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**UNDERGRADUATE STUDENTS' PERCEPTIONS OF ONLINE
EDUCATION: A COMPARATIVE ANALYSIS OF E-LEARNING
EXPERIENCES DURING THE COVID-19 PANDEMIC**

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ABSTRACT

The COVID-19 pandemic created an unprecedented disruption in conventional higher education and accelerated the transition from face-to-face teaching to online learning. Undergraduate students were among the major groups affected by this sudden transformation, as educational institutions adopted digital platforms to maintain academic continuity. This paper examines undergraduate students' perceptions of online education during the COVID-19 pandemic, with particular attention to their learning experiences, technological accessibility, academic engagement, communication, flexibility, and perceived effectiveness. A comparative perspective is adopted to understand differences in students' experiences according to their educational and technological circumstances. The discussion indicates that online education offered important advantages, including flexibility, convenient access to learning materials, continuity of instruction, and opportunities for digital skill development. However, students also experienced challenges involving internet connectivity, inadequate devices, reduced interaction, technological difficulties, motivation, assessment concerns, and unequal learning environments. The paper emphasizes that students' perceptions were shaped not only by the quality of online platforms but also by institutional preparedness, teacher support, digital competence, and socioeconomic conditions.

Keywords: E-learning, undergraduate students, online education, COVID-19 pandemic, student perceptions, digital learning, higher education, online learning experiences

I. INTRODUCTION

The COVID-19 pandemic profoundly transformed educational systems across the world. Beginning in early 2020, widespread lockdowns and restrictions on physical interaction forced educational institutions to suspend conventional classroom teaching. Universities and colleges consequently shifted toward online education to maintain academic continuity. This transition represented more than the adoption of a new technological tool; it involved a fundamental change in teaching practices, student participation, academic communication, assessment, and institutional management. Hodges et al. (2020) distinguished this emergency shift from carefully planned online education, describing the pandemic response as “emergency remote teaching.” The distinction is important because many institutions had limited time to prepare teachers, students, digital infrastructure, and learning materials for online instruction.

Undergraduate students experienced this transition particularly intensely because higher education normally involves direct interaction with teachers, peer collaboration, practical activities, campus facilities, libraries, laboratories, and social engagement. During the pandemic, many of these experiences were replaced or supplemented by video lectures, learning management systems, recorded classes, online assignments, electronic resources, and virtual discussions. The effectiveness of this transition varied considerably among students. Some students appreciated the flexibility of studying from home, while others experienced difficulties due to poor connectivity, limited access to devices, unsuitable home environments, and insufficient digital literacy. Therefore, students’ perceptions of online education cannot be understood through a single positive or negative framework.

The rapid expansion of online learning also highlighted existing inequalities in access to educational technology. UNESCO (2020) emphasized that school and university closures affected learners on an unprecedented scale and that remote learning solutions did not benefit all learners equally. Students from economically disadvantaged backgrounds could face difficulties obtaining laptops, smartphones, reliable internet connections, or quiet spaces for learning. In developing countries, these challenges were particularly significant. The digital divide consequently became an important factor influencing students’ educational experiences. At the same time, institutions, teachers, and students gained new experience in digital communication, online content creation, virtual collaboration, and technology-supported assessment.

Students' perceptions are important indicators of the effectiveness and acceptability of online education. Perception encompasses students' opinions regarding convenience, quality, interaction, flexibility, satisfaction, effectiveness, workload, assessment, and overall educational value. A student may appreciate the flexibility of online learning while simultaneously believing that it is less effective for practical or laboratory-based subjects. Similarly, another student may find recorded lectures convenient but miss direct interaction with teachers and classmates. Therefore, a comparative examination of student experiences provides a more comprehensive understanding of the strengths and limitations of pandemic-era e-learning. This paper examines these experiences and considers the factors that shaped undergraduate students' perceptions of online education during the COVID-19 crisis.

