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## International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

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# A Study on Effectiveness of Blended Learning among College Students in Coimbatore City

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**ABSTRACT:** This study focuses on assessing the effectiveness of blended learning among college students in Coimbatore City by evaluating its impact on academic performance, student engagement, and overall learning experiences. The research will cover diploma, undergraduate and postgraduate students across various disciplines in colleges and universities that have adopted blended learning methods. The study will also consider post-pandemic educational shifts, as many institutions integrated blended learning during and after the COVID-19 pandemic. Evaluating the differences between fully in-person learning and blended learning in terms of effectiveness, flexibility, and accessibility. Data will be collected through surveys, interviews, and academic performance records over a specific academic period to measure the effectiveness of blended learning.

**KEYWORDS:** Student engagement, Flexibility in learning, Learning Effectiveness

## I. INTRODUCTION

Despite the introduction of digital technology, education has experienced a dramatic change that has given rise to creative ways of teaching. Blended learning is one such strategy that combines traditional classroom instruction with online learning elements. Students can benefit from increased engagement with course materials, flexibility, and customized learning experiences with this blended approach. Coimbatore, known as an educational hub in South India, hosts numerous colleges and universities that have increasingly adopted blended learning methods. The shift has been accelerated by technological advancements and the need for more adaptive learning strategies, especially in response to disruptions pandemic. However, the effectiveness of blended learning in improving academic performance, student engagement, and knowledge retention remains a subject of academic inquiry.

Education is constantly evolving, with technological advancements reshaping how students acquire knowledge. One of the most significant developments in recent years is blended learning, a teaching approach that combines traditional in-person instruction with digital learning tools. Unlike conventional classroom-based learning, blended learning incorporates online resources, multimedia content, and interactive platforms to enhance student engagement and flexibility. This method allows students to learn at their own pace while still benefiting from face-to-face interactions with instructors. This study aims to evaluate the effectiveness of blended learning among college students in Coimbatore City by analysing its impact on learning outcomes, student satisfaction, and overall academic success. It will assess students' perceptions, challenges faced, and the extent to which blended learning enhances their educational experience compared to traditional methods. The findings of this study will contribute to the ongoing discourse on modern educational strategies and provide insights for educators, policymakers, and institutions in refining their blended learning frameworks to optimize student learning experiences.

## II. REVIEW OF THE STUDY

**Graham (2006)** Blended learning, also known as hybrid learning, integrates face-to-face teaching with online learning resources. According to blended learning enhances Student engagement by allowing flexibility while maintaining the benefits of inperson interactions. The findings suggest that educational institutions should design blended learning models that are adaptable to students' needs, providing structured yet flexible learning experiences. By addressing challenges such as technological accessibility and instructor support, blended



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can maximize student engagement, improve learning outcomes, and create a more interactive and personalized educational experience.

**Alra, Srivastava, and Gambhir (2025)** developed and validated the Blended Learning Effectiveness and Challenges Scale (BLECS) in the Indian educational context. Their study highlighted challenges such as technological integration and the need for effective educational outcomes, emphasizing the importance of addressing these issues for successful blended learning implementation. Challenges in Technological Integration – Many respondents reported facing technical difficulties such as internet connectivity issues, lack of proper digital infrastructure, and inadequate faculty training in using blended learning tools. Need for Educational Outcomes Focus – Some students felt that blended learning should be more focused on learning outcomes, rather than just using technology for the sake of innovation. They suggested structured lesson plans, interactive assignments, and faculty engagement as key areas for improvement.

### III. STATEMENT OF THE PROBLEM

The rapid advancement of digital technology has transformed traditional education, leading to the widespread adoption of blended learning, which combines face-to-face teaching with online learning components. While this approach offers greater flexibility, improved accessibility, and personalized learning experiences, its actual effectiveness among college students remains a topic of debate.

