



A COMPARATIVE STUDY OF ONLINE VS. TRADITIONAL CLASSROOMS: STUDENT PERFORMANCE AND ENGAGEMENT

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Abstract: This study aims to explore and compare student engagement and performance in online versus traditional classrooms through a qualitative literature review. As the educational landscape evolves, understanding the differences between these learning environments is crucial for optimizing educational strategies. A synthesis of various studies reveals that traditional classrooms consistently outperform online settings in terms of student participation, interaction, and motivation. Traditional classrooms offer a structured environment with real-time feedback, social presence, and peer interaction, which significantly enhance engagement. In contrast, online classrooms, while offering flexibility and personalized learning, face challenges such as reduced social interaction, lack of immediate feedback, and the need for higher self-regulation, leading to lower engagement and performance. The findings suggest that while online learning platforms can be effective, they require improved pedagogical strategies and digital tools to foster deeper interaction and collaboration. This study recommends further research on blended learning models that combine the best elements of both environments to maximize student engagement and performance. Future research should also explore the role of social presence in online learning and investigate the long-term impact of both learning environments on academic success and retention.

Keywords: Student Engagement, Online Learning, Traditional Classrooms, Performance, Blended Learning, Social Presence.

INTRODUCTION:

The rapid evolution of educational technologies has transformed traditional educational models by enabling online learning environments that extend learning opportunities beyond physical classrooms [1], [2]. Online learning has become particularly pervasive following the COVID-19 pandemic, where institutions worldwide adopted digital modalities to sustain educational continuity [3]. This transformation challenges conventional assumptions about classroom instruction and raises vital questions about how different learning environments affect student outcomes, particularly performance and engagement [3].



Student performance and engagement are core indicators of learning effectiveness, as they reflect not only students' academic achievements but also their active participation in the learning process [3]. Meanwhile, traditional face-to-face classrooms have long been upheld for their structured social interactions, direct instructor feedback, and established pedagogical practices [4]. However, the rapid shift to online platforms necessitates empirical comparisons to determine whether online modalities can match or surpass traditional approaches in supporting student learning.

Despite a substantial body of research on online and traditional learning environments, significant gaps remain in systematically comparing both modalities in terms of qualitative outcomes such as student engagement and lived learning experiences. Many existing studies emphasize academic achievement differences but pay limited attention to engagement dynamics that influence long-term learning success [3], [5]. Moreover, conflicting findings in the literature underscore the complexity of these comparisons: some studies report comparable performance across modalities when instructional design is robust, whereas others highlight challenges in online engagement and participation [3], [6]. This inconsistency reveals a clear research gap in understanding how online environments support or impede engagement relative to traditional classrooms, especially through a qualitative lens that centers on experiential dimensions of learning.

Addressing this gap is urgent in the context of globalization and digitalization of education, where institutions must make informed decisions about pedagogical investments. A comparative study of online versus traditional classrooms is therefore necessary to provide robust evidence on how each mode influences both academic outcomes and students' engagement levels. By analyzing existing empirical and theoretical literature, this study contributes to clarifying the nuanced benefits and limitations associated with each instructional modality. The novelty of this research lies in its qualitative emphasis on engagement—not merely performance metrics—which remains underexplored in comparative educational studies [3]. Unlike many quantitative assessments that generalize results through statistical measures, a qualitative literature synthesis allows for deeper insights into how students perceive and interact within diverse learning contexts.



Accordingly, the primary aim of this research is to qualitatively compare student performance and engagement between online and traditional classrooms through systematic literature synthesis. This study seeks to answer the question: How do online and traditional learning environments differ in terms of supporting student academic performance and engagement? By doing so, it not only evaluates educational outcomes but also highlights pedagogical implications for enhancing learning experiences across modalities. The findings from this research will benefit educators, instructional designers, and policymakers by informing evidence-based decisions on pedagogical practices and technology integration in education.

METHODOLOGY:

This study adopts a qualitative research design grounded in systematic literature review as the primary research approach. Qualitative research focuses on exploring complex phenomena and generating deeper understanding of experiences, meanings, and constructs that cannot be captured through numerical measurement alone [7]. In this context, a literature review methodology serves as a robust framework to explore and synthesize existing scholarly evidence on the comparative dynamics of online and traditional classroom environments in terms of student performance and engagement [8]. A literature review in qualitative research entails the comprehensive identification, appraisal, and integration of relevant studies, conceptual frameworks, and theoretical perspectives to answer research questions and illuminate gaps in the literature [8], [9], [10].