II. E-LEARNING EXPERIENCES, ACCESSIBILITY, AND ACADEMIC ENGAGEMENT AMONG UNDERGRADUATE STUDENTS

The transition to online education during the COVID-19 pandemic fundamentally changed how undergraduate students accessed academic content. Instead of attending physical classrooms, students were required to participate through digital platforms, video-conferencing applications, institutional learning management systems, educational websites, and messaging services. This transition provided an opportunity to continue teaching despite campus closures. However, the experience varied according to students' technological resources and familiarity with digital learning. Students with personal computers, stable broadband connections, and suitable learning environments generally had greater opportunities to participate consistently than students dependent on shared smartphones or unstable mobile networks.

Flexibility was one of the major advantages reported in discussions of online education. Digital learning enabled students to attend classes from their homes and, in many cases, access recorded lectures and learning materials at convenient times. This flexibility could be particularly useful for students who needed to manage household responsibilities or experienced difficulties travelling during lockdowns. Online resources could also be revisited, allowing learners to review difficult concepts repeatedly. Means et al. (2010) found that online and blended learning could produce positive learning outcomes under appropriate conditions, although effectiveness depends on instructional design rather than technology alone. During the pandemic, however, many courses were rapidly transferred online without sufficient redesign.

Interaction represented a major area of difference between online and traditional education. Physical classrooms allow spontaneous communication, non-verbal interaction, peer discussion, and immediate teacher feedback. In online environments, interaction often depended on whether students switched on cameras, participated in chats, asked questions, or engaged in discussion forums. Some students became more comfortable communicating through written digital channels, whereas others felt isolated and reluctant to participate. Dhawan (2020) noted that online education offered continuity during the crisis but also involved challenges related to engagement, connectivity, and educational quality. The reduction of direct interpersonal contact therefore influenced many undergraduate students' perceptions.

Another significant factor was students' digital competence. Successful participation required students to operate video-conferencing software, upload assignments, access digital resources, communicate electronically, and sometimes complete online examinations. Students who had previously used digital technologies extensively could adapt more quickly. Others required institutional or teacher support. Digital literacy thus became part of academic competence during the pandemic. The crisis demonstrated that providing technological infrastructure alone was insufficient; students also needed guidance on using digital platforms effectively and responsibly.

The learning environment at home also influenced students' experiences. Unlike classrooms, homes were not necessarily designed for concentrated academic work. Students could face distractions from family responsibilities, noise, inadequate space, or shared devices. These challenges were particularly important for students from larger households or economically constrained environments. The unequal distribution of resources meant that two students enrolled in the same online class could have very different educational experiences. Consequently, comparisons of online learning should consider socioeconomic and technological conditions rather than treating all students as equally positioned.

Despite these difficulties, the pandemic strengthened students' exposure to digital educational practices. Many undergraduate students developed greater confidence in accessing electronic journals, online libraries, recorded lectures, collaborative documents, and digital communication tools. This experience may have long-term implications for higher education because students became more accustomed to blended and technology-supported learning. The pandemic therefore revealed both the potential and limitations of e-learning. Students'

experiences suggest that digital education is most effective when supported by reliable infrastructure, accessible learning materials, effective pedagogy, meaningful interaction, and continuous institutional support.

III. COMPARATIVE PERCEPTIONS OF ONLINE EDUCATION: ADVANTAGES, LIMITATIONS, AND INSTITUTIONAL SUPPORT

Students' perceptions of online education were influenced significantly by the perceived advantages of flexibility and convenience. Online classes eliminated daily commuting and allowed students to participate from home. Learning resources could often be accessed through digital platforms beyond the scheduled class period. This created opportunities for self-paced review and independent learning. For students who preferred digital resources or had strong self-regulation skills, online education could be perceived as efficient. However, convenience did not automatically translate into learning effectiveness, particularly when courses involved practical activities or intensive teacher-student interaction.

