



**Original Article**

**IMPACT OF ONLINE LEARNING ON STUDENT ENGAGEMENT**

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**Abstract:**

*The growing use of online learning, especially during and after the COVID-19 pandemic, has significantly changed how higher education is delivered across the world. Although digital platforms offer flexibility, wider access, and diverse learning resources, questions remain about how effectively they support student engagement. Engagement, which includes behavioral participation, cognitive involvement, and emotional connection, plays a vital role in students' academic achievement. This study explores how online learning influences student engagement, highlights the difficulties learners experience in virtual classrooms, and suggests practical strategies to improve participation. A mixed-method research design was adopted, using survey responses from 60 higher education students along with a review of relevant academic literature. Quantitative data were examined through descriptive statistical techniques, while qualitative feedback provided deeper insights into student experiences. The results show that online learning improves flexibility and access to study materials; however, challenges such as reduced interaction, digital fatigue, motivational issues, and technical problems continue to limit sustained engagement. To address these concerns, the study proposes the use of multimedia content, collaborative activities, gamified learning elements, timely instructor feedback, and training in digital teaching methods. This research contributes to a better understanding of how online learning environments can be strengthened to support meaningful and active student engagement.*

**Keywords: Online Learning, Student Engagement, Digital Education, Higher Education, E-learning**

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**Introduction:**

The rapid growth of digital technologies has brought a major shift in the way education is delivered. This change became especially visible

during the COVID-19 pandemic, when universities and colleges around the world were required to move from physical classrooms to online learning platforms. What initially began as an emergency



response has now evolved into a long-term transformation, with online and hybrid learning models continuing to play an important role in higher education because of their flexibility, accessibility, and ability to reach diverse groups of learners.

Student engagement is widely recognized as a key factor in successful learning outcomes. It is a multidimensional concept that includes students' active participation in learning activities (behavioral engagement), their mental investment in understanding and applying knowledge (cognitive engagement), and their emotional connection to the learning process (emotional engagement). When students are highly engaged, they are more likely to perform well academically, remain motivated, and experience greater satisfaction with their studies.

Despite its many advantages, the online learning environment also presents specific challenges for maintaining student engagement. Limited opportunities for face-to-face interaction, dependence on technology, feelings of isolation, and difficulties in self-regulation can reduce students' involvement in virtual classrooms. In this context, it becomes essential to understand how online learning affects different dimensions of engagement and what can be done to support learners more effectively.

Accordingly, this study investigates the influence of online learning on behavioral, cognitive, and emotional aspects of student engagement. It also identifies the major challenges experienced by students in digital learning settings and proposes practical strategies to improve participation and interaction in online education.

#### **Objectives of the Study:**

1. To examine how online learning influences the behavioral, cognitive, and emotional dimensions of student engagement.

2. To explore the key difficulties students experience in staying engaged within online learning environments.
3. To suggest practical and effective strategies for improving student participation and interaction in digital education.

#### **Literature Review:**

Online learning has become a major mode of instruction in higher education, particularly after the COVID-19 pandemic, and has influenced how students engage with academic content and peers. Research shows that online learning environments offer significant benefits, such as flexibility and improved access to diverse digital resources, which can support student engagement when implemented effectively (Dhawan, 2020; Bond et al., 2021). These advantages allow students to manage their study schedules more independently and revisit learning materials at their own pace, which can enhance behavioral and cognitive involvement (Henrie et al., 2015).

Student engagement itself is a multifaceted construct, encompassing behavioral participation, cognitive effort, and emotional connection to learning activities (Fredricks et al., 2004; Kahu, 2013). Behavioral engagement refers to the active participation of students in educational tasks, cognitive engagement involves mental investment in understanding concepts, and emotional engagement reflects students' attitudes and feelings toward learning (Fredricks et al., 2004). In the context of online learning, meaningful interaction—among students, instructors, and digital content—is critical for sustaining engagement across these dimensions (Martin & Bolliger, 2018).

