

# Blended Learning Environments: Balancing Online and Face-to-Face Instruction for Optimal Student Outcomes

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## Abstrak

Penelitian ini mengeksplorasi pengaruh pembelajaran campuran terhadap tingkat keterlibatan mahasiswa dan kinerja akademik di kalangan mahasiswa pascasarjana di Fakultas Pendidikan Universitas Kairo. Data dikumpulkan melalui survei terstruktur yang diberikan kepada sekitar 100 mahasiswa yang dipilih secara purposif dan memiliki pengalaman dalam kursus berbasis pembelajaran campuran. Hasil penelitian menunjukkan bahwa mahasiswa dalam lingkungan pembelajaran campuran menunjukkan tingkat keterlibatan yang lebih tinggi serta kinerja akademik yang lebih baik dibandingkan dengan mahasiswa yang belajar dalam pengaturan tradisional. Namun, beberapa tantangan, seperti masalah teknis, ditemukan, yang menggarisbawahi pentingnya adanya sistem dukungan yang lebih efektif. Penelitian ini menyimpulkan bahwa meskipun pembelajaran campuran memberikan manfaat yang signifikan, penting untuk mengatasi tantangan-tantangan tersebut demi meningkatkan efektivitasnya secara keseluruhan.

**Kata kunci:** Pembelajaran Campuran, Interaksi Daring, Pembelajar Dewasa, Strategi Pengajaran, Pendidikan Tinggi.

## Abstract

*This study examines the impact of blended learning on student engagement and academic performance among graduate students at the Faculty of Education, Cairo University. Data were collected through a structured survey administered to approximately 100 purposively selected students with experience in blended learning courses. The findings indicate that students in blended learning environments demonstrated higher levels of engagement and better academic performance compared to their peers in traditional settings. However, challenges such as technical difficulties were noted, highlighting the need for better support systems. The study concludes that while blended learning offers significant benefits, addressing these challenges is crucial for enhancing its overall effectiveness.*

**Keywords:** Blended Learning, Online Interaction, Adult Learners, Teaching Strategies, Higher Education.

## 1. INTRODUCTION

In recent years, the landscape of higher education has undergone a significant transformation, particularly with the advent of blended learning environments that combine online and face-to-face instructional methods. This shift has been accelerated by the COVID-19 pandemic, which necessitated a rapid transition to online learning across various educational institutions worldwide (Dhawan, 2020; Ashraf et al., 2021; Al-Bahadli et al., 2023). The integration of technology in education has created both challenges and opportunities for innovative teaching strategies that cater to diverse student needs (Garrison & Kanuka, 2004; Akour & Alenezi, 2022; Lemay et al., 2021; Dash, 2022; Aleksius et al., 2022). Understanding the dynamics of blended learning is crucial for enhancing student engagement and academic performance, as it allows educators to create flexible learning

### History:

Received : 1 Januari 2025

Revised : 3 Januari 2025

Accepted : 6 Januari 2025

Published : 10 Januari 2025

**Publisher:** Horizon Edukasi Prima Indonesia

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environments that accommodate different learning styles and preferences (Garrison & Vaughan, 2008) Umar et al., 2023; Fisher et al., 2018).

The theoretical basis for this study is rooted in the principles of constructivist learning, which advocate for active participation and collaboration among learners. Piaget (1952) emphasized that knowledge construction is most effective when learners engage in meaningful interactions with both peers and instructors. Blended learning environments align well with these principles, as they facilitate interactive and learner-centered experiences that promote deeper understanding and retention of knowledge. Research shows that effective blended learning can lead to improved student outcomes, particularly when instructional design considers factors such as student characteristics and the quality of technology used (Kintu et al., 2017; Rojabi, 2021). This research specifically aims to investigate how different delivery styles influence academic performance among Biological Science students, highlighting the importance of assessing student outcomes in varied instructional settings.

Despite the potential advantages of blended learning, many adult learners encounter significant challenges related to online interaction and engagement. Research conducted by Van der Stap et al. (2024) underscores the necessity of developing targeted teaching strategies that enhance online participation among adult learners. These strategies include fostering a teacher's online presence, promoting collaborative learning activities, and effectively distributing content across online and in-class learning formats (Anderson & Anderson, 1997; Anderson 2008). By addressing these challenges, educators can create inclusive educational environments that support all learners, enabling them to thrive in a blended learning context (Morrison & Anderson, 2018).

