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Digital learning and its impact on the well-being of college students

Dr. Shobha

Assistant Professor, D.W.T. College, Dehradun, Uttarakhand, India

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Corresponding Author: Dr. Shobha

Abstract

The transformation of higher education through digital learning has brought significant structural and pedagogical changes. While technology-driven education has enhanced accessibility and flexibility, it has also posed complex challenges to student well-being. This study investigates the impact of digital learning on various dimensions of college students' well-being, including mental health, physical health, social interaction, sleep quality, and academic stress. Using a mixed-methods approach combining surveys and secondary data analysis, the study found that while digital learning platforms provided greater convenience and learning flexibility, they were also associated with heightened levels of anxiety, physical inactivity, academic burnout, and social isolation. The findings call for a rethinking of educational strategies to integrate supportive structures that promote students' psychological, emotional, and physical wellness.

Keywords: Digital learning, student well-being, online education, mental health, academic stress, screen time, higher education, pandemic education

1. Introduction

The global outbreak of COVID-19 catalyzed a historic shift from traditional classroom teaching to digital learning platforms. Educational institutions were compelled to adopt online delivery models almost overnight, fundamentally altering how education is experienced. For college students, the transition was more than a change in medium-it was a shift in lifestyle, communication, engagement, and expectations. Although digital learning has presented new opportunities, including greater access to resources and personalized learning environments, it has also challenged the foundational aspects of student life. Reduced social interactions, increased screen time, disrupted routines, and lack of structured environments have significantly influenced students' mental and physical health. This research investigates how these transformations affect college students' well-being, aiming to provide actionable academic institutions, insights for educators, and policymakers.

2. Literature Review: Digital learning is not a new concept, but its sudden and widespread implementation has surfaced several previously underexamined concerns. Research by Dhawan (2020) ^[10] praises online education for its scalability, accessibility, and adaptability. However, a

parallel discourse highlights its detrimental effects on psychological health and holistic development. Aristovnik et al. (2020)^[2] conducted a global survey involving more than 30,000 students and found increased symptoms of anxiety, depression, and loneliness due to online learning. They reported that 60% of students lacked motivation and experienced a significant decline in academic satisfaction. Wang et al. (2021)^[9] linked extended screen exposure to poor sleep hygiene, digital fatigue, and sedentary lifestyles. Moreover, studies by Hasan and Bao (2020)^[3] show that academic workloads intensified in digital formats, with a "hyperconnected" constant availability creating environment, increasing pressure and reducing downtime. Digital platforms often fail to replicate the dynamic, spontaneous interactions of physical classrooms, which are crucial for social learning and emotional ^[1] development. The erosion of such experiences can result in feelings of disconnection, a factor especially significant for adolescents and young adults in formative years of identity construction.

¹ The rise in mental health issues during remote learning should not only be seen as a byproduct of technology use but also of reduced social connectedness and altered routines.

WHO (2020) emphasizes that physical distancing and isolation, while necessary during a health crisis, increase vulnerability to anxiety and depression, especially in young adults.

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3. Materials and Methods

This study employed a mixed-methods design comprising quantitative survey data and qualitative feedback from students enrolled in higher education institutions across India. The sample included 350 undergraduate and postgraduate students aged 18–25, selected through stratified random sampling.

3.1 Survey Design

The survey contained 25 questions categorized into five domains:

Mental health (anxiety, motivation, cognitive load) Physical health (activity levels, posture, vision strain) Social interaction (peer engagement, support networks) Academic stress (assignment load, exam pressure) Sleep quality (screen time before bed, sleep duration)

3.1 Data Analysis

Responses were analyzed using descriptive statistics and thematic analysis. Secondary sources were used to support findings and add contextual depth.

4. Results and Discussion

The findings reveal a complex relationship between digital learning and student well-being:

4.1 Mental Health

- 70% of students reported increased anxiety.
- 58% experienced lower motivation levels.
- 46% felt overwhelmed by constant digital communication.

Digital platforms, while efficient, often contribute to information overload. The absence of face-to-face interaction diminishes emotional feedback and peer support, increasing cognitive strain.

4.2 Physical Health

65% experienced weight gain or physical inactivity.