The sources of data for this research consist of peer-reviewed journal articles, academic books, conference proceedings, and authoritative reports that address online and traditional educational environments. These data sources are accessed through academic databases including Springer, Taylor & Francis, Scopus-indexed journals, SAGE Journals, and other reputable scholarly repositories. Selection criteria for literature include relevance to the research objectives, publication in the last decade, and methodological rigor, ensuring a representative and contemporary evidence base for analysis [8], [9].

Data collection in this study is conducted through meticulous literature search and retrieval processes. This involves constructing search strings using combinations of keywords such as “online learning”, “traditional classroom”, “student performance”, and “student engagement” across multiple databases. Studies are screened based on titles, abstracts, and full texts to ascertain their relevance to the research focus. Abstracts are reviewed for conceptual alignment with the study’s comparative theme before full texts are included in the analysis. This systematic literature



collection strategy enables the accumulation of data that directly speaks to the research questions and facilitates a coherent interpretation of existing evidence [9], [10].

Once relevant literature is identified and collected, data analysis proceeds through qualitative synthesis, a method involving thematic extraction, categorization, and interpretation of findings across multiple studies. Thematic synthesis enables the identification of recurring concepts and patterns across the literature, such as motivational factors affecting engagement, instructional strategies influencing performance, and contextual elements unique to each learning modality. This analytical process adheres to established qualitative synthesis principles, which aim to integrate diverse findings into coherent thematic constructs that address the comparative research objectives [8], [11]. The final analysis generates interpretive insights that contribute to understanding not only what the literature reports about performance and engagement, but also why these patterns emerge in different classroom contexts.

RESULTS AND DISCUSSION:

The comparative analysis of online and traditional classroom environments in terms of student performance and engagement reveals significant differences in how each modality affects student outcomes. Drawing from an extensive review of existing literature, the following analysis presents a detailed examination of these differences, particularly focusing on student engagement, performance, and factors that influence these aspects in both online and traditional classroom settings.

Student Engagement: Online vs. Traditional Classrooms

Student engagement plays a crucial role in determining the effectiveness of any educational environment. Across the studies reviewed, it was evident that traditional classrooms consistently outperform online classrooms in terms of student participation, interaction, and motivation. As shown in Figure 1, traditional classrooms demonstrate significantly higher levels of engagement across all three measured metrics. Specifically, participation in traditional classrooms is nearly 90%, which is considerably higher than the 60% reported in online settings. This difference highlights the challenge of fostering active participation in an online environment, where students may struggle with distractions or lack of immediate interaction.

Similarly, traditional classrooms also show a marked advantage in terms of interaction, with an engagement rate of approximately 85%, compared to just 60% in online classrooms. This is a key observation, as interaction—both between students and instructors and among peers—is vital



for deeper learning and critical thinking. In online classrooms, the absence of physical presence and spontaneous discussions can result in reduced engagement. Specific disciplinary studies have demonstrated that online learners can still show meaningful cognitive, emotional, and behavioral engagement, depending on instructional design and interactivity [12]. Furthermore, motivation, which is a critical factor for sustained engagement, is about 90% in traditional classrooms, while online classrooms report a motivation level of around 70%. This suggests that the direct and immediate feedback offered in traditional classrooms plays a vital role in maintaining student interest and motivation.

Table 1: Comparison of Student Engagement Metrics in Online vs. Traditional Classrooms [3], [4], [13]

Engagement Metric	Online Classroom	Traditional Classroom
Participation	60%	90%
Interaction	60%	85%
Motivation	70%	90%

The consistent advantage of traditional classrooms in fostering engagement can be attributed to their structured environment, immediate feedback, and the social interaction that is inherent to face-to-face learning, which aligns with findings that face-to-face classrooms provide superior social presence, enhancing student engagement [14]. These factors combine to create a more dynamic and participatory learning experience compared to the online environment, where such elements can be more difficult to replicate.

Impact on Student Performance

The impact of learning environments on academic performance remains a subject of ongoing debate, with mixed outcomes reported across studies. Some researchers argue that online learning environments can lead to comparable or even superior academic performance, particularly due to the flexibility they offer and the opportunity for personalized learning, although systematic reviews highlight that online learning often struggles with engagement and social interaction, which can impede performance [15]. Empirical studies indicate that classroom learning was more effective than online learning in terms of student academic performance, with higher classroom interaction and lesson interactivity linked to better outcomes [16]. However, previous comparative studies have found that students often demonstrate higher academic performance in traditional classroom environments compared to online learning, suggesting that social interaction and structured



face-to-face instruction may support learning outcomes more effectively than virtual modalities [17]. Online platforms often allow students to learn at their own pace, access resources at any time, and engage in asynchronous communication, which can benefit students who need more time to absorb content [3].

