

A Systematic Literature Review: The Impact of E-Learning on Students' Mental Health

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Abstract

In an era where technology is rapidly advancing in education, the use of E-Learning has become an integral part of the education system globally. However, over time, the use of E-Learning has had a significant impact on students' mental health. This study uses a Systematic Literature Review (SLR) to identify and analyze the impacts (both positive and negative) of E Learning on students' mental health. The first step is to determine the research question (RQ) and then to search on several kinds of literature published in popular journal databases from 2011-2025. As a result of a review of 48 selected articles, there are seven positive impacts of E Learning on students' mental health, such as flexibility, development of self-discipline and time management, increased technology proficiency, reduced stress factors, good sleep quality, personalized learning, and enhanced self-directed learning. Meanwhile, there are five negative impacts of E Learning on students' mental health, such as anxiety, disturbed sleep patterns, social isolation and loneliness, difficulty in concentration, and reduced motivation.

Keywords: digital era, e-learning, mental health, technology

Introduction

The digital era, characterized by rapid technological innovation, has brought significant social changes across various aspects of life, including education (Bahani & Kholid, 2024). Technological advancement has transformed traditional learning systems, enabling education to continue beyond physical classrooms. This transformation became particularly evident during the COVID-19 pandemic, when UNESCO reported that approximately 1.6 billion students worldwide transitioned from offline to online learning in 2020. This global shift highlighted the crucial role of technology in maintaining educational access and continuity.

The integration of technology into education has expanded learning opportunities, improved instructional quality, and increased student engagement. However, alongside these benefits, the widespread adoption of e-learning has raised concerns regarding students' mental health. The sudden transition to fully online learning environments during the pandemic intensified challenges such as social isolation, limited interpersonal interaction, and increased academic demands, which have been linked to psychological distress among students (Žilinskas et al., 2021; Jain & Fernando, 2022; Baloch et al., 2021).

Existing literature demonstrates a complex relationship between e-learning and students' mental health. Gu et al. (2022) found that students' mental well-being significantly influences their sustainability in online learning environments. Students experiencing psychological difficulties tend to exhibit lower engagement and motivation, which may negatively affect their academic performance. Similarly, Jain and Fernando (2022) reported that reduced cognitive engagement and limited social interaction in e-learning contexts contribute to heightened levels of anxiety and depression. These findings are further supported by studies among medical students, a group shown to be particularly vulnerable during the abrupt transition to online learning (Kong et al., 2022; Aljhani et al., 2021).

For example, a cross-sectional study conducted in Malaysia revealed a high prevalence of mental distress among medical students, primarily due to the lack of face-to-face interaction and difficulties in adapting to online learning formats (Kong et al., 2022). In addition, Zhan et al. (2021) reported increased stress and anxiety levels among college students during the COVID-19 pandemic, emphasizing the importance of social experiences and effective coping mechanisms in managing psychological well-being. The role of social support is further reinforced by Chang et al. (2021), who found that unfavorable family environments can exacerbate mental health problems among students engaged in e-learning.

Despite these challenges, e-learning also offers potential benefits for students' mental health when appropriately implemented. Flexible access to learning resources and opportunities for individualized instruction may enhance learner satisfaction, autonomy, and self-efficacy (Innab et al., 2023). Innab et al. (2023) further demonstrated that positive perceptions of e-learning environments can reduce symptoms of anxiety and depression, indicating that well-designed digital learning systems can support students' psychological well-being.

In summary, the reviewed literature indicates that e-learning has both positive and negative impacts on students' mental health, particularly during the COVID-19 pandemic. While e-learning can enhance accessibility, learning satisfaction, and self-efficacy, it may also intensify stress, anxiety, and depression when social interaction and institutional support are insufficient. These findings underscore the importance of integrating mental health considerations into the design and implementation of e-learning systems.

E-learning has evolved from an alternative instructional approach into a primary mode of education across all educational levels. It can be considered a learning medium that utilizes internet-based technologies to facilitate the acquisition of knowledge and skills without requiring direct face-to-face instruction (Sabran & Sabara, 2019). Commonly used e-learning platforms include Google Classroom, Zoom, Quizizz, and Google Meet, which allow learning to occur flexibly across time and location through computers or smartphones.

