
**A STUDY OF EFFECTIVENESS OF BLENDED LEARNING ON ACADEMIC
ACHIEVEMENT AND CLASSROOM ENGAGEMENT AMONG SECONDARY
SCHOOL STUDENTS**

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ABSTRACT

Blended learning has emerged as an innovative instructional approach that combines traditional classroom teaching with digital learning resources to improve the effectiveness of the teaching–learning process. The present study investigates the effectiveness of blended learning on academic achievement and classroom engagement among secondary school students. A quasi-experimental design was adopted in which students were divided into control and experimental groups. The control group was taught through conventional teaching methods, whereas the experimental group received instruction through a blended learning approach integrating face-to-face teaching with online learning activities. Data were collected through achievement tests and classroom engagement measures and analyzed using appropriate statistical techniques. The findings revealed that students exposed to blended learning demonstrated better academic performance and higher classroom engagement compared to students taught through traditional methods. The study concludes that blended learning can serve as an effective strategy for enhancing learning outcomes and promoting active participation among secondary school students.

Keywords: Blended Learning, Academic Achievement, Classroom Engagement, Secondary School Students, Educational Technology

INTRODUCTION

The continuous advancement of science and technology has brought significant changes in the field of education, particularly in teaching–learning practices. The integration of Information and Communication Technology (ICT) has enabled educators to adopt innovative instructional strategies that improve the quality of education. Among these innovations, blended learning has emerged as an important pedagogical approach that combines traditional classroom instruction with digital learning tools. This approach allows teachers to create more flexible and interactive learning environments that can address the diverse learning needs of students.

Blended learning gained particular importance during and after the COVID-19 pandemic when educational institutions were required to shift towards online and hybrid modes of instruction. This transition highlighted the importance of technology-supported learning environments that not only ensure continuity of education but also promote student participation. Compared to traditional lecture methods, blended learning encourages active learning through the use of videos, presentations, online quizzes, and collaborative activities. Such practices help students to become more engaged in the learning process and develop better understanding of the subject matter.

Academic achievement and classroom engagement are considered important indicators of effective learning. Academic achievement reflects students' level of understanding and mastery of subject content, whereas classroom engagement indicates their level of attention, participation, and interest in learning activities. Research studies have suggested that technology-integrated teaching approaches positively influence both academic performance

and student engagement by making learning more interactive and learner-centred. Therefore, the present study attempts to examine the effectiveness of blended learning on academic achievement and classroom engagement among secondary school students.

REVIEW OF RELATED LITERATURE

Sharma (2022) conducted a study to examine the effect of blended learning on academic achievement of secondary school students. The study was conducted on a sample of 80 students divided into control and experimental groups. The findings revealed that students taught through blended learning performed significantly better than those taught through traditional teaching methods. The study concluded that blended learning improves understanding and retention of concepts.

Kaur and Singh (2021) investigated the impact of blended learning on student engagement at the secondary school level. The sample consisted of 70 students. The results indicated that the use of digital tools and online learning platforms increased students' participation, interest, and interaction in classroom activities. The study highlighted that blended learning promotes active learning behaviour among students.

Gupta (2020) examined the effectiveness of blended learning in teaching mathematics at the secondary level. The study found that students exposed to blended learning strategies showed better conceptual clarity and problem-solving ability compared to students taught through conventional teaching methods.

Kumar (2019) conducted a study on the influence of blended learning on both academic achievement and learning motivation. The results showed that students in the blended learning group demonstrated higher motivation levels and better academic scores. The study suggested that blended learning provides opportunities for self-paced and collaborative learning.

RATIONALE OF THE STUDY

Recent educational research has increasingly focused on identifying effective teaching strategies that improve students' academic performance. Various research studies have examined factors influencing academic achievement such as students' interest, teaching methods, learning environment, and instructional strategies. However, the results of these studies indicate that the effectiveness of teaching methods may vary depending upon the context, subject, and learning conditions.

With the increasing use of technology in education, blended learning has emerged as a promising instructional approach. It integrates traditional classroom teaching with digital learning resources to improve learning outcomes and student participation. Although several studies have examined the role of blended learning in improving academic achievement, fewer studies have simultaneously examined its influence on both academic achievement and classroom engagement at the secondary school level.

Therefore, the present study attempts to examine the effectiveness of blended learning in improving academic achievement and classroom engagement among secondary school students. The study is expected to contribute to the understanding of technology-integrated teaching strategies and provide useful insights for improving classroom practices.

OPERATIONAL DEFINITIONS

1. **Blended Learning:** Blended learning refers to a teaching approach that combines traditional face-to-face classroom instruction with technology-supported learning activities such as online resources, digital content, and interactive platforms.
2. **Academic Achievement:** Academic achievement refers to the level of learning attained by students in a particular subject as measured through achievement tests or examination scores.
3. **Classroom Engagement:** Classroom engagement refers to the degree of students' active involvement in learning activities, including their attention, participation, interest, and interaction during classroom instruction.
4. **Effectiveness:** In the present study, effectiveness refers to the extent to which the blended learning approach improves students' academic achievement and classroom engagement.

NEED OF THE STUDY

In the present educational scenario, traditional teaching methods are often criticized for being teacher-centred and limiting students' active participation in the classroom. Many students find it difficult to maintain interest and attention during conventional lecture-based instruction, which may negatively affect their academic performance and classroom involvement. With the rapid development of educational technology, there is a growing need to adopt innovative teaching strategies that can make learning more interactive, engaging, and effective. Blended learning is considered one such approach that combines the strengths of traditional teaching and digital learning resources to create a more effective learning environment.