However, other studies highlight the challenges inherent in online learning that may hinder consistent academic performance. A key issue is the lack of social presence and face-to-face interaction, which can make it harder for students to remain motivated and engaged in the learning process [18], [19]. Studies comparing academic grades in both environments highlight that face-to-face learning provides a more effective structure for interaction and engagement, leading to better performance in subjects requiring collaboration [20]. In particular, subjects that require intensive interaction, such as group discussions, collaborative projects, and peer assessments, tend to see better performance in traditional classrooms, where students can engage directly with each other and their instructors [5]. Traditional classrooms provide a richer environment for collaboration, which is crucial for subjects that involve critical thinking, debate, and idea exchange [4]. The social element of traditional learning thus significantly enhances students' performance in these contexts.

Factors Influencing Engagement

Several factors influence the levels of engagement in both online and traditional classrooms. In online classrooms, the flexibility and accessibility of digital tools are fundamental in promoting engagement. Students can access materials at their own convenience, which is particularly beneficial for those balancing other responsibilities. However, challenges such as the lack of immediate feedback, the isolation of learning without real-time interactions, and the need for self-regulation often result in lower levels of engagement. Research on student engagement in online learning also suggests that engagement comprises multiple dimensions—skill, emotional, participation, and performance engagement—which are critical to understanding effectiveness in virtual contexts [21]. Many students in online environments report feeling disconnected from their peers and instructors, which negatively impacts their motivation and participation [22], [23], [24].

The integration of social presence in online classrooms has been shown to humanize the learning experience, increasing student interaction and fostering a sense of community among learners. This is especially crucial in online learning environments where students often experience disconnection and isolation. Effective use of tools such as video conferencing, chat boxes, and discussion forums helps build social presence, thereby improving engagement and creating a more connected learning experience [25].



Studies have shown that incorporating video cameras, microphones, and chat boxes in online learning environments can significantly improve social presence and engagement in group activities. These tools enable students to interact more dynamically, thereby enhancing their sense of belonging and motivation in online settings [26].

In contrast, traditional classrooms benefit from a structured environment that naturally fosters engagement through direct interaction and immediate feedback from instructors. The physical presence of classmates and instructors facilitates spontaneous discussions and the formation of study groups, which encourages active participation and higher levels of motivation. Additionally, the social interaction that occurs in traditional classrooms plays a vital role in keeping students engaged. Peer interaction, whether through group activities or informal discussions, provides emotional support and promotes a sense of community, which is essential for maintaining motivation [3].

Pedagogical and Technological Implications

The findings of this study emphasize the importance of integrating effective pedagogical strategies into both online and traditional learning environments. In online classrooms, active learning techniques such as peer reviews, online discussions, and collaborative projects can significantly increase student engagement. These methods are essential for mitigating the effects of social isolation and ensuring that students remain actively involved in the learning process. By incorporating more interactive elements, instructors can create a more engaging and dynamic online learning experience that replicates some of the benefits of traditional classrooms [7].

Traditional classrooms, on the other hand, naturally offer more opportunities for active learning due to their structure. Face-to-face interactions allow for spontaneous discussions, real-time feedback, and collaborative activities that are vital for fostering deeper learning and engagement. However, there is also a growing recognition of the importance of integrating technology in traditional classrooms. Digital tools that support collaborative learning, such as learning management systems and collaborative platforms, can enhance the learning experience by offering additional resources and communication channels. The challenge, therefore, is not only in integrating technology into traditional classrooms but also in ensuring that online classrooms make use of similar technologies to foster a more interactive and engaging learning environment.



DISCUSSION

The findings from this study underscore the significant differences in student engagement and performance between online and traditional classroom environments, which are shaped by various factors such as social interaction, feedback mechanisms, and the inherent structure of each modality. These differences are especially prominent in the context of engagement, where traditional classrooms show significantly higher levels of participation, interaction, and motivation compared to online settings. This discrepancy can be understood through the lens of social presence theory, which posits that engagement in online learning is contingent upon students' ability to establish a sense of social connection with their peers and instructors [27]. Research has demonstrated that online interaction influences social presence, which in turn significantly affects learning engagement, suggesting that the lack of social presence may reduce engagement in virtual settings [18]. Comparative research highlights that engagement and achievement patterns can differ substantially between online and face-to-face modes, with interactive elements and instructor presence being crucial determinants of academic success [28]. Traditional classrooms naturally provide this social presence through face-to-face interactions, fostering a more immediate and sustained engagement among students. The findings from Akpen (2024) and Addae (2023) support this view, highlighting that the lack of spontaneous interaction and feedback in online classrooms may contribute to reduced student engagement, as students often feel isolated or disconnected [29].

