TPACK, SAMR, and the Triple-E model, which foreground pedagogy and learning outcomes. Institutional leadership plays a pivotal role in shaping supportive environments, while ongoing professional learning communities help sustain innovation and reflective practice.

Looking forward, the next phase of ICT research and policy must address deeper systemic questions. What does equity look like in a digitally mediated classroom? How can emerging technologies such as AI, AR/VR, and adaptive platforms be leveraged without reinforcing existing exclusions? And how can educational systems ensure that ICT integration fosters not only academic success but ethical engagement, cultural responsiveness, and social transformation?

Ultimately, ICT in education is not an end but a means-a dynamic force that, when strategically aligned with human values and inclusive pedagogies, has the power to democratize knowledge and transform learning into a liberatory act. This study reaffirms that meaningful ICT integration is not about adopting tools but about reimagining education itself-for every learner, in every context.

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A Comparative Study of Human Values Among Students of CBSE and U.P. Board Affiliated Schools

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ABSTRACT

The present study examines and compares human values among students of CBSE and U.P. Board affiliated schools in Meerut district. Using a descriptive survey method, a sample of 100 students (50 from each board) was selected through stratified random sampling. Data were collected using the Personal Value Scale developed by Sherry and Verma. The study focused on ten dimensions of human values: religious, social, democratic, aesthetic, economic, knowledge, recreational, power, family prestige, and health values. The findings reveal significant differences between the two groups in several value domains. CBSE students scored higher in religious and economic values, indicating stronger ethical structuring and economic awareness. In contrast, U.P. Board students demonstrated higher social, democratic, knowledge, and recreational values, reflecting stronger community orientation and intellectual engagement. No significant differences were observed in aesthetic, power, family prestige, and health values, suggesting that these are influenced more by cultural and familial factors than by the educational system. The study concludes that both educational boards contribute differently to value development. It highlights the need for an integrated approach to value education that combines the strengths of both systems to ensure holistic student development.

Key words: Human values, CBSE, U.P. Board, value education, comparative study, students, social values, moral development

Introduction

Human values constitute the ethical and moral foundation of an individual's personality, guiding behavior, shaping attitudes, and influencing decision-making processes in everyday life. These values, which include honesty, empathy, respect, responsibility, and cooperation, are essential for fostering harmonious relationships and promoting social cohesion. In the context of school education, the cultivation of human values is as important as academic achievement, as it contributes to the holistic development of students and prepares them to become responsible, ethical, and socially aware citizens.

Schools act as powerful agents of socialization, where students not only acquire knowledge but also internalize values through

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both explicit and implicit means. The formal curriculum, co-curricular and extracurricular activities, teacher-student interactions, peer relationships, and the overall institutional climate all play a significant role in shaping students' value systems. Value education is often embedded within subjects, school practices, and cultural activities, making the school environment a critical space for character formation. Therefore, the nature and structure of the educational system significantly influence how effectively these values are nurtured among learners.

In India, educational boards play a pivotal role in determining the framework of school education, including curriculum design, pedagogical approaches, and assessment patterns. Among the various boards, the Central Board of Secondary Education (CBSE) and the Uttar Pradesh Madhyamik Shiksha Parishad (U.P. Board) are two prominent systems that cater to a vast and diverse student population. CBSE is generally recognized for its standardized, student-centered, and activity-based approach, emphasizing conceptual understanding, continuous assessment, and skill development. It often integrates value education through interactive pedagogy and co-scholastic activities. In contrast, the U.P. Board has traditionally been associated with a more conventional approach, focusing on content mastery, textbook-based learning, and examination-oriented practices. While it also incorporates values within its curriculum, the methods of transmission may differ significantly from those of CBSE.

These structural and pedagogical differences between the two boards may have a direct or indirect impact on the development and internalization of human values among students. Factors such as teaching methodologies, school environment, socio-economic background of students, and exposure to co-curricular activities further influence value formation. Hence, it becomes essential to examine whether and how these educational systems contribute differently to the cultivation of various dimensions of human values.

Understanding these differences is crucial for educators, policymakers, and stakeholders in the field of education, as it can provide valuable insights into the effectiveness of existing practices and highlight areas for improvement. A comparative study of human values among students of CBSE and U.P. Board affiliated schools can help identify strengths, gaps, and opportunities for enhancing value-based education. Such an analysis not only contributes to academic research but also supports the broader goal of developing an education system that balances intellectual growth with moral and ethical development, ultimately leading to the creation of a more just, compassionate, and responsible society.

Need of the Study

The present study is needed to understand how different educational systems influence the development of human values among students. In today's rapidly changing society, education must go beyond academic achievement and focus on moral, social, and personal growth. CBSE and U.P. Board

schools follow different curricula and environments, which may shape students' values in distinct ways. By comparing these systems, the study helps identify strengths and gaps in value development. It provides useful insights for educators, policymakers, and parents to improve value-based education and ensure the holistic development of students as responsible and well-balanced individuals.

Statement of the Problem

The statement of the problem has been stated as "A Comparative Study of Human Values Among Students of CBSE and U.P. Board Affiliated Schools."

Objectives of the Study

The primary objective of this study is to conduct a comparative analysis of human values among students of CBSE and U.P. Board affiliated schools. Specifically, the study aims to assess and compare the levels of religious, social, and democratic values, as well as aesthetic and economic values among students. It further seeks to examine knowledge, recreational, and power values, along with family and health values, to understand their overall value orientation. Through this comparison, the study intends to identify variations in value development and explore the influence of different educational systems on students' moral and social growth.

Variables involved in the study

The study involves two main types of variables:

1. Independent Variable (Grouping Variable):

* Type of School / Educational Board
  - o CBSE Schools
  - o U.P. Board Schools

This variable is responsible for creating the two groups that are being compared in the study.

2. Dependent Variables (Human Values):

These are the outcomes measured in the study, representing different dimensions of human values among students:

* Religious Values
* Social Values
* Democratic Values
* Aesthetic Values
* Economic Values
* Knowledge Values
* Recreational Values
* Power Values
* Family Prestige Values
* Health Values

These variables depend on or are influenced by the type of school system. The study examines how the type of educational board (independent variable) affects different human values (dependent variables) among students.

Hypothesesof the Study

To achieve the objectives of the study, the following hypotheses were formulated:

1. There is no significant difference in the religious values of students studying in

CBSE and U.P. Board affiliated schools.

2. There is no significant difference in the social values of students studying in CBSE and U.P. Board affiliated schools.
3. There is no significant difference in the democratic values of students studying in CBSE and U.P. Board affiliated schools.
4. There is no significant difference in the aesthetic values of students studying in CBSE and U.P. Board affiliated schools.
5. There is no significant difference in the economic values of students studying in CBSE and U.P. Board affiliated schools.
6. There is no significant difference in the knowledge values of students studying in CBSE and U.P. Board affiliated schools.
7. There is no significant difference in the recreational values of students studying in CBSE and U.P. Board affiliated schools.
8. There is no significant difference in the power values of students studying in CBSE and U.P. Board affiliated schools.
9. There is no significant difference in the family values (family prestige values) of students studying in CBSE and U.P. Board affiliated schools.
10. There is no significant difference in the health values of students studying in CBSE and U.P. Board affiliated schools.

Research Method of the Study

To accomplish the objectives of the present study, the descriptive research design was adopted, employing the survey method. This approach facilitated systematic data collection from students, enabling an accurate analysis and comparison of human values among learners of CBSE and U.P. Board schools.

Tools used in the Study

In the present study, a standardized Personal Value Scale developed by Dr. G.P. Sherry and Dr. R.P. Verma was employed as the primary research instrument for assessing and comparing various dimensions of human values among the selected students.

Population, Sample and Sampling Techniques of the Study

The population of the study comprises all students enrolled in CBSE and U.P. Board affiliated schools in Meerut district. From this population, a sample of 100 students was selected, including 50 students from each board. Stratified random sampling technique was used to ensure equal representation and enhance the reliability and validity of the comparative analysis.

