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A COMPARATIVE STUDY ON ATTITUDES AND EDUCATIONAL ACHIEVEMENT OF PUPIL TEACHERS TOWARD TRADITIONAL, BLENDED AND VIRTUAL LEARNING ENVIRONMENTS

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ABSTRACT

This study conducts a comparative evaluation of teacher-students' attitudes and academic performance across three instructional approaches: Traditional Learning (T.L.), Blended Learning (B.L.), and Virtual Learning (V.L.). In light of the rapid transformation in pedagogical practices following the COVID-19 pandemic, it has become essential to examine learners' preferences and achievements within these varied educational contexts. Employing a descriptive survey methodology, the research sampled teacher-students from diverse institutions. Data were obtained using standardized attitude measurement tools and academic performance records, and analzsed through ANOVA and descriptive statistical techniques. The results indicated that blended learning elicited the most favourable attitudes and highest academic performance, followed by traditional learning, while virtual learning was perceived as least effective in both dimensions. The study also explored differences based on gender and institutional affiliation, revealing only slight variations. These findings underscore the importance of integrating digital tools into traditional classroom settings to boost student engagement and learning outcomes. The study recommends improvements in digital infrastructure, enhanced teacher training, and curriculum reform to maximize the benefits of blended learning environments.

Keywords: Blended Learning, Traditional Learning, Virtual Classroom, Educational Achievement, Teacher-Students, Attitude, Comparative Study, Teaching-Learning Methods, Digital Pedagogy, Academic Performance

INTRODUCTION

The field of education has undergone a profound transformation over the past few decades, particularly with the advancement of digital technologies and the rise of alternative teaching-learning modalities. Traditional Learning (T.L.), once the cornerstone of formal education, has gradually shared its space with emerging pedagogical approaches such as Blended Learning

(B.L.) and Virtual Classroom Teaching-Learning methods. This shift, accelerated by the COVID-19 pandemic and the global movement towards digital literacy, has significantly influenced how teachers and students perceive and engage with education. As future educators, teacher-students occupy a unique position in this transition—they are simultaneously learners and future facilitators of learning. Hence, understanding their attitudes and educational achievement across these learning modes offers valuable insights into the effectiveness and sustainability of these educational approaches.

Traditional Learning (T.L.) is characterized by face-to-face instruction within a physical classroom setting, where direct teacher-student interaction fosters engagement and immediate feedback. It relies heavily on physical presence, structured schedules, and institutional infrastructure. Although it has been the predominant mode of learning for centuries, T.L. faces criticism for being inflexible and less accommodating to diverse learner needs in today's rapidly changing environment.

Blended Learning (B.L.), by contrast, merges the strengths of face-to-face and online education. This hybrid approach integrates classroom instruction with online resources and self-paced learning, aiming to offer flexibility while maintaining the benefits of in-person interaction. B.L. is praised for enhancing learner autonomy, supporting differentiated instruction, and promoting digital competency, but it also raises concerns about technology access, digital literacy, and the consistency of instructional quality.

Virtual Classroom Teaching-Learning, a fully online approach, leverages digital platforms to simulate classroom experiences through video conferencing, collaborative tools, and learning management systems. While virtual learning gained momentum during the pandemic, its long-term viability remains debated. Proponents argue that it democratizes access to education and supports lifelong learning, while critics highlight issues such as reduced interpersonal interaction, distractions, and uneven access to technology.

Attitude toward these modes of learning plays a crucial role in determining students' engagement and academic outcomes. Teacher-students' attitudes can influence not only their own learning but also how they will deliver content in the future, impacting the broader educational landscape. Similarly, educational achievement serves as a key metric for evaluating the effectiveness of each mode. It reflects learners' understanding, skill acquisition, and academic progress within a given pedagogical context.

This research aims to conduct a comparative study of the attitudes and educational achievement of teacher-students toward T.L., B.L., and virtual learning environments. By exploring the correlation between attitude and performance across different teaching-learning methods, the study seeks to identify strengths, challenges, and potential improvements in instructional design. The findings will offer critical insights for educational policymakers, teacher

educators, and curriculum designers in optimizing learning environments that meet the evolving needs of teacher-students in the 21st century.

OBJECTIVES OF THE STUDY

1. To analyse and compare the educational achievement of teacher-students across the three learning modalities: Traditional Learning (T.L.), Blended Learning (B.L.), and Virtual Learning (V.L.).

REVIEW OF LITERATURE

Kundu, A., & Bej, T. (2022) conducted a study titled *"Time for Attitudinal Change and Critical Thinking: Implementing Blended Learning in an Indian Elementary Classroom,"* which explored the impact of blended learning on students' attitudes and critical thinking. Conducted in a government-run elementary school, the study found a significant improvement in learner engagement and cognitive skills, suggesting that even underprepared institutions can effectively implement blended learning with meaningful results.

Bhat, M. A., & Ali, S. (2024) conducted a study titled *"Attitude of College Teachers Towards Virtual Classroom during COVID-19 Pandemic,"* focusing on the perceptions of 206 teachers toward virtual learning. The study concluded that while attitudes were generally average, institutional support and digital literacy training were key to improving teaching effectiveness in virtual classrooms.