Therefore, the purpose of this systematic literature review is to comprehensively examine the relationship between e-learning participation and learners' mental health in the digital era. Specifically, this review aims to address the following research question: *What are the positive and negative impacts of e-learning on students' mental health?* To answer this question, the review analyzes various psychological outcomes discussed in the literature, including stress, anxiety, depression, general well-being, self-efficacy, and learning satisfaction.

To ensure comprehensive and relevant findings, this review includes empirical studies published between 2011 and 2025 that investigate learners at different educational levels who have participated in various forms of e-learning.

Method

A Systematic Literature Review (SLR) is a secondary study to map, identify, critically evaluate, consolidate, and collect the results of major studies on specific research topics. SLR is the standard method for getting answers by conducting a literature review based on previous related studies. The aim of conducting an SLR is to summarize previous research, to identify gaps that need to be met between previous and current research, to produce coherent reports/syntheses, and to create a research framework.

The purpose of this literature review is to understand research topics that are components, methods, and frameworks in the impact of e-learning on students' mental health in the digital era. To obtain comprehensive results, this study analyzes a wide range of published literature from 2011-2025. The study will specifically focus on identifying the various psychological impacts (both positive and negative) associated with participation in e-learning among students at different levels of education.

Results and Discussion

This section presents and discusses the findings of the systematic literature review regarding the impacts of e-learning on students' mental health in the digital era. Based on the analysis of selected empirical studies published between 2011 and 2025, the findings reveal that e-learning produces both positive and negative psychological outcomes. These outcomes are categorized into thematic dimensions to provide a clearer understanding of how e-learning influences learners' mental well-being.

Positive Impacts of E-Learning on Students' Mental Health

The results of the literature review that can be seen in Table 1 indicate that e-learning contributes positively to students' mental health through several interconnected dimensions, including flexibility and accessibility, self-discipline, technological proficiency, stress reduction, sleep quality, personalized learning, and self-directed learning. These findings suggest that when e-learning environments are well-designed and adequately supported, they can foster psychological well-being alongside academic development.

One of the most frequently reported positive impacts is flexibility and accessibility. Numerous studies emphasize that e-learning allows students to manage their learning activities according to their own pace, time, and personal circumstances (Afroze & Shafi, 2024; Ahmad et al., 2022; García-González et al., 2021). This flexibility reduces time pressure and commuting-related stress, which can positively affect mental health. As Cheng (2011) states, "*flexible access to learning resources empowers learners and reduces anxiety associated with rigid instructional*

schedules.” Similarly, Liu and Lin (2024) argue that accessible digital platforms provide learners with a sense of control, which is closely associated with reduced psychological distress.

Another important positive outcome is the development of self-discipline and time management skills. Several studies report that e-learning environments encourage students to organize their schedules, set learning goals, and manage deadlines independently (Garnasih et al., 2022; Villarama et al., 2022). Made et al. (2025) note that “*students who successfully adapt to online learning often demonstrate higher levels of self-regulation, which contributes to greater academic confidence and emotional stability.*” This increased sense of responsibility can enhance students’ self-efficacy, which plays a protective role in mental health.

The review also highlights increased technological proficiency as a positive psychological outcome. Regular exposure to digital learning platforms improves students’ digital literacy and technological confidence (Buragohain et al., 2023; Rutkowska et al., 2022). García-González et al. (2021) assert that “*technological competence not only supports academic success but also reduces technology-related anxiety.*” As students become more familiar with digital tools, they experience lower stress levels and greater confidence in navigating online learning environments.

In addition, several studies report reduced stress factors associated with e-learning. Akpınar (2021) and Meintjes (2023) found that the absence of physical classroom pressures, such as crowded environments and face-to-face performance anxiety, can lower stress levels for some learners. Xia and Lee (2024) further explain that “*online learning environments may reduce social evaluative threats, allowing students to engage more comfortably.*”

Interestingly, good sleep quality is also identified as a positive impact in some studies. Rathnayake (2021) and Tamura (2024) suggest that flexible learning schedules enable students to align study activities with their natural sleep patterns. As Rathnayake (2021) notes, “*flexibility in online learning can contribute to healthier sleep routines, which are essential for mental well-being.*”

Furthermore, personalized learning emerges as a key factor supporting mental health. Adaptive e-learning systems allow students to learn according to their individual needs and abilities (Agarwal et al., 2021; Li, 2025). Aulakh et al. (2023) emphasize that “*personalized instruction enhances learner satisfaction and reduces frustration, which in turn supports emotional well-being.*” When students feel that learning materials are relevant and manageable, they are less likely to experience academic stress.