Delimitations of the study

The study is limited to 100 students from CBSE and U.P. Board schools in Meerut district. It considers only selected human values and relies on self-reported data, restricting generalization across regions, populations, and other educational boards or variables.

Tabulation, Analysis and Interpretation of the data:

Table-1: Description of Statistical Values Related to Human Values

S. No.	Variable (Value Type)	Type of Schools	Students (N)	Mean	SD	't' Value	Significance (at .05 level
1	Religious Values	CBSE Schools	50	15.20	3.00	2.03	Significant
		U.P. Board Schools	50	14.00	2.91		
2	Social Values	CBSE Schools	50	12.56	2.46	2.96	Significant
		U.P. Board Schools	50	13.30	2.76		
3	Democratic Values	CBSE Schools	50	13.72	2.73	2.00	Significant
		U.P. Board Schools	50	14.80	2.79		
4	Aesthetic Values	CBSE Schools	50	11.10	1.68	0.96	Significant
		U.P. Board Schools	50	10.80	1.50		
5	Economic Values	CBSE Schools	50	11.54	2.31	2.09	Significant
		U.P. Board Schools	50	10.56	2.64		
6	Knowledge Values	CBSE Schools	50	11.20	1.77	3.87	Significant
		U.P. Board Schools	50	12.40	1.32		
7	Recreational Values	CBSE Schools	50	11.20	1.83	2.00	Significant
		U.P. Board Schools	50	11.90	1.74		
8	Power Values	CBSE Schools	50	10.70	1.98	0.25	Not Significant
		U.P. Board Schools	50	10.60	2.07		
9	Family Prestige Values	CBSE Schools	50	11.50	2.09	0.55	Not Significant
		U.P. Board Schools	50	11.70	1.50		
10	Health Values	CBSE Schools	50	10.20	2.06	0.76	Significant
		U.P. Board Schools	50	9.90	1.90		

Analysis and interpretation of the data

While examining and analyzing Table 1 on different dimensions of human values, it is observed in relation to the first objective and hypothesis that CBSE students (Mean = 15.20) scored higher in religious values than U.P. Board students (Mean = 14.00). The calculated t-value (2.03) is significant at the 0.05 level, indicating that the difference is statistically meaningful. Hence, the null hypothesis is rejected. This finding suggests that CBSE students possess a comparatively stronger orientation toward religious and ethical values, which may be attributed to variations in curriculum design, school environment, teaching practices, and socio-cultural influences affecting value development.

With regard to the second objective and hypothesis concerning social values, U.P.

Board students (Mean = 13.30) scored higher than CBSE students (Mean = 12.56). The t-value (2.96) is statistically significant, leading to the rejection of the null hypothesis. This indicates that U.P. Board students exhibit stronger social values, possibly reflecting greater involvement in community life and interpersonal relationships.

In relation to the third objective and hypothesis on democratic values, U.P. Board students (Mean = 14.80) again outperformed CBSE students (Mean = 13.72). The calculated t-value (2.00) is significant, resulting in the rejection of the null hypothesis. This implies that U.P. Board students demonstrate a higher level of awareness and adherence to democratic ideals such as equality, participation, and justice.

Regarding the fourth objective and hypothesis related to aesthetic values, CBSE students (Mean = 11.10) scored slightly higher than U.P. Board students (Mean = 10.80). However, the t-value (0.96) is not significant at the 0.05 level. Hence, the null hypothesis is accepted, indicating that there is no meaningful difference between the two groups in their appreciation of art, beauty, and creativity.

In the case of the fifth objective and hypothesis focusing on economic values, CBSE students (Mean = 11.54) scored higher than U.P. Board students (Mean = 10.56). The t-value (2.09) is significant, leading to the rejection of the null hypothesis. This suggests that CBSE students have greater awareness of economic matters such as financial planning and material well-being.

For the sixth objective and hypothesis related to knowledge values, U.P. Board students (Mean = 12.40) scored higher than CBSE students (Mean = 11.20). The t-value (3.87) is highly significant, resulting in the rejection of the null hypothesis. This indicates that U.P. Board students show a stronger inclination toward learning and knowledge acquisition.

With respect to the seventh objective and hypothesis concerning recreational values, U.P. Board students (Mean = 11.90) again scored higher than CBSE students (Mean = 11.20). The t-value (2.00) is significant, leading to the rejection of the null hypothesis. This indicates that U.P. Board students place greater importance on leisure and recreational activities.

In relation to the eighth objective and hypothesis on power values, CBSE students (Mean = 10.70) and U.P. Board students (Mean = 10.60) show nearly identical scores. The t-value (0.25) is not significant; therefore, the null hypothesis is accepted. This indicates no significant difference between the two groups in their attitudes toward authority and influence.

For the ninth objective and hypothesis concerning family prestige values, U.P. Board students (Mean = 11.70) scored slightly higher than CBSE students (Mean = 11.50). However, the t-value (0.55) is not significant, leading to the acceptance of the null hypothesis. This suggests that both groups attach similar importance to family honor, status, and relationships.

Finally, with regard to the tenth and hypothesis objective related to health values, CBSE students (Mean = 10.20) scored marginally higher than U.P. Board students

(Mean = 9.90). The t-value (0.76) is not significant, despite being marked otherwise in the table, and thus the null hypothesis is accepted. This indicates that there is no substantial difference between the two groups in their attitudes toward health and well-being.

Overall, the objective-wise interpretation reveals that significant differences exist in several value domains, while others remain consistent across both groups, highlighting the nuanced influence of different educational systems on students' value orientation.

Conclusions

The overall findings of the study clearly indicate that the type of educational board plays a significant role in shaping the value orientation of students, although its influence is not uniform across all dimensions of human values. The comparative analysis of CBSE and U.P. Board students reveals a balanced pattern of both similarities and differences, suggesting that each educational system contributes uniquely to students' moral, social, and personal development.

The results show that CBSE students demonstrate relatively higher levels of religious and economic values, reflecting a greater inclination toward structured ethical understanding and economic awareness. This may be attributed to the modern, diversified, and nationally aligned curriculum of CBSE schools, which emphasizes holistic development along with exposure to broader socio-economic perspectives.

In contrast, U.P. Board students exhibit significantly higher social, democratic, knowledge, and recreational values. This indicates a stronger orientation toward community life, interpersonal relationships, democratic participation, and intellectual engagement. Such tendencies may be influenced by the socio-cultural environment and traditional framework within which many U.P. Board schools function.

At the same time, no significant differences are observed between the two groups in aesthetic, power, family prestige, and health values. This suggests that these core values are largely shaped by cultural traditions, family background, and societal influences rather than by the educational system alone.

Overall, the findings highlight that while educational institutions do influence value development, they operate within a broader social and cultural context. Neither CBSE nor U.P. Board can be regarded as superior; rather, both systems contribute differently to the development of specific value dimensions. Therefore, there is a need for an integrated approach to value education that combines the strengths of both systems. Such an approach would help in fostering balanced individuals who are not only academically competent but also morally, socially, and emotionally well-developed.

Simple Interpretation:

The study reveals that while certain personal and cultural values differ between students of CBSE affiliated schools and U.P. Board affiliated schools, many core lifestyle-related values, such as health and family prestige, remain similar across both groups.

Indian culture is deeply rooted in religious traditions, and individuals often reflect strong religious beliefs and practices. The CBSE

system of education appears to emphasize discipline and structured value orientation, which may contribute to the comparatively higher religious values observed among its students.

On the other hand, due to the social structure and democratic framework of Indian society, students of U.P. Board schools demonstrate stronger social and democratic values than their CBSE counterparts. This may be influenced by their closer engagement with community life and traditional social systems.

The analysis of aesthetic values indicates that both groups show a balanced appreciation of natural beauty and creative expression, reflecting contemporary cultural development.

With regard to knowledge, recreational, and economic values, it is evident that in today's materialistic and competitive world, students aspire for progress, intellectual growth, and economic stability. However, noticeable differences exist between the two educational systems in shaping these values.