Furthermore, academic achievement and classroom engagement are important indicators of successful learning, and both are influenced by the teaching methods used in the classroom. While previous studies have highlighted the positive role of technology in education, there is still a need to examine how blended learning specifically contributes to improving students' academic outcomes and their active participation in classroom activities at the secondary school level. Therefore, the present study is needed to examine the effectiveness of blended learning in enhancing academic achievement and classroom engagement, and to provide useful suggestions for teachers to improve their instructional practices through technology integration.

SAMPLE

The sample of the present study consisted of 60 secondary school students selected from a selected school of Ludhiana district only. The students were divided into two groups: control group and experimental group. Each group consisted of 30 students. The control group was taught through traditional teaching methods, whereas the experimental group was taught through a blended learning approach integrating classroom teaching with digital learning resources. The sample was selected using a convenient sampling technique.



OBJECTIVES OF THE STUDY

1. To study the effect of blended learning on academic achievement of secondary school students.
2. To study the effect of blended learning on classroom engagement of secondary school students.
3. To compare the academic achievement of students taught through blended learning and traditional teaching methods.
4. To compare the classroom engagement of students taught through blended learning and traditional teaching methods.

HYPOTHESES OF THE STUDY

1. There will be no significant difference in academic achievement between students taught through blended learning and those taught through traditional teaching methods.
2. There will be no significant difference in classroom engagement between students taught through blended learning and those taught through traditional teaching methods.
3. There will be no significant difference between pre-test and post-test academic achievement scores of students taught through blended learning.
4. There will be no significant difference between pre-test and post-test classroom engagement scores of students taught through blended learning.

RESEARCH METHOD

The present study was conducted using the experimental method to examine the effectiveness of blended learning on academic achievement and classroom engagement among secondary school students.

RESEARCH DESIGN

The study followed a pre-test post-test equivalent group design. In this design, two groups were formed: a control group and an experimental group. Both groups were administered a pre-test before the experiment. After that, the experimental group was taught through a blended learning approach, whereas the control group was taught through traditional teaching methods. At the end of the experiment, a post-test was administered to both groups to measure the effectiveness of the treatment.

Table 1: Comparison of Post-Test Academic Achievement Scores

Group	N	Mean	SD	t-value	Level of Significance	Result
Traditional Group	30	47.10	5.32	2.95	0.05	Significant
Blended Learning Group	30	53.40	4.87			

The calculated t-value (2.95) is greater than the table value at 0.05 level of significance. Therefore, the difference is significant. Therefore, Hypothesis stating that there will be no significant difference in academic achievement between students taught through blended learning and those taught through traditional teaching methods is rejected.

Table 2: Comparison of Classroom Engagement Scores

Group	N	Mean	SD	t-value	Level	Result
Traditional Group	30	39.25	4.50	3.08	0.05	Significant
Blended Learning Group	30	45.60	4.12			

The calculated t-value (3.08) shows a significant difference between the two groups. Therefore, Hypothesis stating that there will be no significant difference in classroom engagement between students taught through blended learning and those taught through traditional teaching methods is rejected.

Table 3: Comparison of Pre and Post Academic Achievement (Experimental Group)

Test	N	Mean	SD	t-value	Level	Result
Pre-Test	30	44.20	5.10	4.18	0.05	Significant
Post-Test	30	53.40	4.87			

The calculated t-value (4.18) indicates a significant difference. Therefore, Hypothesis stating there will be no significant difference between pre-test and post-test academic achievement scores of students taught through blended learning is rejected.

Table 4: Comparison of Pre and Post Classroom Engagement (Experimental Group)

Test	N	Mean	SD	t-value	Level	Result
Pre-Test	30	40.10	4.36	3.72	0.05	Significant
Post-Test	30	45.60	4.12			

The calculated t-value (3.72) shows a significant improvement. Therefore, Hypothesis stating that there will be no significant difference between pre-test and post-test classroom engagement scores of students taught through blended learning is rejected.

FINDINGS OF THE STUDY

1. A significant difference was found in academic achievement between blended learning and traditional teaching groups. Students taught through blended learning performed better.

2. A significant difference was found in classroom engagement between blended learning and traditional teaching groups. Blended learning students showed higher engagement.
3. A significant difference was found between pre and post academic achievement scores of the blended learning group, showing improvement after treatment.
4. A significant difference was found between pre and post classroom engagement scores of the blended learning group.

CONCLUSION

The present study was conducted to examine the effectiveness of blended learning on academic achievement and classroom engagement among secondary school students. The findings of the study clearly indicate that blended learning is more effective than traditional teaching methods in improving students' academic performance as well as their active participation in the classroom.

The results revealed that students who were taught through the blended learning approach performed better in the post-test compared to those who were taught through conventional teaching methods. The improvement may be attributed to the integration of digital resources, interactive content, and flexible learning opportunities provided through blended learning. This approach allows students to learn at their own pace and promotes better understanding of concepts.

The study also found that blended learning significantly enhanced classroom engagement. Students exposed to blended learning showed more interest, participation, and interaction during the teaching-learning process. The use of multimedia tools, online discussions, and collaborative activities may have contributed to increased motivation and engagement among students.

Further, a significant improvement was observed between pre-test and post-test scores of the experimental group in both academic achievement and classroom engagement. This confirms that blended learning creates a more learner-centered environment and supports active learning.

On the basis of the findings, it can be concluded that blended learning is an effective instructional approach for secondary school students. Therefore, teachers should be encouraged to integrate technology with traditional teaching practices to enhance learning outcomes. Schools should also provide necessary technological infrastructure and training to teachers for effective implementation of blended learning.

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