Finally, the review identifies enhanced self-directed learning as a positive psychological outcome. Studies indicate that e-learning encourages autonomy and lifelong learning skills (Tinella et al., 2022; Buragohain et al., 2023). Akpınar (2021) highlights that “*self-directed learners tend to experience higher motivation and psychological resilience,*” suggesting a positive link between autonomy and mental health.

Table 1
Positive Impacts of E-Learning on Students' Mental Health

No	Positive Impacts	References
1.	Flexibility and Accessibility	Afroze and Shafi (2024), Ahmad et al. (2022), Akpınar (2021), Aulakh et al. (2023), Kader et al. (2022), Buragohain et al. (2023), Cheng (2011), García-González et al. (2021), Garnasih et al. (2022), Ionescu et al. (2020), Li (2025), Limbu and Pham (2023), Lister et al. (2023), Liu and Lin (2024), Liu et al. (2023), Liu and Suan (2023), Made at al. (2025), Meintjes (2023), Nur et al. (2023), Palalas and Doran (2023), Shkemi et al. (2024), Rathnayake (2021), Saha et al. (2021), Sánchez-Ballester (2021)
2.	Development of Self-discipline and Time Management	Garnasih et al. (2022), Made et al. (2025), Nur et al. (2023), Villarama et al. (2022)
3.	Increased Technological Proficiency	Buragohain et al. (2023), García-González et al. (2021), Liu and Lin (2024), Nur et al. (2023), Rutkowska et al. (2022), Rathnayake (2021), Othman et al. (2022), Romanova et al. (2022)
4.	Reduced Stress Factors	Akpınar (2021), Kader et al. (2022), Meintjes (2023), Rathnayake (2021), Xia and Lee (2024), Yosep et al. (2023).
5.	Good Sleep Quality	Rathnayake (2021), Tamura (2024)
6.	Personalized Learning	Agarwal et al. (2021), Aulakh et al. (2023), Li (2025), Liu et al. (2023), Putro (2023)
7.	Enhanced Self-Directed Learning	Akpınar (2021), Aulakh et al. (2023), Buragohain et al. (2023), Tinella et al. (2022)

Negative Impact of E-Learning on Mental Health

Despite its benefits, the literature stated in Table 2 consistently reports several negative impacts of e-learning on students' mental health, particularly during prolonged or poorly supported online learning periods. These negative effects include anxiety, depression, stress, disturbed sleep patterns, social isolation, difficulty in concentration, and reduced motivation.

The most frequently reported negative outcomes is anxiety, depression, and stress. Numerous studies document increased psychological distress among students engaged in e-learning, especially during the COVID-19 pandemic (Ahmad et al., 2022; Jain & Fernando, 2022; Innab et al., 2023). Jain and Fernando (2022) argue that *“the lack of meaningful interaction and increased academic workload in online environments significantly contribute to anxiety and depressive symptoms.”* Similarly, Das (2023) notes that prolonged screen exposure and constant academic demands exacerbate stress levels among students.

Another major concern is disturbed sleep patterns. Several studies report that excessive screen time and irregular study schedules negatively affect students' sleep quality (Agarwal et al., 2021; Noskova et al., 2024). Fatimah and Mahmudah (2020) state that *"the blurring of boundaries between study time and rest time in e-learning environments often leads to sleep deprivation."* Poor sleep quality, in turn, is strongly associated with increased anxiety and reduced emotional regulation.

Social isolation and loneliness are also prominent negative impacts identified in the review. The absence of face-to-face interaction reduces opportunities for peer support and social bonding (Di Giacomo et al., 2021; Li, 2025). Ionescu et al. (2020) emphasize that *"social connectedness plays a critical role in maintaining students' mental health, and its absence in online learning can lead to feelings of loneliness."* This lack of social engagement is particularly detrimental for students who rely on collaborative learning and interpersonal communication.