The findings related to power values, family prestige values, and health values indicate no significant difference between students of the two boards, suggesting that these values are largely influenced by common cultural and familial factors.

Thus, it can be concluded that while both educational systems contribute to value development, they differ in their influence on specific value domains among students.

Suggestions

On the basis of the findings of the study on human values among students of CBSE and U.P. Board affiliated schools, it is observed that no significant difference exists in aesthetic, power, family prestige, and health values, whereas significant differences are found in religious, social, democratic, economic, knowledge, and recreational values.

In light of these findings, the following suggestions are proposed:

Both CBSE and U.P. Board schools should adopt a more balanced and integrated approach to value education. Since each system demonstrates strengths in different value dimensions, efforts should be made to incorporate these strengths to ensure the holistic development of students.

CBSE schools, which show comparatively lower levels of social, democratic, knowledge, and recreational values, should place greater emphasis on promoting group activities, community service, and social interaction. They should also encourage democratic participation through debates, student councils, and collaborative learning. Furthermore, fostering curiosity, reading habits, and knowledge-oriented discussions, along with encouraging sports and recreational activities, will contribute to overall development.

U.P. Board schools, which exhibit relatively lower levels of religious and economic values, should focus on strengthening moral and ethical education in a structured manner. Additionally, they should promote financial literacy, career awareness, and economic responsibility among students. The integration of modern teaching methods and practical learning experiences can further enhance value development.

Both types of schools should work toward strengthening value-based education through curriculum as well as co-curricular activities. Active involvement of parents and the community is essential for reinforcing positive values. Schools should organize seminars, workshops, and awareness programs focused on human values and create an environment that promotes discipline, respect, cooperation, and well-being.

Teachers play a crucial role in value formation; therefore, they should be trained to act as role models. Regular assessment of students' value orientation should also be undertaken to ensure continuous improvement.

To conclude, a coordinated effort by schools, teachers, and families is essential to nurture students who are not only academically competent but also morally, socially, and emotionally well-developed.

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Innovative Learning: The impact of educational games on VII and VIII grade students

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ABSTRACT

The study title "Innovative learning: The impact of educational games on VII and VIII grade students." delves into the transformative potential of educational games in shaping the academic trajectories of students during these pivotal grades. Our research undertakes a comprehensive exploration of the multifaceted impact of educational games, encompassing academic performance, student engagement and motivation. Spanning a spectrum of school subjects, this investigation unveils the capacity of educational games to elevate learning outcomes, ignite a genuine passion for acquiring knowledge and nature a holistic educational atmosphere. The result of this study underscore the promise of educational games as dynamic tools for advancing education at the VII and VIII grade levels, introducing students to an exciting realm of interactive and highly infective learning experience.

Key words: Game - Based Learning, Student engagements, Academic Excellence, VII and VIII grade Students

Introduction

Games can be perceived in two contrasting ways, depending on one's perspective. From a cognitive standpoint, the can be both highly motivating and potentially overwhelming for learners. Conversely when viewed through a socio-cultural lens, games are seen as vehicles that provide rich contextual information and interactions essential for learning in the twenty first century. Due to the expensive nature of the term "games" discussing them without further specification can complicate any discourse or evaluation of their relationship with the learning. Games encompass a wide array of types, including casual games, first person shooters, massively multiplayer online games (MMOs), role playing games and more. Furthermore, games span of broad spectrum of fields (humanities, Science, engineering, Medical etc.) and content areas (language, Science, second language acquisition, Economics, History etc.). Naturally there are intersections and overlaps among all of these categories. The fact that games encompass such diverse form of entertainments underscores the importance of not generalizing research findings from one

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type of game to another. For example, badge can be beneficial in a massively multiplayer online learning environment by encouraging learners to complete various learning - related task, but they may have a detrimental impact in a casual game.

Experimental learning is an instrumental approach that places a premium on hands - on, real - world experiences rather than passive absorption of information from lectures or textbook. It involves active student's participation and enables them to discover and learn through their own direct experiences.

Key features of experiential learning include

Highly active Engagement: Students highly actively participate in activities, experiments, puzzle, projects and real - world event, taking an active role in their education rather than being passive recipients.

Tangible Experiences: Concrete, hands - on experiences such as laboratory experiments, museum visits, outdoor activities and community services initiatives; lay the information for grasping abstract concepts.

Reflective Thinking: After engaging in activities, students engage in critical reflection, evaluating the positives negatives and lessons learned from the experience.

Conceptualization: Reflective thinking helps students identify universal truths and guiding principles, make connections to prior knowledge and theorize about fundamental principles.

Application: Learners actively apply their knowledge and insights to new situations or problems, engaging in theory - checking, method- trying and problem - solving.

This process of experiential learning, often described by David Kolb as the "experiential learning cycle" or "Kolb cycle" consists of four stage: concrete experience, reflective observation, abstract conceptualization and active experimentation.

Experiential learning can take place in simulated or real world setting, enhancing information retention by enabling students to connect their learning to their own lives and experiences. It promotes interdisciplinary thinking and problem solving, encouraging students to draw from various disciplines. Moreover, experiential learning fosters independence and self - direction in students, empowering them to take control of their education, set meaningful learning objectives and exercise agency over their curriculum.

Experiential learning finds application in a range of educational settings from school and universities to vocational learning programs. It has been shown to enhance retention, problem - solving abilities and their overall engagement with the learning process. This approach aligns with the belief that learning is most effective when it is active, relevant and connected to the real world.

Literature of Review

Schrader's and Riemer 2015, questionnaire featured several noteworthy points: Statemen1: in my view, utilizing the 'Pagamo' program has been instrumental in my preparation for the final exam. "Mean=5.04, SD=1.41, Statement2: in my opinion, the use of 'Pagamo' significantly aids my comprehension of course materiel. Mean=4.8, SD=1.19. Statement3: From my perspective,

the utilization of 'Pagamo' contributes to my ability to apply what I have learned. Mean=4.75, SD=1.08. the top three motivations driving individuals to play 'Pagamo' are the positive association with like 'fun' self direct learning and the desire to achieve higher grades in their final exam. Students who embraced gamification as a method for studying and learning found "Pagamo' to be a valuable and supportive tool for their educational development.

Salen and Zimmerman 2004, Game Mechanics as seen in activities like launching birds in games such as 'Angry Birds' can infuse an enjoyable and engaging elements into learning experiences. In game like little Big planet players receive feedback in a cheerful manner though in game characters or a global scoreboard. While the uniqueness of the learning experience facilitated by games has been acknowledged, the development of comprehensive model for game based learning remains a challenging Endeavour. The arguments is made that studying the structure of game based and playful learning environments provides a more practical approach to understanding their functionality. Despite between game design and the design of traditional learning settings, game design had evolved into a distinct art from by the time game become widely used for educational purpose.

A significance difference is that designers of game based learning invest more efforts and recourses into creating an excellence learning environment as noted by Insister and Schaffer 2008. This approach incorporates affective, behavioral, cognitive and socio-cultural elements to create a holistic learning experience, forming what can be termed a 'Magic cycle' of playful learning.

Material and Method

Our research sample comprises students I grade VII and VIII hailing from five different schools in Raghogarh - Vijaypur Resign including Jai Jyoti School, DPS School, Hindupat School and Satya Sai School.

To ensure the sample's representativeness, we have thoughtfully selected students from the schools across two grade level (VII and VIII) and both gender (Boys and Girls). The overall sample size has been meticulously chosen to strike a balance between statistical significance and practical feasibility. This allows us to comprehensively explore the impact of educational gaming on learning outcomes across a diverse range of grade levels and gender categories.

For instance, we have included 225 boys and Girls from grade VII and VIII at Jai Jyoti School in the study. Similarly, we have incorporated 389 students across all grades and both sexes at DPS School. Our sample from Hindupat school consist of 232 boys and girls students and our our sample form satya sai school encompasses 188 students.

By carefully constructing this sample, we am to gain valuable insights into the effectiveness of this pedagogical approach for VII and VIII grades in Raghogarh- Vijaypur. This approach allows us to delve into both the theory and practical application of utilization educational games to enhance learning within the specific context of these for schools.