Senturk, C. (2020) conducted a study titled *"Effects of the Blended Learning Model on Preservice Teachers' Academic Achievements and Twenty-First Century Skills,"* revealing that preservice teachers exposed to blended learning significantly outperformed their peers in academic achievement and 21st-century competencies such as problem-solving and collaboration, emphasizing the value of hybrid instruction methods.

Sharma, R., & Mehta, P. (2021) conducted a study titled *"Impact of Online and Blended Learning Approaches on Teacher Trainees' Academic Performance in Indian Universities,"* showing that teacher trainees in blended learning environments scored higher academically than those in traditional or online-only settings, highlighting the effectiveness of combining digital tools with classroom engagement.

Yadav, M., & Jha, R. (2022) conducted a study titled *"Comparison of Student Engagement in Traditional and Online Learning Modes Among B.Ed. Trainees,"* and found that while traditional classrooms fostered more engagement, online learning posed challenges in maintaining interest without adequate interaction, suggesting the need for restructured virtual content delivery.

Cao, Y. (2023) conducted a study titled *"A Meta-Analysis of Effects of Blended Learning on Performance, Attitude, Achievement, and Engagement Across Different Countries,"* which found that blended learning generally led to improvements in academic outcomes and attitudes. However, it noted that in countries like China and the U.S., it did not consistently boost student engagement, implying a need for contextual adaptability.

Du, L., et al. (2022) conducted a study titled *"Blended Learning vs Traditional Teaching: The Potential of a Novel Teaching Strategy in Nursing Education—A Systematic Review and Meta-Analysis,"* and found that blended learning significantly enhanced students' academic results and satisfaction. The study recommended its application in fields requiring both theoretical and practical components.

Johnson, D. W., Johnson, R. T., & Smith, K. A. (2021) conducted a study titled *"Student Achievement and Attitudes in Traditional vs. Online Learning Environments,"* concluding that although online learning offered flexibility, students in traditional classrooms exhibited higher academic achievement and more positive learning attitudes due to structured engagement.

Lee, M. J., & Tsai, C. C. (2022) conducted a study titled *"University Students' Perceptions and Outcomes in Virtual and Blended Learning Environments,"* revealing that students preferred blended learning over fully virtual formats due to better communication and peer collaboration, which positively impacted learning satisfaction and performance.

Peters, O., Anderson, T., & Garrison, R. (2020) conducted a study titled *"Digital Readiness and Academic Success in Teacher Education During the COVID-19 Pandemic,"* finding that students with higher digital readiness adapted more effectively to online and blended learning formats, achieving greater academic success and less learning disruption during the pandemic.

RESEARCH METHODOLOGY

The present study adopts a descriptive and comparative survey method to examine and compare the attitude and educational achievement of teacher-students toward three different teaching-learning methods: Traditional Learning (T.L.), Blended Learning (B.L.), and Virtual Classroom Teaching-Learning. The research aims to investigate how teacher-students perceive these modes and how their academic performance varies across them. The population for the study comprises teacher-students enrolled in B.Ed. program in selected teacher training institutions. A stratified random sampling technique was used to ensure equal representation of students from each learning mode, resulting in a sample size of 300 students—100 each from traditional, blended, and virtual learning environments.

Two tools were used for data collection: a standardized Likert-type Attitude Scale developed to assess students' perceptions regarding satisfaction, engagement, flexibility, and

effectiveness of each learning mode, and academic achievement records obtained from institutional examination results. The reliability of the attitude scale was established through a pilot study and statistical analysis, yielding a Cronbach's Alpha of 0.84, confirming good internal consistency. Validity was ensured through expert judgment in the field of education.

Data were collected with prior consent from institutional authorities and participants. For students engaged in virtual and blended learning, online survey methods were employed, while traditional learners completed the questionnaire in person. Academic scores were collected with due confidentiality. The data were analysed using descriptive statistics like mean and standard deviation to understand trends, and inferential statistics such as ANOVA to compare means among the three groups. Pearson's correlation coefficient was used to examine the relationship between attitude and achievement. The methodology was designed to ensure objectivity, reliability, and comparability across the diverse learning modalities.

DATA ANALYSIS AND INTERPRETATION

Table 1: Mean Attitude Scores of Teacher-Students Toward Different Learning Modes

Learning Mode	N	Mean Score	Standard Deviation (SD)
Traditional Learning	100	72.45	6.87
Blended Learning	100	79.62	5.94
Virtual Learning	100	68.34	7.12
ANOVA (F)	—	**F = 21.74**	**p < 0.01**

The mean attitude scores indicate that teacher-students had the highest positive attitude toward Blended Learning, followed by Traditional Learning, with Virtual Learning receiving the lowest scores. The ANOVA test reveals a statistically significant difference in attitudes among the three groups, implying that the learning mode considerably impacts students' perceptions. Blended Learning seems more engaging, probably due to its flexible and interactive nature, compared to the rigid or isolated structures of the other modes.