In Coimbatore City, many higher education institutions have incorporated blended learning into their curriculum. However, several concerns arise regarding its impact on student learning outcomes, engagement levels, and overall academic performance. Some students and educators find blended learning beneficial in enhancing understanding and retention, while others struggle with technological barriers, lack of motivation, and reduced direct interaction with teachers and peers. Additionally, factors such as infrastructure limitations, digital literacy, internet accessibility, and faculty readiness may influence the success of blended learning. Given these uncertainties, it is essential to investigate how well this learning model works for college students in Coimbatore, identify its challenges, and explore ways to optimize its implementation.

#### OBJECTIVE OF THE STUDY:

- To analyse the impact of blended learning on Students academic performance
- To identify challenges faced by students and faculty in implementing blended learning.
- To examine students' perceptions and attitudes toward blended learning methodologies.
- To evaluate the role of digital tools and platforms in enhancing blended learning experiences

### IV. RESEARCH METHODOLOGY

This study aims to evaluate the effectiveness of blended learning among college students in Coimbatore City by analysing its impact on academic performance, student engagement, and learning experiences. The research methodology outlines the approach, tools, and techniques used to collect, analyse, and interpret data.

#### PRIMARY DATA

Primary data has been collected through questionnaires and necessary secondary data have been collected from journal, magazines and website.

#### SECONDARY DATA

The secondary data for the information about the study on hr practice on employee engagement in IT sector have collected from book source, website, journal and magazines.

#### SAMPLE SIZE

Data has been collected from 120 respondents of “Effectiveness of blended learning among college students in Coimbatore City”.



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### SAMPLING TECHNIQUE

The sampling technique used for the study is Stratified Sampling. Stratified sampling is a type of probability sample that is selected based on characteristics on a population and objectives of the study.

### IV. TOOLS FOR ANALYSIS

#### ONE WAY ANOVA

#### TO IDENTIFY CHALLENGES FACED BY STUDENTS IN IMPLEMENTING BLENDED LEARNING

Factors	Source of variable	Sum square of	Df.	Mean square	F value	Sig
Internet Connectivity Issues	Between Groups	3.317	2	1.658	.911	.405
	Within Groups	213.050	117	1.821		
	Total	216.367	119			
Engagement & Interaction Challenges	Between Groups	.847	2	.424	.257	.774
	Within Groups	193.078	117	1.650		
	Total	193.925	119			
Lack of face to face interaction	Between Groups	10.482	2	5.241	3.815	.076
	Within Groups	160.718	117	1.374		
	Total	171.200	119			
Insufficient Training for Online Learning	Between Groups	7.099	2	3.550	2.637	.494
	Within Groups	7.099	117	1.346		
	Total	157.492	119			

Source : Primary Data



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### INTERPRETATION

The analysis examines different factors affecting online learning and their statistical significance. Internet connectivity issues, engagement challenges, lack of face-to-face interaction, and insufficient training for online learning were evaluated using ANOVA. The results show that none of these factors have a statistically significant impact, as indicated by the high significance values ( $p > 0.05$ ). Internet connectivity issues  $F = 0.911$ ,  $p = 0.405$  and engagement challenges  $F = 0.257$ ,  $p = 0.774$  have very low F-values, suggesting minimal differences between groups. Lack of face-to-face interaction shows a slightly higher F-value  $F = 3.815$ ,  $p = 0.076$ , indicating a marginal but still insignificant effect. Similarly, insufficient training for online learning  $F = 2.637$ ,  $p = 0.494$  does not show a significant difference. Overall, the findings suggest that these factors do not significantly vary across the groups analysed.