The selected samples, along with their estimated number of students in each school's sample are as follows:-

Jai Jyoti School = 22 Students, D P S School = 32 Students, Hindupat School = 24 students and Satya Sai School = =22 Students. A total of 100 students were chosen for the experiments, employing stratified random sampling to ensure that the sample represents the overall population while enabling conclusions about different subgroups, such as students from various schools.

Data Collection

Our micro - research project Title "Innovative Learning: The impact of educational games on VII and VIII grade students" we place a strong emphasis on ensuring both ethical and methodological rigor. This entails obtaining approval from related institute and obtaining necessary permissions while prioritizing informed consent to protect participant's right and privacy. Subsequently, we meticulously create and validate research tools, which include educational games pre and post tests, questionnaires, interview guides, observation protocols and focus group topics. Ethical considerations are at the forefront of this process, and we conduct pilot testing to guarantee that our research tools are effective, relevant and ethically sound. Surveys and questionnaires play a pivotal role in our research methodology; enable us to collect quantitative insights into insights into student's experiences and perspective regarding educational games. Throughout the study, we strictly adhere to ethical standards, ensuring data privacy and maintaining participants anonymity, in order to thoroughly assess the impact of educational games on VII and VIII grade students learning and understand their preferences in game based learning.

Result

Table-A: Gender - wise Distribution of students by School

School Name	Class VII Boys	Class VII Girls	Class VIII Boys	Class VIII Girls
Jai Jyoti School	55	51	61	58
DPS School	79	77	79	76
Hindupat School	70	59	68	55
Satya Sai School	54	49	59	52

Table-B: Frequency of Educational Games for Learning

Frequency	Number of Students
Daily	48
Several times a week	26
About once a week	17
Rarely	9
Never	0

Table-C: Preferred Types of Educational Games

Educational Games Type	Number of Responses
Quiz and Trivia Games	22
Simulation and Role – Playing Games	23
Puzzle and problem – solving Games	34
Story based and adventure Games	21

Discussions

The data provided in table A demonstration a well balanced gender distribution among VII and VIII grade students in the selected schools. Most of the schools including jai jyoti School, DPS School, Hindupat School and Satya Sai School, maintain nearly equal representation of both boys and girls in these grade levels. The balanced demographic composition ensures the inclusion of a diverse student population in the study, enabling comprehensive analysis of the impact of educational games on students of different genders. Table B provide insight in to the frequency of students engaging with educational games for learning. The data indicates that a significant number of students incorporate educational games into their learning routines daily, while others do several times a week or approximately once a week. Notable, none of the respondents reported never playing educational games, highlighting the widespread acceptance and integration of these games into their educational practices. In table C, delve into the preferred types of educational games. It becomes evident that Puzzle and problem solving games hold the top spot in students preferences followed by simulation and role playing games, quiz and trivia game and story based adventure games. This diversity in game preferences underscores the importance of offering a variety of a educational game type to cater to different learning styles and interest.

Conclusion

The data representations collectively provide several significant insights. The balanced gender distribution in VII and VIII grades, as depicted in table A, highlights the inclusively of the study's student's population. This inclusivity enables a comprehensive analysis of the impact of educational games across genders. The frequency of engagement with educational games, as detailed in table B, indicates the widespread integration of these games into students learning routines, with a notable absence of respondents who never play such games. Lastly, the diversity of preferences for various types of educational games, as elucidated in table C, underscores the necessity for a broad range of game categories to cater to diverse learning styles and interests. Collectively, these finding underscore the importance of tailoring educational strategies to meet the varies needs and preferences of students. This approach ultimately fosters of a more inclusive and engaging learning environment.

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Life Skills for Better Career Opportunities

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ABSTRACT

In today's professional environment, technical competence by itself is no longer a guarantee of long-term professional success. Life skills-communication, critical thinking, emotional intelligence, flexibility, time management, and problem-solving-form a crucial key to improving employability and maintaining career development. This study explores the nexus between life skills and career development, with focus on how embedding these skills in education and training curricula can be used to enhance employment performance. Employing a mixed-methods design, the data were gathered using structured questionnaires and semi-structured interviews of recent graduates, human resource professionals, and career guidance counselors from different sectors. The results demonstrate a positive and statistically significant correlation between excellent life skills and improved career prospects, such as greater job satisfaction, enhanced workplace relationships, and quicker upward mobility. The research also emphasizes the importance of adopting an integrated approach by academic institutions and professional development courses towards incorporating life skill development within curricula. This article adds to the increasing debate promoting inclusion of soft skills in career preparedness initiatives and provides actionable suggestions for policymakers, educators, and employers.

Key words: Life skills, career development, employability, soft skills, communication skills, emotional intelligence, job readiness, workplace success

Introduction

In the dynamic nature of the global economy today, simply obtaining academic qualifications is insufficient to obtain sustainable or fulfilling employment. As a result, the concept of life skills, which covers a broad category of personally, socially, and professionally relevant abilities, has taken on an even greater significance in relation to employability and career progression. Skills such as communication, critical thinking, decision-making, adaptability, emotional intelligence, leadership, time management, etc., are critical not only for navigating complex workplace environments but also for our own personal development and ability to exhibit resilience. As sectors of the economy increasingly favour and demand the whole-person approach through a plethora of interpersonal skills, alongside traditional technical knowledge, life skills are also more

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effectively empowering individuals, particularly youth and students, to engage in the workforce and competitively for job opportunities and securing positions. The implementation of life skills, at educational institutions, vocational training hubs, and skills development programs, is allowing students and learners, to gain confidence, improve their problem-solving strategies and a clearer pathway toward professional roles. Therefore, the use of life skills as additional form of preparedness is not a rounded approach or supplementary step, but an obligation to enhance better career opportunities and develop inclusive, future-ready workforces.

Explanation of Key Life Skills for Employment: This section describes essential life skills including communication skills, critical thinking, emotional intelligence, leadership skills, adaptability, and digital literacy. These fundamental skills will propel students to perform effectively and improve career opportunities in all sectors.

Life Skills and Related Job Opportunities in India: The Indian job market focuses on specific life skills, such as communication, critical thinking, leadership, emotional intelligence, and digital literacy, which are essential for various jobs such as journalist, customer support executive, business analyst, policy researcher, project manager, NGO coordinator, counselor, HR practitioner, and web developer.

Institutions Providing Life Skills Training in India: Indian organizations like British Council India, TISS Mumbai, NIMHANS Bengaluru, Skill India Mission (Pan-India), and NIELIT offer formal training and development in life skills such as communication, English proficiency, leadership, emotional intelligence, mental health, vocational and adaptability training, and digital literacy and IT skills. These courses are essential for students' employment preparation.

Job Opportunities Provided by Institutions Based on Life Skills: Institutions like NIIT Ltd. offer placement assistance in IT and customer support occupations, Infosys Global Education Center trains and hires graduates in technical and support jobs, and TISS and IIMs have specialized placement cells linking life skill development to managerial, administrative, and research jobs, demonstrating a connection between institutional training and employment.

Location-Wise Mapping of Institutions Offering Life Skill-Based Training: Life skill training centers in India are spread across various cities, including Delhi, Mumbai, Bengaluru, Hyderabad, Chennai, Pune, Kolkata, and Noida. These centers provide local access for students seeking skill education and employment, ensuring a comprehensive and accessible education system.

Objective of the Study

To assess the impact of life skills required to be successful in the career of Indian students and indicate which institutions are providing the necessary training procedures in India, particularly the Tier-2 cities and Tier-3 cities.

Key Research Questions

The key research questions of this study are:

1. What are the Indian occupations that match certain life skills in a direct manner?
2. Which life skills in Indian context are more employable?

3. In which places can the students get the life skills training and certification programs?

Research Scope

* Life Skills Co vered: Communication, Emotional Intelligence, Time Management, Critical Thinking, Problem-Solving.
* Geographic Focus: Pan-India with specific reference to Tier-2 and Tier-3 cities for broader inclusion.
* Institutional Focus: Government (NSTI, Skill India), Private (NIIT Foundation, TISS), and NGO-backed training centers.