The perceived quality of teaching was another important factor. Online education required teachers to adapt their instructional methods. Simply transferring a conventional lecture to a video-conferencing platform did not necessarily create an effective online learning environment. Effective online instruction requires structured content, appropriate multimedia resources, opportunities for interaction, timely feedback, and well-designed assessments. Martin (2020) emphasized that online teaching requires consideration of pedagogy, technology, and learner engagement. During the pandemic, however, teachers often had limited time to redesign courses. Students consequently experienced considerable variation in the quality of online instruction.

Assessment was especially challenging. Traditional examinations had to be reconsidered because institutions faced concerns about academic integrity, connectivity, student identification, and fairness. Some institutions introduced online examinations, assignments, open-book assessments, presentations, and continuous evaluation. Students differed in their perceptions of these approaches. Some appreciated continuous assessment because it reduced dependence on a single examination, while others believed online examinations were stressful or vulnerable to technical problems. The effectiveness of online assessment depended on clear instructions, reasonable deadlines, technical support, and assessment methods appropriate to the learning objectives.

Mental and social dimensions also influenced students' perceptions. Extended periods of online learning could contribute to screen fatigue, reduced social interaction, isolation, and difficulty maintaining motivation. Aristovnik et al. (2020), in a large international study of university students during the pandemic, reported that students experienced substantial changes in their academic and personal lives, with technology-related and psychological factors influencing their satisfaction. This indicates that student satisfaction with e-learning cannot be evaluated exclusively through technical performance. Emotional well-being, social connectedness, workload, and academic uncertainty are also relevant.

Institutional support was therefore crucial. Universities and colleges that provided technical assistance, recorded lectures, digital libraries, counselling, flexible attendance arrangements, and clear communication could reduce some of the difficulties experienced by students. Teachers also played an important role by responding to questions, providing feedback, and showing understanding of students' technological limitations. Rapanta et al. (2020) argued that effective online university teaching requires attention to teaching presence, cognitive engagement, and meaningful interaction. Institutions that recognized these dimensions were better positioned to provide supportive online learning environments.

Overall, undergraduate students' perceptions during the pandemic were mixed rather than uniformly positive or negative. Online education offered continuity, flexibility, resource accessibility, and digital skill development, but it also exposed problems associated with unequal access, reduced interaction, technological failures, motivation, and assessment. The comparative evidence suggests that students with better technological access and stronger digital competence generally experienced fewer barriers. Therefore, future digital education strategies should not simply reproduce emergency remote teaching. They should combine the strengths of digital learning with the interaction, practical experiences, and social dimensions of conventional education.

IV. CONCLUSION

For undergraduate students, this transition changed established patterns of classroom interaction, academic participation, assessment, and access to learning resources. Online education provided an essential mechanism for maintaining educational continuity during institutional closures. At the same time, students' experiences demonstrated that technology alone cannot guarantee effective learning.

The analysis shows that undergraduate students recognized several benefits of e-learning, including flexibility, convenient access to materials, reduced travel requirements, recorded content, and opportunities to develop digital competencies. Nevertheless, these benefits were accompanied by substantial challenges. Poor internet connectivity, limited devices, unsuitable home environments, lack of direct interaction, screen fatigue, assessment difficulties, and differences in digital literacy affected students' experiences. The impact of these challenges was not equally distributed across student groups.

Institutional and teacher support emerged as critical factors in shaping perceptions. Students required not only access to digital platforms but also clear communication, well-designed instructional materials, timely feedback, technical assistance, academic counselling, and flexible assessment. The pandemic demonstrated that effective digital education requires pedagogical preparation and learner support in addition to technological infrastructure. Consequently, future higher education strategies should focus on quality rather than merely increasing the quantity of online instruction.

In conclusion, the pandemic-era experience should be understood as an important learning opportunity for higher education. Online education should not necessarily replace face-to-face teaching, particularly where practical work, laboratory activities, or intensive interpersonal interaction are required. Instead, the most valuable future model may involve appropriately designed blended learning that combines digital flexibility with classroom interaction. Understanding students' perceptions and experiences can help institutions develop more inclusive, accessible, and effective technology-supported education systems.

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