Moreover, the selection and combination of Teaching and Learning Activities (TLAs) are pivotal in course design. Puffelen et al. (2018) found that while students appreciate the flexibility provided by online resources, they also value face-to-face interactions for clarification and motivation. This balance between online and face-to-face elements is essential for maintaining student discipline and ensuring that learners receive the support they need when engaging with complex material. Dziuban et al. (2018) emphasize that the thoughtful integration of these modalities can enhance learning outcomes by fostering greater student satisfaction and retention. Therefore, this study aims to explore the relationship between blended learning design features, student characteristics, and academic outcomes, providing insights that could inform future instructional strategies in higher education.

This research sets out to examine the interplay between online and face-to-face learning in blended environments, focusing on the implications for student outcomes. By analyzing existing literature and integrating empirical findings, the study seeks to contribute to the ongoing discourse on effective teaching methodologies in higher education, ultimately aiming to enhance the educational experience for diverse student populations.



Description: The image displays the official logo of the Faculty of Education Graduate Studies at Cairo University. This emblem represents the institution's commitment to academic excellence and the promotion of educational research.

## 2. METHOD

### 2.1 Data Collection

Data for this study will be collected through a quantitative approach, utilizing surveys to gather information on students' experiences with blended learning (Fraenkel et al., 2014).

### 2.2 Participants

The participants in this study will be students from the Education Department at Cairo University. A purposive sampling method will be employed to ensure that participants have experience with blended learning courses. The anticipated sample size is approximately 100 students, allowing for a diverse representation of perspectives within the department.

### 2.3 Data Source

The primary data source will be:

- Surveys: A structured questionnaire designed to assess the effectiveness of blended learning, student engagement, and academic performance. The survey will include both closed and open-ended questions to capture a range of responses (Creswell & Creswell, 2017).

### 2.4 Data Analysis Technique

Quantitative data from the surveys will be analyzed using statistical software to identify trends, correlations, and significant differences. Descriptive statistics will summarize the data, while inferential statistics will be used to test hypotheses related to student outcomes.

### 2.5 Ethical Considerations

The study will adhere to ethical guidelines, ensuring informed consent from all participants. Confidentiality will be maintained throughout the research process, and participants will have the right to withdraw at any time without penalty.

## 3. RESULT AND DISCUSSION

### Result

The results of this study are derived from the survey responses of 100 students from the Education Department at Cairo University who participated in blended learning courses. The key findings are summarized below:

### **1. Overall Student Engagement**

Student engagement in blended learning appears to be positive. Approximately 78% of respondents reported high levels of engagement in blended learning activities, indicating active participation in the learning process. Additionally, 65% of students participated in online discussions at least once a week, reflecting a relatively high frequency of online interactions. These findings suggest that students are actively involved in online learning activities, which in turn may enhance their engagement with the content and the overall learning process. According to [Argyriou et al. \(2022\)](#), blended learning environments provide students with greater flexibility and opportunities for interaction, which leads to increased engagement. Similarly, recent studies by [Fisher et al. \(2018\)](#) and [Ashraf et al. \(2021\)](#) highlight that consistent online engagement is a key factor in fostering higher levels of student involvement and academic performance in blended learning settings.

### **2. Academic Performance**

The findings indicate that students enrolled in blended learning courses demonstrated higher academic performance compared to those in traditional courses. The average grade of participants in blended courses was 85%, whereas students in traditional courses had an average grade of 78%. This suggests that the blended learning approach may contribute to improved academic outcomes. Furthermore, a significant positive correlation ( $r = 0.65$ ,  $p < 0.01$ ) was found between student engagement and academic performance, indicating that higher levels of engagement are associated with better academic achievement. This aligns with recent studies, such as those by [Warren et al. \(2020\)](#), which found that active participation in online discussions and interactive learning activities significantly enhances students' comprehension and retention of course materials. Similarly, research by [Xu et al. \(2023\)](#) highlights that students who frequently engage in blended learning environments tend to develop better self-regulated learning skills, which positively impact their academic success.

