

Student Satisfaction toward Virtual Learning Platforms during the COVID-19 Era: A Comprehensive Review

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Abstract

The COVID-19 pandemic transformed the global education system by shifting traditional classroom teaching to virtual learning environments. Educational institutions worldwide adopted online learning platforms such as Zoom, Google Meet, Microsoft Teams, Moodle, and Google Classroom to continue academic activities during lockdowns. This review paper examines student satisfaction toward virtual learning platforms during the COVID-19 era by synthesizing findings from existing national and international studies. The review identifies major factors influencing student satisfaction, including technological accessibility, instructor support, interaction quality, digital literacy, internet connectivity, course design, and psychological well-being. The study also discusses challenges faced by students, such as digital divide, reduced social interaction, technical issues, and learning stress. Findings indicate that while virtual learning offered flexibility and continuity in education, student satisfaction varied depending on infrastructure availability and pedagogical effectiveness. The review concludes that blended learning and improved digital infrastructure are essential for future educational resilience.

Keywords: COVID-19, Online Learning, Virtual Learning Platforms, Student Satisfaction, E-learning, Digital Education, Adolescents.

1. Introduction

The COVID-19 pandemic created unprecedented disruptions across educational systems worldwide. Due to lockdowns and social distancing measures, schools, colleges, and universities shifted from face-to-face teaching to online learning environments. Virtual learning platforms became the primary medium for delivering education during this period. Applications such as Zoom, Google

Classroom, Microsoft Teams, and Moodle were extensively used for conducting lectures, assignments, assessments, and academic interactions.

The rapid adoption of online learning significantly changed students' educational experiences. Although virtual learning ensured educational continuity during the pandemic, several concerns emerged regarding student engagement, academic achievement, learning satisfaction, mental health, and accessibility. Student satisfaction became one of the most important indicators for evaluating the effectiveness of virtual learning systems during the COVID-19 era.

Research studies conducted across different countries reported mixed perceptions regarding online education. Some students appreciated the flexibility, accessibility, and self-paced learning opportunities provided by virtual platforms, while others experienced dissatisfaction due to poor internet connectivity, lack of interaction, technological barriers, and psychological stress.

This comprehensive review aims to examine the factors influencing student satisfaction toward virtual learning platforms during the COVID-19 pandemic and identify the major opportunities and challenges associated with online education.

2. Objectives of the Study

The major objectives of this review paper are:

1. To examine student satisfaction toward virtual learning platforms during COVID-19.
2. To identify factors affecting satisfaction in online learning environments.
3. To analyze challenges faced by students in virtual education.
4. To review the effectiveness of online learning platforms during the pandemic.
5. To suggest strategies for improving future online and blended learning systems.

3. Research Methodology

This study is based on a comprehensive review of published literature related to online learning and student satisfaction during the COVID-19 pandemic. Relevant research articles, review papers, conference proceedings, and reports were collected from databases such as Google Scholar, Scopus, Web of Science, Springer, MDPI, and ResearchGate.

The review mainly included studies published between 2020 and 2025 focusing on:

- Student satisfaction
- Virtual learning environments
- Online education
- E-learning effectiveness
- COVID-19 educational impact

The collected studies were analyzed thematically to identify major findings, trends, challenges, and recommendations.

4. Concept of Virtual Learning Platforms

Virtual learning platforms are digital systems that facilitate teaching and learning through internet-based technologies. These platforms support live classes, recorded lectures, assignment submission, assessments, communication, and collaborative learning.

Commonly used virtual learning platforms during COVID-19 included:

Platform	Major Features
Zoom	Video conferencing, screen sharing, recording
Google Classroom	Assignment management, communication
Microsoft Teams	Integrated collaboration and meetings
Moodle	Learning management and assessments
Cisco Webex	Online conferencing and webinars
Google Meet	Real-time virtual classes

These platforms enabled educational continuity despite physical restrictions imposed during the pandemic.

5. Student Satisfaction in Online Learning

Student satisfaction refers to the degree to which learners perceive their educational experiences as positive, effective, and fulfilling. In online learning environments, satisfaction is influenced by several academic, technological, social, and psychological factors.