### V. DESCRIPTIVE STATISTICS

Descriptive statistics has been used to find the mean scores for the factors of organizational attributes prevailing in IT sector. The organization attributes prevailing in IT sector is measured by summing up the ratings given by the respondents for 11 statements at five point scale. The mean ratings have been assigned as 1 for Highly satisfied, 2 for satisfied, 3 for Neutral, 4 for dissatisfied and 5 for Highly dissatisfied

PARTICULARS	N	MINIMUM	MAXIMUM	MEAN	STD.DEVIATION
Flexibility in Managing Studies Through Blended Learning	120	1	5	3.19	1.218
Blended Learning and the Development of Self-Discipline & Time Management	120	1	5	3.18	1.066
Blended Learning Enhances Problem-Solving and Critical Thinking	120	1	5	3.31	1.151
Workload in blended learning is manageable	120	1	5	3.12	1.210
Valid N (listwise)	120			12.8	4.645



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### INTERPRETATION

The results suggest that participants generally have a neutral to slightly positive perception of blended learning. The mean scores (around 3.1 to 3.3) indicate moderate agreement on its flexibility, impact on self-discipline, problem-solving skills, and workload manageability. However, the relatively high standard deviations suggest varying opinions among respondents.

### VI. FINDINGS

- There is no significant difference in responses across groups regarding internet connectivity issues.  $p\text{-value} = 0.405 (>0.05)$
- There is no significant difference in responses across groups regarding engagement and interaction challenges.  $p\text{-value} = 0.774 (>0.05)$
- There is no significant difference in responses across groups regarding the lack of face-to-face interaction, though the  $p\text{-value}$  is closer to the threshold  $p\text{-value} = 0.076 (>0.05)$
- There is no significant difference in responses across groups regarding insufficient training for online learning.  $p\text{-value} = 0.494 (>0.05)$
- Flexibility in Managing Studies Through Blended Learning → The mean score (3.19) suggests a moderate level of agreement, with some variation ( $SD = 1.218$ ) in responses.
- Blended Learning and the Development of Self-Discipline & Time Management → The mean score (3.18) indicates a neutral to slightly positive perception, with a relatively lower variation ( $SD = 1.066$ ).
- Blended Learning Enhances Problem-Solving and Critical Thinking → The highest mean (3.31) suggests a slightly more positive view on this factor, though responses still vary ( $SD = 1.151$ ).
- Workload in Blended Learning is Manageable → The mean (3.12) indicates a neutral stance, with a notable variation in opinions ( $SD = 1.210$ ).

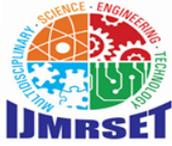
### VII. SUGGESTION

- Enhance Digital Infrastructure – Improve internet connectivity and provide access to reliable digital tools to ensure a seamless blended learning experience.
- Provide Adequate Training – Conduct training sessions for both students and faculty on using online learning platforms effectively.
- Increase Student Engagement – Incorporate interactive activities like quizzes, discussions, and gamification to enhance participation and motivation.
- Balance Online and Offline Learning – Ensure a well-structured mix of face-to-face and digital learning to maintain the benefits of both traditional and online education.

### VIII. CONCLUSION

The study highlights the significant impact of blended learning on student engagement, academic performance, and the overall learning experience. Through a comprehensive review of literature and empirical findings, it is evident that blended learning offers a more effective and flexible approach compared to traditional classroom settings and fully online methods. Key findings suggest that blended learning enhances learning outcomes by integrating technological tools with face-to-face instruction, catering to diverse learning styles and needs. Studies indicate that blended learning is particularly effective in STEM education, medical training, and higher education contexts, where hands-on experience and self-regulated learning play crucial roles.

Moreover, the research underscores the importance of institutional support, technological readiness, and instructional design in maximizing the benefits of blended learning. Self-regulated learning strategies, student motivation, and perceived enjoyment of technology-mediated learning environments emerge as critical factors in determining the success of blended learning programs. However, challenges such as digital accessibility, technological integration, and student engagement disparities remain concerns. Addressing these challenges requires well-structured instructional frameworks, faculty training, and continuous assessment of blended learning strategies to ensure their effectiveness. Overall, the study reaffirms that blended learning is a powerful educational approach that fosters deeper engagement, enhances critical thinking, and improves learning outcomes. By leveraging both in-person and digital learning



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experiences, institutions can create a more dynamic, inclusive, and student-centered learning environment.

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