However, many studies highlight that online learning can inadvertently limit personal interaction, which may reduce students' sense of belonging and motivation (Bond et al., 2021; Kahu, 2013). The



physical separation inherent in virtual classrooms often challenges the development of social presence, which is a key driver of emotional engagement (Kahu, 2013). Similarly, Henrie et al. (2015) noted that while technology-mediated instruction provides new opportunities for engagement, it also demands students' self-regulation and digital readiness, which not all learners possess.

Additional challenges identified in the literature include **digital fatigue**, **technical issues**, and **self-motivation difficulties**. Prolonged screen time and extended virtual sessions can contribute to exhaustion and loss of focus, which negatively impact cognitive engagement (Dhawan, 2020).

Technical barriers, such as unstable internet connectivity, further disrupt continuity and reduce students' active participation in online classes (Bond et al., 2021). Moreover, students often struggle with self-discipline and time management in online settings, which affects their sustained involvement in learning activities (Martin & Bolliger, 2018).

Conversely, research suggests that carefully designed online instruction—especially with interactive tools and collaborative activities—can promote engagement. Incorporating multimedia elements, such as videos and quizzes, along with opportunities for peer discussion, has been shown to foster higher interest and cognitive involvement (Henrie et al., 2015; Martin & Bolliger, 2018). These strategies help create a more dynamic learning environment that supports both interaction and higher-order thinking.

This literature establishes that online learning has both **positive and negative effects** on student engagement. While flexibility and accessibility make digital education appealing, meaningful interaction and structured instructional design are essential to address challenges related to motivation, engagement, and learner satisfaction. This literature provides a theoretical foundation for

examining how online learning influences behavioral, cognitive, and emotional engagement in higher education settings.

#### **Limitations and Scope for Future Research:**

1. The study is limited to a small sample of 60 students, which restricts generalization.
2. Findings reflect a specific group of learners and may not apply to all educational contexts or disciplines.
3. The research captures student views at one point in time; future studies can use longitudinal designs.
4. Larger and more diverse samples can improve the reliability of future research.

#### **Research Methodology:**

This study adopted a mixed-method research design, integrating quantitative and qualitative approaches to provide a comprehensive understanding of student engagement in online learning.

##### **1 Primary Data Collection:**

- A structured online questionnaire was administered to 60 higher education students who had experienced online learning during and after the COVID-19 pandemic.
- The questionnaire comprised both closed-ended and open-ended questions.
- Items were designed to assess two dimensions of engagement: behavioral and emotional.
- Responses were collected using a survey.

##### **2 Secondary Data Collection:**

- Relevant academic journals, research articles, and reports on online learning and student engagement were reviewed.
- The literature provided theoretical support and comparative insights for interpreting primary findings.



### 3 Data Analysis Techniques:

- Quantitative data were analyzed using descriptive statistics, including percentages and averages.
- Qualitative responses were thematically analyzed to identify recurring patterns and perceptions.

This methodological approach ensured triangulation of findings and enhanced the reliability and validity of results.

### Data Analysis and Findings:

The analysis of student responses highlights several important trends regarding the impact of online learning on engagement. The findings reflect both positive and negative experiences reported by learners.

Table 1: Impact of Online Learning on Student Engagement

Aspect	Impact Type	Percentage of Students (%)
Flexibility in balancing studies with responsibilities	Positive	70
Access to digital resources improved learning	Positive	65
Interactive features increased interest	Positive	55
Lack of personal interaction	Negative	30
Zoom fatigue and loss of focus	Negative	35
Poor internet connectivity and technical issues	Negative	45
Struggled with self-motivation and time management	Negative	45