Table 2: Mean Educational Achievement Scores Across Learning Modes

Learning Mode	N	Mean Score	Standard Deviation (SD)
Traditional Learning	100	68.21	8.45
Blended Learning	100	74.88	7.06

Virtual Learning	100	65.47	8.90
ANOVA (F)	—	**F = 18.92**	**p < 0.01**

Blended Learning yielded the highest academic achievement scores, while Virtual Learning was associated with the lowest. Traditional Learning was in the middle. The significant F-value confirms that these differences are not due to chance. These results highlight the effectiveness of blended models, which offer a mix of structure, flexibility, and teacher interaction—key elements in enhancing academic performance among teacher-students.

Table 3: Correlation Between Attitude and Achievement in Each Learning Mode

Learning Mode	Pearson's r	Significance (p)
Traditional Learning	0.41	$p < 0.01$
Blended Learning	0.56	$p < 0.01$
Virtual Learning	0.33	$p < 0.05$

A positive and statistically significant correlation exists between attitude and achievement in all three learning modes. Blended Learning showed the strongest relationship ($r = 0.56$), reinforcing that favourable perceptions toward learning significantly influence academic success. This relationship highlights the importance of learner satisfaction, engagement, and adaptability in boosting outcomes, especially in hybrid learning settings that combine flexibility with structure.

Table 4: Learning Mode-Wise Frequency Distribution of Achievement Categories

Achievement Level	Traditional (n=100)	Blended (n=100)	Virtual (n=100)
High (Above 75%)	18	42	11
Moderate (60–75%)	56	48	44
Low (Below 60%)	26	10	45

Blended Learning had the highest number of high achievers (42%) and the lowest number of low performers, further validating its effectiveness. Virtual Learning had the highest number of low achievers (45%) and the least in the high-performance category. Traditional Learning

showed a mostly moderate performance. This distribution underscores the influence of instructional design and learning environment on learners' academic success.

Table5: Attitude, Achievement, Correlation, and Frequency Distribution

Learning Mode	Mean Attitude Score (SD)	Mean Achievement Score (SD)	Pearson's r (Attitude vs Achievement)	Male Attitude Mean (SD)	Female Attitude Mean (SD)	High Achievers (%)	Moderate Achievers (%)	Low Achievers (%)
Traditional Learning	72.45 (6.87)	68.21 (8.45)	0.41 ($p < 0.01$)	70.40 (6.55)	74.50 (6.12)	18	56	26
Blended Learning	79.62 (5.94)	74.88 (7.06)	0.56 ($p < 0.01$)	77.68 (6.01)	81.56 (5.30)	42	48	10
Virtual Learning	68.34 (7.12)	65.47 (8.90)	0.33 ($p < 0.05$)	67.12 (7.20)	69.56 (6.85)	11	44	45

The conjugated analysis provides a holistic view of how teacher-students responded to Traditional, Blended, and Virtual learning methods in terms of attitude, academic achievement, gender differences, and performance categories. Blended Learning stands out prominently across all dimensions. It recorded the highest mean attitude score (79.62) and mean achievement score (74.88), along with the strongest positive correlation ($r = 0.56$) between attitude and achievement. This suggests that teacher-students not only preferred blended approaches but also performed better academically when exposed to such methods. Moreover, both male and female students exhibited higher attitude scores in this mode, with females scoring slightly higher, indicating consistent positive engagement across gender. In contrast, Virtual Learning showed the lowest mean attitude (68.34) and achievement scores (65.47). The weakest correlation ($r = 0.33$) between attitude and achievement suggests that factors like poor interaction, technological barriers, and reduced motivation may hinder student success in fully online environments. It also had the highest percentage of low achievers (45%), reflecting significant challenges in maintaining academic performance in virtual formats.

Traditional Learning, while better than Virtual Learning, fell behind Blended Learning. With moderate mean scores (Attitude: 72.45, Achievement: 68.21), and a moderate correlation (r = 0.41), it still demonstrated educational effectiveness but lacked the flexibility and engagement that modern learners seem to value. Interestingly, female students had notably higher attitude scores than males in this mode as well. In terms of achievement distribution, Blended Learning produced the largest share of high achievers (42%) and the fewest low achievers (10%), further reinforcing its effectiveness in teacher education.

CONCLUSION

This study explored the comparative impact of Traditional Learning (T.L.), Blended Learning (B.L.), and Virtual Learning (V.L.) on the attitude and educational achievement of teacher-students. A sample of 300 teacher-students (100 per group) was assessed using standardized tools. The analysis revealed significant differences among the three teaching-learning modes.

Blended Learning proved to be the most effective, with the highest mean scores in both attitude and academic performance. It also demonstrated the strongest positive correlation between attitude and achievement, indicating that students who preferred this mode also performed better. Its interactive and flexible nature likely contributed to increased engagement and learning outcomes.

Traditional Learning showed moderate results, suggesting it remains effective but may lack the flexibility and innovation that modern learners expect. Virtual Learning, though convenient, was associated with the lowest scores in both attitude and achievement, likely due to reduced interaction, technical challenges, and motivational issues.

Gender-wise, female students displayed slightly higher positive attitudes across all modes, especially in Blended Learning. Achievement distribution also supported B.L. as the most successful model, with the highest percentage of high achievers.

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