50% complained of eye strain, headaches, or musculoskeletal pain. The sedentary lifestyle reinforced by continuous screen exposure undermines physical wellness, especially when movement breaks or physical education are not integrated into daily routines.

4.3 Social Interaction

60% reported reduced peer-to-peer communication. 35% felt socially isolated or disconnected.

Though tools like Zoom and Google Meet facilitated academic collaboration, they often lacked emotional nuance. The loss of campus experiences-group studies, extracurriculars, informal discussions-led to diminished social satisfaction.

4.4 Academic Pressure

72% felt academic expectations had increased.

48% reported difficulty managing deadlines due to lack of structure.

Digital environments blurred the boundaries between study and rest, fostering a culture of 24/7 availability and reduced work-life balance.

4.5 Sleep Quality

68% reported disturbed sleep patterns.

43% slept less than six hours due to screen exposure and irregular schedules.

Sleep disruption was a common consequence of prolonged device use and erratic time management, which further exacerbated stress and reduced cognitive function.

The bar chart titled "Impact of Digital Learning on Wellbeing of College Students" highlights the percentage of students affected both negatively and positively across five key dimensions of well-being:



Fig 1: Impact of Digital learning on well-being of college students

5. Mental Health

5.1 Negative Impact (70%): Many students reported increased anxiety, stress, and feelings of isolation due to lack of in-person interaction and constant screen time.

5.1.1 Positive Impact (20%): Some students appreciated the flexibility and reduced social pressure of online environments.

5.2 Physical Health: Negative Impact (65%): Reduced physical movement, long hours of sitting, and screen exposure led to fatigue and health complaints.

5.2.1 Positive Impact (18%): A minority engaged in self-paced physical routines while studying from home.

5.3 Social Interaction: Negative Impact (60%): Students felt socially disconnected due to reduced face-to-face engagement.

5.3.1 Positive Impact (15%): Some built virtual peer networks through digital platforms.

5.4 Sleep Quality: Negative Impact (68%): Irregular schedules, screen use before bed, and lack of daily structure disrupted sleep patterns.

5.4.1 Positive Impact (15%): A small segment reported better rest due to saved commuting time and self-scheduling.

5.5 Academic Pressure: Negative Impact (72%): Increased assignments, digital monitoring, and lack of clear boundaries led to burnout.

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5.5.1 Positive Impact (15%): Some students felt less peer competition and experienced a supportive learning pace.

Key Insight: The chart demonstrates that while digital learning offered some advantages, the overwhelming majority of students experienced negative impacts on their overall well-being, especially in mental health and academic stress

Below is the visual representation of the study's findings, illustrating the percentage of students experiencing positive and negative impacts across different well-being indicators.

6. Recommendations

To create a sustainable and healthy digital learning ecosystem, the following steps are recommended:

- 1. Blended Learning Models: Institutions should combine digital flexibility with in-person interaction to provide a balanced experience. Physical classrooms promote engagement, while online modules ensure accessibility.
- Mental Health Infrastructure: Every college must 2. have access to psychological counselors and peersupport groups. Regular mental health check-ins should be integrated into the curriculum.
- Digital Literacy and Time Management: Educators 3. must guide students on responsible digital use, setting healthy boundaries, and time management to avoid burnout.
- 4. Promote Social and Physical Activities: Online platforms should include social mixers, discussion boards, and virtual fitness clubs to maintain interaction and physical activity.
- Scheduled Breaks and Screen Detox: Instructors 5. should implement regular breaks during lectures, encourage the 20-20-20 rule (every 20 minutes, look 20 feet away for 20 seconds), and minimize unnecessary screen-based assignments.

7. Conclusion

While digital learning stands as a transformative force in modern education, its evolution must prioritize the holistic well-being of learners. Technology should serve as an empowering enabler-one that enhances educational access, engagement, and flexibility-rather than becoming a source of stress, isolation, or cognitive overload. As we envision the future of education, it is imperative to create learning ecosystems that seamlessly blend innovation with empathy. This approach ensures that the pursuit of academic excellence is not achieved at the expense of mental, social, or physical health. Instead, education must become a nurturing space where emotional resilience, interpersonal relationships, and physical vitality are valued as equally important as intellectual growth. By fostering such a balanced and inclusive learning environment, we can truly empower students to thrive in all aspects of their lives.

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