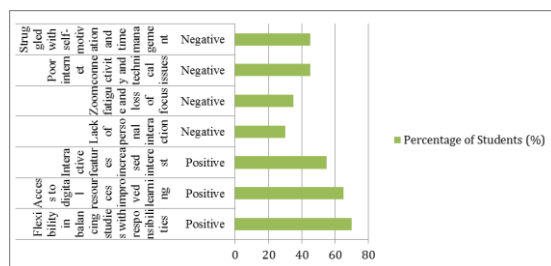


Fig.1 Impact of Online Learning on Student Engagement

#### 1 Positive Impacts of Online Learning

- Flexibility:** A majority of students (70%) indicated that online learning helped them manage academic responsibilities alongside personal commitments. The ability to attend classes remotely and access recorded lectures at convenient times made learning more adaptable to individual schedules.
- Access to Digital Resources:** About 65% of respondents reported that their learning experience improved due to the availability of digital resources such as recorded lectures, e-

books, and online tutorials. These materials allowed students to revisit complex topics and learn at their own pace.

- Interactive Features:** Nearly 55% of students felt that interactive tools, including polls, quizzes, and breakout rooms, increased their interest and participation during online sessions. Such features encouraged active involvement and made virtual classes more engaging.

#### 2 Negative Impacts of Online Learning:

- Lack of Personal Interaction:** Around 30% of students identified reduced interaction with peers and instructors as a major limitation of online learning. The absence of face-to-face communication affected their sense of connection and belonging.
- Digital Fatigue:** Approximately 35% of respondents experienced exhaustion and difficulty concentrating during long online sessions. Prolonged screen time contributed to



what is commonly described as digital or “Zoom” fatigue.

- **Technical Issues:** About 45% of students reported problems such as unstable internet connectivity and software-related difficulties, which disrupted their learning process and caused frustration.
- **Motivational Challenges:** An equal proportion (45%) of respondents stated that they struggled with self-discipline and time management in the online learning environment. The lack of a structured classroom setting made it harder for some learners to stay focused and meet deadlines.

**3 Interpretation of Findings:** The findings indicate that online learning has a **dual effect** on student engagement. On the one hand, flexibility and improved access to digital resources enhance learning experiences and support independent study. On the other hand, challenges such as reduced social interaction, digital fatigue, technical constraints, and motivational difficulties limit sustained engagement. These results suggest that online learning can be effective only when supported by purposeful instructional design, strong technological infrastructure, and well-planned engagement strategies.

#### **Discussion:**

The study shows that online learning can effectively support education when its technological benefits are combined with sound teaching practices. Flexibility and access to digital resources make learning more convenient and adaptable for students, suggesting that online education can complement traditional classrooms.

However, challenges such as limited interaction, digital fatigue, and motivational issues highlight the need for better learner support and structured engagement. Student engagement depends not only

on technology but also on instructional design, communication, and teaching methods. Collaborative activities, timely feedback, and inclusive virtual environments are essential to sustain cognitive and emotional engagement in online learning.

#### **Strategies to Enhance Student Engagement:**

Drawing on insights from existing research and observed learning practices, the following strategies are suggested to improve student engagement in online learning environments:

- The use of multimedia resources such as videos, animations, and audio content to maintain learner interest and improve understanding.
- Encouraging peer interaction through group assignments, discussion forums, and virtual teamwork to strengthen collaboration and social connection.
- Providing timely and personalized feedback to help students stay motivated and improve their academic performance.
- Introducing gamified learning elements, such as badges, points, and challenges, to make learning more interactive and enjoyable.
- Organizing faculty training programs focused on digital pedagogy and effective online instructional design.
- Designing shorter, more interactive learning sessions rather than long lectures to reduce digital fatigue and improve concentration.

#### **Conclusion:**

This study examined the impact of online learning on behavioral, cognitive, and emotional aspects of student engagement. The findings show that while online learning offers flexibility, accessibility, and interactive opportunities, it also creates challenges such as limited personal



interaction, digital fatigue, and motivational difficulties.

The proposed strategies including multimedia use, peer collaboration, timely feedback, gamification, and faculty training can help address these issues and support sustained engagement. The study meets its research objectives and contributes to improving digital education practices. Future research may explore hybrid learning models that combine the strengths of online learning with the interpersonal benefits of traditional classrooms.

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