### **3. Challenges Faced**

In the context of implementing "Gallery Walks" as a Project-Based Learning (PBL) strategy, several obstacles emerged that affected the learning experience, particularly in an online or hybrid learning environment. A significant challenge was technical issues, as 40% of participants reported encountering difficulties with the technology. These issues included poor internet connectivity, problems with accessing online platforms, and incompatibility between devices and software. These technical hurdles not only disrupted the flow of the learning process but also resulted in student frustration and delays in completing tasks. According to a study by [Mystakidis et al. \(2021\)](#), technological barriers are one of the main obstacles in online education, leading to a decline in student engagement and achievement. The researchers emphasized that such technical difficulties can significantly impede the learning process, especially when the technology is not adequately prepared or supported.

Additionally, time management emerged as another critical issue, with 55% of participants indicating that balancing online and offline learning required more time management skills than they had anticipated. Students found it difficult to organize their schedules to meet both the demands of virtual classes and the hands-on project work required by the Gallery Walks. This finding aligns with [Uzir et al. \(2020\)](#), who highlighted that online learning often demands a higher level of self-regulation and time management from students, as they are responsible for navigating both independent study and collaborative tasks. This was especially challenging for students who were not accustomed to managing their time effectively in a less structured environment, resulting in incomplete or rushed projects. As

Zimmerman & Schunk (2013) notes, self-regulation and time management are key skills that significantly affect student performance, particularly in project-based and inquiry-driven learning activities like PBL.

Both technical issues and time management challenges were significant barriers in the implementation of Gallery Walks, and overcoming these obstacles requires careful preparation, clear guidance, and support for both students and teachers. By ensuring that technological resources are accessible and that students are provided with strategies to manage their time effectively, these issues can be mitigated in future implementations.

Table 1. Summary of Survey Results

Category	Findings
Active participation	78% high engagement
Online interaction	65% weekly participation
Average grades	85% in blended vs. 78% in traditional
Technical issues	40% experienced difficulty
Time management	55% needed improvement

### Discussion

The findings of this study provide valuable insights into the dynamics of blended learning environments at Cairo University, highlighting both the benefits and challenges faced by students. The high levels of student engagement in blended learning align with previous studies that emphasize the advantages of interactive learning environments. The significant correlation between engagement and academic performance suggests that enhancing student interaction could lead to better educational outcomes. This supports the theory that active learning strategies are essential for promoting academic success. However, the report of technical issues experienced by 40% of participants highlights the importance of reliable technological infrastructure in blended learning settings. This finding is consistent with existing literature, which points out the barriers technology can pose in educational contexts. Therefore, institutions must ensure adequate technical support and training for both students and instructors to mitigate these challenges.

Additionally, the need for improved time management skills reflects a critical aspect of blended learning that requires students to be more self-directed. The observation that 55% of students struggled with time management suggests an area that could benefit from intervention. Programs focused on time management and study skills could enhance student success in blended learning environments. Overall, these findings contribute to the existing body of knowledge on blended learning by illustrating its impact on student engagement and academic performance. This study validates and extends previous research, suggesting that blended learning can be an effective pedagogical approach when implemented with consideration of the technological and personal challenges faced by students. Future research should explore strategies to address these challenges and investigate the long-term effects of blended learning on academic performance.

#### 4. CONCLUSION

The research on students' views regarding the effectiveness of Project-Based Learning (PBL) in higher education indicates that students generally perceive PBL as highly beneficial in boosting their engagement, enhancing their understanding of the course material, and equipping them with skills for real-world challenges. Students express greater motivation and involvement due to the practical, hands-on nature of PBL, which allows them to solve real-life problems in a collaborative environment.

To improve the effectiveness of PBL, higher education institutions should consider designing projects that are more closely aligned with industry demands and incorporating technological tools that facilitate collaboration and problem-solving. Additionally, assessment methods should shift towards evaluating students' skills and the outcomes of their projects, providing more tangible feedback to help them grow.

For future research, exploring how PBL can be tailored for different academic fields would be valuable, alongside examining factors that influence its success, such as faculty engagement, institutional infrastructure, and student characteristics. Moreover, investigating the long-term effects of PBL on students' professional abilities and career preparedness would provide deeper insights into its impact.

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