Studies revealed that student satisfaction during COVID-19 depended heavily on:

- Quality of internet access
- Ease of platform usage

- Teacher responsiveness
- Course structure
- Student interaction
- Technical support
- Availability of digital devices

Research indicated that students who experienced better instructor engagement and interactive learning environments reported higher satisfaction levels.

6. Factors Affecting Student Satisfaction

6.1 Technological Accessibility

Access to stable internet connectivity and digital devices significantly influenced student satisfaction. Students from rural and economically weaker backgrounds often faced difficulties in accessing online education due to limited technological resources.

6.2 Instructor Support and Teaching Quality

Teacher interaction, timely feedback, and effective communication positively affected students' learning experiences. Supportive instructors increased student motivation and engagement in virtual classrooms.

6.3 Course Design and Content Delivery

Well-structured online courses with interactive materials, recorded lectures, and organized assignments improved student satisfaction. Poorly designed courses often led to confusion and reduced engagement.

6.4 Student Interaction and Engagement

Lack of peer interaction and reduced classroom communication negatively impacted student experiences. Many students reported feelings of isolation during prolonged online learning periods.

6.5 Psychological and Emotional Factors

Stress, anxiety, screen fatigue, and reduced socialization affected students' mental health and overall satisfaction with online education. Adolescents particularly experienced motivational and emotional challenges during remote learning.

7. Benefits of Virtual Learning during COVID-19

Virtual learning platforms provided several educational benefits during the pandemic:

- Continuity of education during lockdowns
- Flexibility in learning schedules
- Accessibility to recorded lectures
- Self-paced learning opportunities
- Increased digital literacy among students

- Reduced travel and accommodation costs

Many students appreciated the convenience and flexibility associated with online learning systems.

8. Challenges Faced in Virtual Learning

Despite its advantages, online learning created multiple challenges:

8.1 Digital Divide

Students from rural and low-income backgrounds lacked adequate internet access and digital devices, creating educational inequality.

8.2 Technical Problems

Frequent network interruptions, software issues, and lack of technical support negatively affected online learning experiences.

8.3 Reduced Social Interaction

Online learning limited face-to-face interaction between teachers and students, affecting collaborative learning and emotional well-being.

8.4 Learning Fatigue

Extended screen time caused physical discomfort, stress, eye strain, and reduced concentration among students.

8.5 Assessment Difficulties

Conducting fair and effective online examinations became a major challenge during the pandemic.

Studies reported that dissatisfaction was higher among students experiencing poor connectivity, low engagement, and inadequate institutional support.

9. Discussion

The review indicates that student satisfaction toward virtual learning platforms during the COVID-19 era was multidimensional and influenced by technological, pedagogical, and psychological factors. While online learning helped maintain educational continuity during global lockdowns, the sudden transition exposed infrastructural and digital inequalities across educational systems.

Most studies reported moderate levels of student satisfaction. Students valued flexibility and accessibility but expressed concerns regarding interaction quality, practical learning limitations, and mental health issues.

The findings also suggest that educational institutions with better digital infrastructure, trained faculty, and interactive teaching approaches achieved higher student satisfaction rates. Furthermore, blended learning models combining

online and offline teaching may provide more effective long-term educational solutions.

10. Recommendations

The following measures can improve student satisfaction in future online learning environments:

1. Strengthening digital infrastructure in rural and underserved regions.
2. Providing affordable internet access and digital devices.
3. Conducting faculty training programs for effective online teaching.
4. Developing interactive and student-centered course designs.
5. Offering psychological counseling and mental health support.
6. Promoting blended learning approaches.
7. Enhancing technical support services for students and teachers.

11. Conclusion

The COVID-19 pandemic accelerated the adoption of virtual learning platforms across the world. Student satisfaction toward online learning varied significantly depending on technological accessibility, instructional quality, engagement, and emotional well-being. Although virtual education provided continuity during a global crisis, several challenges related to infrastructure, digital inequality, and student interaction affected learning experiences.

The review concludes that virtual learning cannot completely replace traditional classroom education, especially for adolescents requiring social interaction and guided learning. However, online learning has become an integral component of modern education systems. Future educational models should focus on blended learning strategies, digital inclusivity, and learner-centered approaches to improve educational effectiveness and student satisfaction.

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