The significant gap in participation and motivation between online and traditional classrooms reflects a broader trend in educational research, where the absence of real-time feedback and the lack of social integration in online environments are identified as major challenges. According to Tinto's (2012) theory of student retention, social integration plays a crucial role in keeping students engaged and motivated, which is more readily achieved in traditional, face-to-face classrooms [30]. The social element of education—the peer interactions, group discussions, and immediate instructor feedback—helps create a sense of belonging and community, which is difficult to replicate in an online setting without deliberate design. This aligns with the findings of Kumari (2021), who asserts that traditional classrooms are inherently better at fostering motivation through their structured, interactive nature.

While traditional classrooms provide these benefits, the flexibility of online learning remains a significant advantage, particularly for students who require a more individualized approach to learning. Online environments allow for personalized pacing, providing students with the autonomy to engage with content at their own convenience, a flexibility that traditional classrooms



struggle to offer. However, the findings also indicate that this flexibility comes at a cost. While students may benefit from more control over their learning schedules, the lack of regular interaction and the self-regulation required in online learning can lead to disengagement and lower performance, particularly for students who thrive in interactive settings. This dynamic is well-documented in the literature, with Sultan Mohd et al. (2024) emphasizing that online learning platforms, despite their flexibility, often result in less consistent performance, especially in subjects that demand high levels of collaboration and peer interaction.

The contrast between the two environments highlights the importance of pedagogical strategies tailored to each setting. Active learning techniques, such as collaborative projects, peer reviews, and group discussions, have been shown to increase engagement in both online and traditional classrooms. However, in online environments, these strategies must be purposefully integrated using digital tools that can facilitate real-time communication and collaboration. Tools like online discussion boards, video conferencing, and collaborative platforms can replicate some of the interactivity found in traditional classrooms, though their effectiveness depends heavily on how well they are integrated into the learning design [7]. This points to a need for a hybrid approach to education, where both online and traditional elements are blended to create a more inclusive and engaging learning experience.

In traditional classrooms, the role of technology is also crucial in enhancing engagement. While face-to-face interaction is a hallmark of traditional learning, integrating technologies such as interactive learning platforms, real-time polling, and multimedia content can enhance the learning experience. The challenge, as highlighted by Tenny et al (2017), is ensuring that technology complements rather than detracts from the core value of in-person interactions. The evolving educational landscape suggests that blended learning environments—which combine the benefits of both digital and traditional methods—hold the potential to maximize student engagement and performance across various learning contexts.

Ultimately, the findings of this study suggest that while both online and traditional learning environments have their respective strengths and challenges, the future of education will likely lie in finding ways to integrate the best of both modalities. Ensuring that online learning environments are equipped with active learning strategies and collaborative tools, while also integrating technological enhancements in traditional classrooms, could provide a more dynamic, inclusive, and engaging learning experience for all students. The need for educational innovation is clear, as the landscape of learning continues to evolve in response to technological advancements and shifting student needs.



CONCLUSIONS

This study highlights the distinct differences in student engagement and performance between online and traditional classrooms, as revealed through a comprehensive literature review. Traditional classrooms consistently outperform online settings in terms of participation, interaction, and motivation, primarily due to the inherent structure, face-to-face interaction, and immediate feedback that foster a more engaging and collaborative environment. While online learning offers flexibility and personalized pacing, it presents challenges in sustaining engagement, particularly due to the lack of social presence and real-time interaction, which are essential for maintaining student motivation and performance. The findings suggest that although online learning has proven effective for some learners, it cannot fully replicate the dynamic interaction and peer support found in traditional classrooms. Consequently, it is clear that future educational practices should explore blended learning models that combine the best features of both online and traditional settings. This approach could ensure a more inclusive, flexible, and engaging learning experience that caters to diverse student needs.

Recommendations for Future Research

Future research should explore hybrid learning environments that effectively integrate digital tools and traditional face-to-face interactions to enhance student engagement and performance. Studies examining the specific pedagogical strategies that work best in each setting would provide valuable insights into how to optimize learning outcomes in both environments. Additionally, research focused on longitudinal studies to track the long-term effects of online versus traditional learning on student success and retention would further deepen our understanding of how each modality impacts academic achievement over time. Exploring the role of social presence in online classrooms and developing strategies to enhance peer interaction in virtual environments could also address some of the engagement challenges identified in this study. Finally, comparative studies that analyze diverse student populations across various disciplines will provide a broader perspective on how different contexts influence the effectiveness of online and traditional learning.



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