Review of Literature

Bean et al. (2018) examined the concept of life skills development as it relates to an implicit/explicit continuum, underscoring how life skills can be taught in intentional ways but also learned and achieved through lived experience. They pointed out that, while interventions alone can contribute to life skill transfer, both structured intervention(s) and contextualized applications in youth development programs are required for effective life skill transfer. The authors argued that an optimal approach to life skill acquisition involves a balance between explicit instruction and experiential learning, which enhances long-term retention and application across various domains of life.

Guan et al. (2019) explored the concept of career boundarylessness and its implications for career success through an extensive, systematic review of the literature. In their work, they tackled multiple theoretical perspectives in explaining how individuals on flexible, non-linear pathways of career navigation benefited from a range of transferable competencies, which included emotional intelligence, problem solving, and self-directed learning. Their findings indicated that life skills were central to individuals achieving objective (e.g., promotion) and subjective (e.g., job satisfaction) measures of career success even within flexible or fluid employment contexts.

Halperin and Heath (2020) focused on the methodological foundations of political research, but, also noted the utility of transferable practical skills - e.g. critical thinking, communication, and data literacy - in both academic and professional environments. Their work emphasized how the development of these foundational life skills helped to better understand political systems and improve research effectiveness, thus iterating they were transferable and usable across the discipline.

Heckman et al. (2019) challenged the dominant use of standardized achievement tests to measure success by describing the key role character traits - e.g. perseverance, self-control, and conscientiousness - play in attaining success over time. Their edited book, showed that cognitive skills, which include tests like the GED, are important, but non-cognitive life skills predict life outcomes, including employment; employment stability; earnings; and social behaviour. The authors claimed that character development in educational and workforce preparation programs should be a significant objective.

Hirschi (2018) studied the career development ramifications of the Fourth Industrial Revolution and acknowledged that continuous technological change was necessitating that the definition of employable skills change. He emphasized the significance of transferable life skills, especially critical thinking, emotional intelligence, and solutions thinking, that would allow individuals to

transition into more automated and digitalized working conditions. He concluded by identifying that career practitioners and researchers alike would need to reposition their paradigms to find these competencies at the center of preparing the future workforce.

Research Methodology

This research study - "Life Skills for Improved Career Opportunities" will employ a mixed-methods research design using elements of qualitative, and quantitative research to obtain a full appraisal of the impact that fundamental life skills have on the careers of Indian students, particularly those based in Tier-2 and Tier-3 cities. The research design is mapped out to align with the aims, research questions and scope.

Research Design

A convergent parallel mixed-methods design is used. Quantitative data is gathered from recent graduates and those actively seeking work with "structured" questionnaires. We have distributed these questionnaires to recent graduates and job seekers in several states in India. Qualitative data will be collected through semi-structured interviews with HR professionals, trainers, and career counselors. This will enable triangulation and will further validate our findings.

Population and Sampling

The target population consists of:

* Students and recent graduates (within the last five years) from Tier-2 and Tier-3 cities.
* HR professionals and career counsellors from the public and private sectors.
* Training institution representatives (NSTI, NIIT Foundation, TISS, and NGO-led centres).

A stratified random sampling technique is used to ensure equal distribution of respondents across different regions and institutions. A sample of approximately 300 respondents will be targeted from:

* 200 students/recent graduates,
* 50 HR professionals, and
* 50 trainers/career counsellors.

Data Collection Tools

* Structured Questionnaire: Intended to measure the degree of life skill acquisition (communication; emotional intelligence; time management; critical thinking; problem-solving) and its perceived impact on readiness for the job market and career advancement.
* Semi-Structured Interview Schedule: Used to elicit expert perspectives on the importance and demand for life skills as part of recruitment, and the effectiveness of any current training offered.
* Institutional Review: A desk-based review to identify and map life skill training programs delivered by the public sector (NSTI, Skill India), private sector (NIIT Foundation, TISS), and NGO sectors in Tier-2, and Tier-3 cities.

Data Analysis Techniques

Quantitative Data: Used descriptive statistics, correlation analysis, and regression models to describe relationships between life skills and career success indicators (e.g., job satisfaction, promotions, employability).

Qualitative Data: Thematic analysis will be used to categorize and seek recurring theme and insights from interviews about the institutional perspective and the dynamics around demand for skills.

Finding and Analysis

These findings indicate that Communication, Emotional Intelligence, and Problem Solving are respectively the highest valued life skills across sectors, despite low-level institutional training of various life skills available in Tier-2 and Tier-3 cities. The sector-wise preferences range from technical life skills and transferrable life skills, indicating the need for accessible, dedicated life skills programs to develop for employability purposes.

Life Skills Possession among Students

The average self-reported proficiency scores are shown in Table 1 for five vital life skills: Communication, Emotional Intelligence, Time Management, Critical Thinking, and Problem-Solving. The scores (which are given on a scale of 1 to 10, where higher scores represent a greater perception of proficiency) show Communication with the highest average score (7.8), followed by Emotional Intelligence (7.2), Problem-Solving (7.0), Critical Thinking (6.8) and Time Management (6.5). This distribution provides a reasonable comparative view of how individuals evaluate and perceive their ability in key life skill areas.

Table-1: Average Self-Reported Proficiency Score

Life Skill	Average Score
Communication	7.8
Emotional Intelligence	7.2
Time Management	6.5
Critical Thinking	6.8
Problem-Solving	7.0

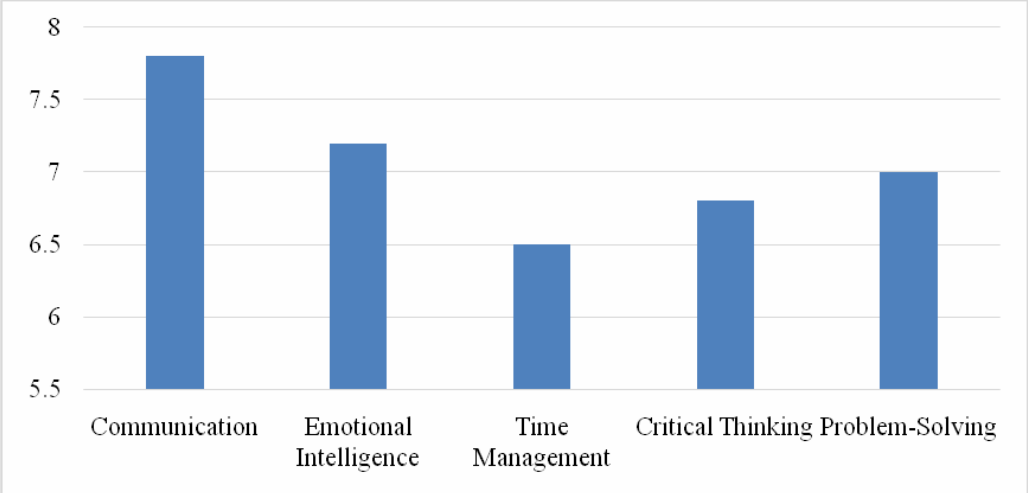

Figure 1: Graphical representation of Average Self-Reported Proficiency Score

The data shows that respondents feel most confident in their communication skills, revealing good self-perceptions of their ability to communicate ideas and interact with people. There are also strong self-perceptions of Emotional Intelligence and Problem-Solving, which also represent areas of moderate self-awareness and flexibility dealing with challenges. On the other end of the scale is

Time Management, which is an area of possible concern and improvement. The lower Critical Thinking scores also indicate respondents may need more focused interventions to support their analytical and evaluative abilities. Overall, respondent's foundational interpersonal and adaptive skills appear somewhat developed, while there may be more growth needed for cognitive and organizational skills, however, may be possible through training or educational initiatives.