Additionally, several studies report difficulty in concentration as a challenge in e-learning environments. Nur et al. (2023) and Rathnayake (2021) found that distractions at home and prolonged screen exposure reduce students' ability to focus. Rathnayake (2021) explains that *"online learning requires sustained attention, which can be difficult to maintain without structured supervision."*

Finally, reduced motivation is identified as a significant negative impact. Afroze and Shafi (2024) and Rutkowska et al. (2022) report that the lack of direct teacher feedback and peer interaction diminishes students' intrinsic motivation. Jain and Fernando (2022) conclude that *"motivation declines when students feel disconnected from their learning community,"* which can negatively affect both academic performance and mental health.

Table 2
Negative Impacts of E-Learning on Students' Mental Health

No	Negative Impacts	References
1	Anxiety, Depression, Stress	Afroze and Shafi (2024), Agarwal et al. (2021), Ahmad et al. (2022), Akpınar (2021), Das (2023), Dev et al. (2022), Fatimah and Mahmudah (2020), Garnasih et al. (2022), Innab et al. (2023), Jain and Fernando (2022), Made at al. (2025), Meintjes (2023), Noskova et al. (2024), Nur et al. (2023), Othman et al. (2022), Shkemi et al. (2024), Rafsanjani et al. (2023), Rutkowska et al. (2022), Sánchez-Ballester (2021), Tamura (2024), Villarama et al. (2022), Wang (2024), Xia and Lee (2024), Yosep et al. (2023).
2	Disturbed Sleep Patterns	Agarwal et al. (2021), Das (2023), Fatimah and Mahmudah (2020), Noskova et al. (2024), Nur et al. (2023)
3	Social Isolation and Loneliness	Agarwal et al. (2021), Ahmad et al. (2022), Buragohain et al. (2023), Cheng (2011), Dev et al. (2022), Di Giacomo et al. (2021), Fatimah and Mahmudah (2020), García-González et al. (2021), Garnasih et al. (2022), Ionescu et al. (2020), Li (2025), Limbu and Pham (2023), Lister et al.

		(2023), Liu and Lin (2024), Made at al. (2025), Meintjes (2023), Noskova et al. (2024), Nur et al. (2023), Othman et al. (2022), Shkempi et al. (2024), Putro (2023), Rafsanjani et al. (2023), Romanova et al. (2022), Rutkowska et al. (2022), Saha et al. (2021), Wang (2024), Xia and Lee (2024), Yosep et al. (2023), Zarei and Mohammadi (2022) and Zhang et al. (2020).
4	Difficulty in Concentration	Nur et al. (2023), Rathnayake (2021)
5	Reduced Motivation	Afroze and Shafi (2024), Aulakh et al. (2023), Jain and Fernando (2022), Noskova et al. (2024), Rafsanjani et al. (2023), Rutkowska et al. (2022), Villarama et al. (2022)

Overall, the findings demonstrate that e-learning has a dual impact on students' mental health. While flexibility, personalization, and autonomy can enhance well-being, factors such as social isolation, excessive workload, and inadequate support can lead to psychological distress. These results align with previous studies suggesting that the effectiveness of e-learning depends largely on instructional design, institutional support, and learners' individual characteristics.

Therefore, mental health should be considered a central component in the development and implementation of e-learning systems. Institutions are encouraged to integrate interactive learning activities, provide psychological support services, and promote healthy learning routines to maximize the benefits of e-learning while minimizing its negative effects.

Conclusion

This study has succeeded in identifying and analyzing the impacts (both positive and negative) of E-Learning on students' mental health based on research questions submitted with SLRs between 2019-2025 in several journal databases. Based on the keyword formula found 25.000 papers then by applying the inclusion and exclusion criteria, 48 papers will be reviewed. The results of the review are as follows: there are seven positive impacts of E Learning on students' mental health, such as flexibility, development of self-discipline and time management, increased technology proficiency, reduced stress factors, good sleep quality, personalized learning, and enhanced self-directed learning. Meanwhile, there are five negative impacts of E Learning on students' mental health, such as anxiety, disturbed sleep patterns, social isolation and loneliness, difficulty in concentration, and reduced motivation.

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