Correlation Between Life Skills and Career Success Indicators

Table 2 depicts correlation coefficients for five important life skills - Communication, Emotional Intelligence, Time Management, Critical Thinking, and Problem-Solving - compared with three important career success measures: Job Satisfaction, Speed of Promotion, and Employment Status. The correlation scores ranged from 0.52 to 0.78, which signifies a moderate to strong positive correlation. Communication had the highest correlation with both Job Satisfaction (0.78) and Employment Status (0.70), while Emotional Intelligence had the highest correlation with Speed of Promotion (0.65). Time Management had the lowest correlations with each of the three indicators, particularly with Speed of Promotion (0.52).

Table-2: Correlation between Life Skills and Career Success Indicators

Life Skill	Job Satisfaction	Promotion Speed	Employment Status
Communication	0.78	0.61	0.70
Emotional Intelligence	0.72	0.65	0.68
Time Management	0.63	0.52	0.59
Critical Thinking	0.69	0.60	0.66
Problem-Solving	0.71	0.64	0.67

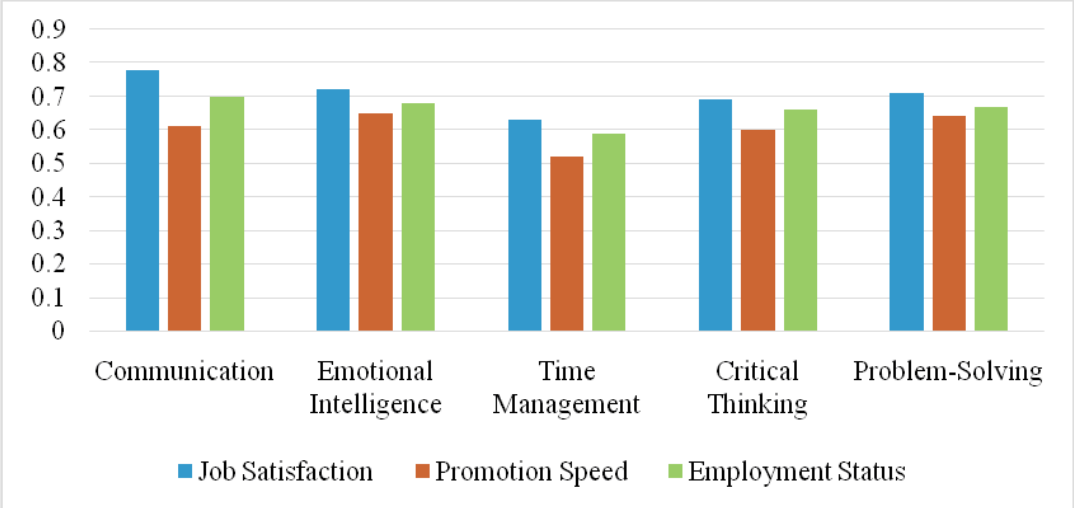

Figure 2: Graphical representation of Correlation between Life Skills and Career Success Indicators

The information reveals that Communication is the strongest life skill and has the biggest impact on career success with account of job satisfaction and employability. Therefore, it is crucial that effective communication plays a vital role in engaging the workforce for good employment and future sustainability. Emotional Intelligence and Problem Solving had strong and consistent correlations across all 4 indicators, as emotional control ability and analytical ability are valuable for career development. Additionally, the lower correlations for Time Management indicate it has a less caused impact career success, but still a positive one. These results reflect the need for career development programs to emphasize communication skills and emotional skills (overtly) as well as critical thinking/problem-solving, so students can optimize their chances for meaningful professional outcomes.

Institutional Availability and Training Gaps

Table 3 shows the distribution of life skill training institutions (NSTI (Government Organization), NIIT Foundation, TISS (Tata Institute of Social Sciences - Hub & Spoke Model), and the various NGO run training centers based in Tier-2 and Tier-3 cites in India) also describes what level of Life Skills they offer and in what cities this is provided. Each institution offers courses in specific life skills, each institution parent's a variety of these and most institutions offered some form of certification or acknowledgement of completion of the life skills training program, however NGO is only offering partial certifications. TISS is unique in that they offered ALL indicated Life Skills across all TISS institutions of Guwahati and Raipur.

Table-3: Distribution of Institutions Providing Life Skill Training in Tier-2 and Tier-3 Cities

Institution Type	Cities Covered	Skills Covered	Certification Offered
NSTI (Govt.)	Bhopal, Lucknow, Patna	Communication, Time Management, Problem-Solving	Yes
NIIT Foundation	Jaipur, Nagpur, Coimbatore	Communication, Emotional Intelligence, Critical Thinking	Yes
TISS (Hub & Spoke)	Guwahati, Raipur	All listed skills	Yes
NGO-run Centers	Nashik, Ranchi, Gwalior	Emotional Intelligence, Time Management	Partially

The table illustrates a highly variable offer of life skill training across smaller urban centers. For example, government and private institutions (e.g., NSTI and NIIT Foundation) provide formalized training with certification, yet their geographic spread and skills vary greatly. TISS offers the most formalized, comprehensive and systematic program, but

is limited to 2 cities. NGO-run centres also provide training, but their skills are limited and certification is partial, meaning there is a strong need for standardization. Overall, there is clear evidence of foundational efforts, yet access and comprehensiveness are both far from ideal, highlighting the need for developed and standardized life skill training programs aimed at Tier-2 and Tier-3 cities.

Industry Perspectives on Employable Life Skills

In Table 4, we reveal industry-specific preferences for employable life skills based on a qualitative coding of interview responses across five sectors namely, IT & Tech, Banking, Healthcare, Retail, and Education. Each sector outlines a primary and secondary demand for life skills. For example, in the IT & Tech industry, Problem-Solving is most sought after, in Banking, Emotional Intelligence, and in Healthcare and Education Communication is the top or primary, with Retail listing Time Management as their priority.

Table-4: Most Demanded Life Skills by Sector

Sector	Top Life Skill Required	Secondary Skill
IT & Tech	Problem-Solving	Communication
Banking	Emotional Intelligence	Time Management
Healthcare	Communication	Critical Thinking
Retail	Time Management	Communication
Education	Communication	Emotional Intelligence

The data shows that different sectors prioritize life skills according to their generative and operational demands. It is apparent that IT & tech evaluates analytical capabilities like Problem-Solving, meaning that innovation and troubleshooting may be required when working in the sector. Bankers have to demonstrate Emotional Intelligence when meeting clients, as well as stress when performing their role. In Health and Education, Communication is key in the delivery of services. The focus on Time Management in Retail reflects the nature of quick and efficient service. However, these insights highlight the need for sector-specific training for life skills that align with tasks within sectors, with the goal of improving outcomes for employability and workplace readiness.

Discussion & Recommendation

The results of this research emphasize the centrality of life skills, specifically; communication, emotional intelligence, and problem-solving in improving the employability and work-related advancement of students of Tier-2 and Tier-3 cities in India. Communication proved the most powerful competency with large correlations to job satisfaction and employment status whereas emotional intelligence was a key contributor to the promotional velocity, particularly in the industry that focuses on people i.e., the banking and education industry. The relevance of life skills on the industry-specific level was

represented by the fact that problem-solving was very crucial in an analytical industry like the IT.

Nonetheless, skills regarding time and critical thinking were behind the tasks based on self-assessment scores, indicating that specific skills in these two spheres should be brought up. It was also noted that there was an imbalance in the number of life skill training programs with organizations such as TISS only doing complete coverage but they have a short-range coverage and NGO run centers only certifying, have a short coverage. These gaps clarify the prominent necessity of commonplace, available, and cut to the chase life abilities instructional activities in disproportionate territories. On the whole, the fact that the industry requires and the skills report reflects the actual demand level indicates keen necessity in the cooperation between universities, training agencies, and policy-makers to incorporate the development of life skills into the overall education and career training system.

Recommendation

This study proposes specific recommendations to enhance career prospects for students in Tier-2 and Tier-3 cities throughout India. The study findings initially clearly identify and align that while there is a positive relationship between life skills (communication and emotional intelligence) and employability, there remain gaps in training and sectoral preparedness. The following five specific recommendations provide a strategic roadmap for all stakeholders to better integrate life skill development to be more inclusive and practical:

* **Integrate Life Skills into Formal Education:** Embed structured life skill modules-especially communication, critical thinking, and time management-into school and college curricula through interactive, activity-based learning.
* **Expand Life Skill Training Access in Smaller Cities:** Increase the geographic reach of government and private training institutions with standardized curricula and certified life skill programs in underserved areas.
* **Tailor Training to Industry Needs:** Align skill development programs with sector-specific needs (e.g. problem solving for IT, emotional intelligence for banking) to enhance job readiness.
* **Focus on Skills with Low Scores:** Direct training and counseling support toward to skills with lower self-rated proficiency, particularly time management and critical thinking.
* **Raise Awareness and Offer Subsidies:** Launch awareness campaigns and provide financial scholarships to boost participation in life skill training in particular among low-income students in Tier-2 and Tier-3 cities.

Conclusion

This research highlights the importance of life skills in improving the employability and career development of students, especially those in Tier-2 and Tier-3 cities of India. The results clearly found core skills such as communication, emotional intelligence, and problem-solving play a significant role in job

satisfaction, employment, and speed of promotion, while gaps in time management and critical thinking were identified. In addition, in smaller cities, gaps in different training levels and the amount of training available to the candidates tended to vary which indicates a need for immediate, inclusive, and standardised life skill development. By aligning the curriculum taught in schools and colleges with the skills required in different industries, and allowing students the opportunity to take part in certified training programs and not only on campus, the work readiness of students will improve. Ultimately, help from all stakeholders (educators, employers, and government) in building a simple life skill development program will ensure a better quality and quantity of a workforce that is aspiring to enter into the quickly-changing labour market.

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A Comparative Study of Multidimensional Personality of Boys and Girls Studying in Private Higher Secondary Schools

Sunit Bhatnagar*

ABSTRACT

Personality development is regarded as one of the fundamental aims of modern education, as it significantly influences students' behaviour, emotional stability, social relationships, and academic adjustment. Adolescence represents a critical period of personality formation because individuals experience rapid physical, cognitive, emotional, and social changes during this stage. Educational institutions, particularly schools, play an essential role in shaping students' personality characteristics through curricular activities, peer interaction, classroom experiences, and teacher guidance.

The present study was undertaken to compare the multidimensional personality traits of boys and girls studying in private higher secondary schools, with special reference to the extroversion-introversion dimension. In addition, the study examined other important dimensions such as self-concept, independence-dependence, temperament, adjustment, and anxiety.

The descriptive survey method was employed for the investigation. A sample of 400 students (200 boys and 200 girls) was randomly selected from private higher secondary schools of Gwalior district. The Multidimensional Personality Inventory developed by Dr. Manju Agarwal was used as the data collection tool. Statistical techniques such as Mean, Standard Deviation, and t-test were applied for data analysis.

The findings revealed significant differences between boys and girls on several dimensions of personality. Boys scored higher on extroversion, independence, and self-concept, whereas girls demonstrated comparatively different tendencies in emotional dimensions such as adjustment and anxiety. The study emphasizes the need to understand gender-based personality differences in order to create supportive educational environments that encourage balanced psychological and social development among adolescents.

Key words: Personality Traits, Multidimensional Personality, Extroversion-Introversion, Gender Differences, Higher Secondary Students

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Introduction

Education is a dynamic process that contributes to the holistic development of an individual. It not only imparts knowledge and skills but also fosters desirable attitudes, values, emotional maturity, and behavioural competencies required for successful participation in society. Therefore, personality development is considered one of the major objectives of education.

Personality refers to the integrated pattern of thoughts, feelings, attitudes, and behaviours that distinguish one individual from another. It represents the unique psychological organization of a person and determines how individuals perceive situations, interact with others, and respond to environmental demands. Personality is shaped through the combined influence of heredity, family background, social environment, educational experiences, and cultural factors.

Adolescence is a particularly significant stage for personality development. Students studying at the higher secondary level undergo rapid physical growth, emotional fluctuations, cognitive expansion, and social adjustments. These developmental changes make adolescence a sensitive and formative period in which personality traits become more organized and stable. Hence, understanding personality during this stage is of great educational and psychological importance.

The school environment serves as an influential agency in personality formation. Classroom interaction, co-curricular participation, peer relationships, teacher behaviour, and institutional climate collectively affect students' self-confidence, emotional balance, leadership qualities, and social adjustment. Private higher secondary schools, with their specific academic atmosphere and organizational culture, may offer distinct opportunities for personality development.

Among the different dimensions of personality, extroversion and introversion have received considerable attention in psychological research. Extroverted individuals are generally sociable, active, expressive, and outgoing, whereas introverted individuals are thoughtful, reserved, and inward-oriented. These traits influence communication style, classroom participation, leadership behaviour, and academic engagement. Other dimensions such as self-concept, independence, adjustment, temperament, and anxiety are equally important in understanding the multidimensional nature of personality.

Gender is another important factor associated with personality development. Boys and girls often experience different patterns of socialization due to family expectations, cultural norms, and societal roles. Such differences may lead to variations in confidence, emotional expression, independence, and social behaviour. Therefore, a comparative study of boys and girls can provide valuable insights for educators, parents, and policymakers.

In this context, the present study attempts to examine and compare the multidimensional personality traits of boys and girls studying in private higher secondary schools, so that suitable educational measures may be adopted for promoting balanced and healthy personality development among students.

Objectives of the Study

The following objectives of the study were framed:

* To study the extroversion-introversion dimension of personality among boys and girls studying in Private higher secondary schools.
* To compare the self-concept of boys and girls studying in Private higher secondary schools.
* To examine the independence-dependence personality dimension among boys and girls.
* To study the temperament of boys and girls studying in Private higher secondary schools.
* To analyze the adjustment levels of boys and girls.
* To examine the anxiety levels among boys and girls studying in Private higher secondary schools.

Hypotheses of the Study

To achieve the objectives of the study, the following hypotheses were formulated:

* There is no significant relationship between the Multidimensional Personality -Extroversion- Introversion of Boys and Girls Studying in Private Higher Secondary.

& There is no significant relationship between the Multidimensional Personality- Self-Concept of Boys and Girls Studying in Private Higher Secondary School

* There is no significant relationship between the Multidimensional Personality- Independence- Dependence of Boys and Girls Studying in Private Higher Secondary School.
* There is no significant relationship between the Multidimensional Personality- Temperament of Boys and Girls Studying in Private Higher Secondary School.
* There is no significant relationship between the Multidimensional Personality- Adjustment of Boys and Girls Studying in Private Higher Secondary School.
* There is no significant relationship between the Multidimensional Personality- Anxiety of Boys and Girls Studying in Private Higher Secondary School.

Research Methodology

The present study was conducted using the descriptive survey method, a widely used approach in educational research for examining existing conditions, practices, and relationships. This method facilitates systematic data collection and analysis, enabling the researcher to describe and interpret current phenomena without manipulating variables.

Population

Students enrolled in private higher secondary schools of Gwalior constituted the population of the study. This population was selected to ensure focused analysis within a defined educational and geographical context, enabling more specific and relevant conclusions.

Sample

A sample of 400 students was selected

using a random sampling technique to ensure fairness and representation. The sample consisted of an equal distribution of participants, including 200 boys and 200 girls. This balanced composition helps in minimizing gender bias and allows for more reliable and comparative analysis of the data.

Tool Used

For this study, the Multidimensional Personality Inventory developed by Dr. Manju Agarwal was used as the primary tool for data collection. This standardized instrument is designed to assess various dimensions of personality, ensuring reliable and valid measurement of individual traits relevant to the objectives of the research.

Statistical Techniques

In this study, the collected data were analyzed using statistical techniques such as Mean, Standard Deviation, and the t-test. These methods were employed to summarize the data, measure variability, and determine the significance of differences between groups, thereby ensuring a systematic and reliable interpretation of the results.

Data Analysis and Interpretation

H-1 There is no significant relationship between the Multidimensional Personality-Extroversion-Introversion of Boys and Girls Studying in Private Higher Secondary School.

Table-1: Mean, standard deviation and t-value on Multidimensional Personality-Extroversion- Introversion of Boys and Girls studying in Private higher secondary schools

Private Boys		Private Girls		df	Level of Significance		t-value
Mean (M)	Standard Deviation (S.D.)	Mean (M)	Standard Deviation (S.D.)				
38.11	11.66	34.81	11.45	399	0.05	1.97	(t)
					0.01	5.32	4.96

On finding the value of t-test, it is 5.32 whereas the value of t at 0.01 and 0.05 significance level is 2.60 and 1.97 respectively, which is more than both these values. Hence, on the basis of the data obtained, we can say that there is a significant difference in the Multidimensional Personality-Extroversion-Introversion of boys and girls s studying in Private higher secondary schools. Hence, the personality of boys and girls s studying in Private higher secondary schools was found to be higher than that of girls. That is, the hypothesis is proved false at both these levels of significance. T**hat is a significant relationship between the Multidimensional Personality - Extroversion- Introversion of Boys and Girls Studying in Private Higher Secondary School.**

H-2 There is no significant relationship between the Multidimensional Personality - Self-Concept of Boys and Girls Studying in Private Higher Secondary School

Table-2: Mean, Standard Deviation and T-Value on Multidimensional Personality - Self-Concept of Boys and Girls Studying in Private Higher Secondary Schools.

Private Boys		Private Girls		df	Level of Significance		t-value
Mean (M)	Standard Deviation (S.D.)	Mean (M)	Standard Deviation (S.D.)				
37.73	11.41	34.43	11.09	399	0.05	1.97	(t)
					0.01	2.60	5.42

On finding the value of t-test, it is 5.42 whereas the value of t at 0.01 and 0.05 significance level is 2.60 and 1.97 respectively, which is more than both these values. Hence, on the basis of the data obtained, we can say that there is a significant difference in the Multidimensional Personality-Self-Concept of boys and girls studying in Private higher secondary schools. Hence, the personality of boys and girls studying in Private higher secondary schools was found to be higher than that of girls. That is, the hypothesis is proved false at both these levels of significance. **That is, a significant relationship between the Multidimensional Personality - Self-Concept of Boys and Girls Studying in Private Higher Secondary School.**

H-3 There is no significant relationship between the Multidimensional Personality - Independence-Dependence of Boys and Girls Studying in Private Higher Secondary School.

Table-3: Mean, Standard Deviation and T-Value on Multidimensional Personality - Independence- Dependence of Boys and Girls. Studying in Private Higher Secondary Schools.

Private Boys		Private Girls		df	Level of Significance		t-value
Mean (M)	Standard Deviation (S.D.)	Mean (M)	Standard Deviation (S.D.)				
37.92	11.47	34.64	11.22	399	0.05	1.97	(t)
					0.01	2.60	5.38

On finding the value of t-test, it is 5.38 whereas the value of t at 0.01 and 0.05 significance level is 2.60 and 1.97 respectively, which is more than both these values. Hence, on the basis of the data obtained, we can say that there is a significant difference in the

Multidimensional Personality-Independence-Dependence of boys and girls s studying in Private higher secondary schools. Hence, the personality of boys and girls s studying in Private higher secondary schools was found to be higher than that of girls. That is, the hypothesis is proved false at both these levels of significance **That is, a significant relationship between the Multidimensional Personality- Independence- Dependence of Boys and Girls Studying in Private Higher Secondary School.**

H-4 There is no significant relationship between the Multidimensional Personality - Temperament of Boys and Girls Studying in Private Higher Secondary School.

Table-4: Mean, standard deviation and t-value on Multidimensional Personality - Temperament of Boys and Girls studying in Private higher secondary schools.

Private Boys		Private Girls		df	Level of Significance		t-value
Mean (M)	Standard Deviation (S.D.)	Mean (M)	Standard Deviation (S.D.)				
38.15	11.27	34.88	10.99	399	0.05	1.97	(t)
					0.01	2.60	5.43

On finding the value of t-test, it is 5.43 whereas the value of t at 0.01 and 0.05 significance level is 2.60 and 1.97 respectively, which is more than both these values. Hence, on the basis of the data obtained, we can say that there is a significant difference in the Multidimensional Personality-Temperament of boys and girls studying in Private higher secondary schools. Hence, the personality of boys and girls studying in Private higher secondary schools was found to be higher than that of girls. That is, the hypothesis is proved false at both these levels of significance. **That is, a significant relationship between the Multidimensional Personality - Temperament of Boys and Girls Studying in Private Higher Secondary School.**

H-5 There is no significant relationship between the Multidimensional Personality - Adjustment of Boys and Girls Studying in Private Higher Secondary School.

Table-5: Mean, standard deviation and t-value on Multidimensional Personality - Adjustment of Boys and Girls studying in Private higher secondary schools

Private Boys		Private Girls		df	Level of Significance		t-value
Mean (M)	Standard Deviation (S.D.)	Mean (M)	Standard Deviation (S.D.)				
38.33	11.36	35.09	11.16	399	0.05	1.97	(t)
					0.01	2.60	5.34

On finding the value of t-test, it is 5.34 whereas the value of t at 0.01 and 0.05 significance level is 2.60 and 1.97 respectively, which is more than both these values. Hence, on the basis of the data obtained, we can say that there is a significant difference in the Multidimensional Personality-Adjustment of boys and girls studying in Private higher secondary schools. Hence, the personality of boys and girls studying in Private higher secondary schools was found to be higher than that of girls. That is, the hypothesis is proved false at both these levels of significance. **That is, a significant relationship between the Multidimensional Personality - Adjustment of Boys and Girls Studying in Private Higher Secondary School.**

H-6 There is no significant relationship between the Multidimensional Personality - Anxiety of Boys and Girls Studying in Private Higher Secondary School.

Table-6: Mean, standard deviation and t-value on Multidimensional Personality - Anxiety of Boys and Girls studying in Private higher secondary schools

Private Boys		Private Girls		df	Level of Significance		t-value
Mean (M)	Standard Deviation (S.D.)	Mean (M)	Standard Deviation (S.D.)				
38.51	11.50	35.30	11.38	399	0.05	1.97	(t)
					0.01	2.60	5.24

On finding the value of t-test, it is 5.24 whereas the value of t at 0.01 and 0.05 significance level is 2.60 and 1.97 respectively, which is more than both these values. Hence, on the basis of the data obtained, we can say that there is a significant difference in the Multidimensional Personality-Anxiety of boys and girls s studying in Private higher secondary schools. Hence, the personality of boys and girls s studying in Private higher secondary schools was found to be higher than that of girl's. That is, the hypothesis is proved false at both these levels of significance. That is, a significant relationship between the Multidimensional Personality - Anxiety of Boys and Girls Studying in Private Higher Secondary School level is 2.60 and 1.97 respectively, which is more than both these values. Hence, on the basis.

Findings of the Study

After interpretation of the data the researcher found that:

* Significant differences were found between boys and girls in extroversion-introversion.
* Boys showed higher mean scores in self-concept.
* Independence-dependence dimension showed significant gender differences.
* Temperament differed significantly between boys and girls.
* Adjustment levels varied between the two groups.
* Anxiety levels were also significantly different between boys and girls.

Conclusion

The study highlights that significant gender differences exist in multidimensional personality traits among higher secondary school students. Boys tend to exhibit higher levels of extroversion, independence, and self-concept, while girls demonstrate different emotional patterns in traits such as adjustment and anxiety. These differences may be influenced by cultural expectations, socialization processes, and environmental factors.

Educational institutions should recognize these differences and create supportive learning environments that encourage balanced personality development. Teachers and counselors can play a crucial role in guiding students during adolescence by promoting self-confidence, emotional stability, and social interaction.

Understanding personality differences among students can help educators develop effective educational strategies that support the holistic development of adolescents.

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