



AI-Supported Education and Student Mental Health: Balancing Innovation with Psychological Well-Being

Dr Batool Butt¹, Nimra Jamil², Dr. Mahira Mirza³, Dr. Muhammad Imran Saleem⁴

¹Classified Medical Specialist

Email: batoolbutt7@gmail.com

²M.Phil in Education, Iqra University, Karachi

Email: Nimra.g29339@iqra.edu.pk

³Assistant Professor, Bahria University

Email: mahiramirza.bukc@bahria.edu.pk

⁴Sir Syed University of Engineering and Technology Karachi

Email: Isaleem@ssuet.edu.pk

ARTICLE INFO	ABSTRACT
Submission: June 04, 2026 Revised: June 19, 2026 Accepted: July 05, 2026 Available Online: July 21, 2026 Keywords: <i>Artificial Intelligence, AI-Supported Education, Student Mental Health, Psychological Well-Being, Higher Education, Educational Innovation, University Students, Pakistan.</i> Corresponding author: batoolbutt7@gmail.com	Artificial intelligence (AI) has transformed higher education by introducing intelligent learning environments that support personalized instruction, adaptive learning, automated assessment, and enhanced student engagement. While AI-supported education offers substantial academic benefits, its implications for students' mental health and psychological well-being remain insufficiently explored. Therefore, this study examined the relationship between AI-supported education and student mental health. This research aimed to identify artificial intelligence-supported education systems and teaching models and the effect that AI-assisted education has on students' psychological well-being and mental state. It focused on health in the field of higher education, balancing the innovations and psychological health of students. A quantitative, cross-sectional study was used. The primary data used were collected by means of a structured questionnaire. The targeted population for this study included both undergraduate and postgraduate students enrolled at public and private universities in Punjab and Sindh, Pakistan, including Bahauddin Zakariya University, The Women University Multan, University of the Punjab, Government College University Faisalabad, Islamia University of Bahawalpur, University of Sindh Jamshoro, Mehran University of Engineering and Technology, NED University of Engineering and Technology Karachi, Foundation university medical college, and the University of Karachi. The specific sample used for this study was convenience sampling. Google Forms were distributed to university mailing lists and academic social media platforms, collecting data from 457 participants. The data were screened using Microsoft Excel. The data were analyzed using IBM SPSS Statistics Version 27. Descriptive statistics and inferential statistics including Cronbach's Alpha, Pearson's correlation, multiple linear regression, Independent Samples t-test, and One-Way ANOVA were employed for this study. The results showed that AI-supported education positively affected student mental health and psychological well-being, showing distinct demographic patterns for respondents. The results of this study build on established research to show that, when critically applied in the field of higher education, AI innovation may support the enhancement of not only teaching and learning but also the psychological well-being of students. Based on the results, recommendations are made for educators, higher education

administrators, and policy makers, as well as instructional designers and education technology entrepreneurs, to aid the development of ethical, student-centered, and psychological support frameworks for the use of AI Learning technologies within the field of higher education.

Introduction

In terms of innovation, artificial intelligence (AI) tops the list of technologies impacting contemporary education. Today's schools and universities are highly integrated with AI and educational technologies. For schools and universities, AI and educational technologies begin with the automation of administrative and educational tasks. AI, as compared with traditional educational technology, modifies the content of its digital learning repository. AI systems also have the ability to learn users' behavioral patterns and adaptive learning techniques. AI, in its multitude of supportive educational systems, has fostered a paradigm shift in instructional design and systems; thereby, transforming the instructional delivery model, from a norm referenced, standardized model, to a formally and functionally adaptive model. AI systems are more learner centered than traditional educational technologies. Consequently, AI systems and models enhance learners' educational achievement and promote educational equity and ease of access (Holmes et al., 2022, Kasneci et al., 2023).

AI technologies have further developed due to the incorporation of cloud services, big data analytics, and sophisticated algorithms which have streamlined learning services by providing education companies with means to analyze massive student data at large scale. Due to the advantages of AI technologies, learning management systems, automated grading software, intelligent tutoring systems, and AI conversational learning assistants have become ubiquitous in Higher Education over the globe. Generation of AI tools and ICT Learning Management Systems become powerful tools in the hands of students to enable independent and collaborative learning and empower students by providing them on-demand explanations, writing assistance, programming support, and problem-solving assistance (Antoninis et al, 2023; Zawacki-Richter et al, 2019).

AI, to many educational researchers, is no longer a cutting edge technology; it has provided the world with new innovations in teaching and learning beyond belief. Traditional, teacher-centered classrooms, contain evolving systems which allow students to interact with intelligent, learning systems, and, within the systems, versions of instructional materials tailored to the systems' assessment of a student's cognitive ability and learning preferences. AI systems contain the means to deliver lessons which students may progress through at their own pace. The systems encourage more learning and participation in view of the fact that the systems eliminate barriers to traditional, classroom based teaching. This is of particular importance in post secondary education, given the varying levels of education and learning systems that students possess, as well as the differing end goals that students may have for their level of education (Luckin, 2018).

AI-Supported Learning and Educational Innovation

Education integrated with AI has made teaching adaptive based on how students develop cognitively and on how they perform. AI models can create educational programs and materials that best suit students' needs based on their learning habits and how they engage with learning. AI models can be used to provide materials and create programs that are continuously adaptive, unlike most teaching methods that use a "one-size fits all" method. This is useful in promoting learning and enhancing the understanding and retention of learners (Yaru, K et al., 2026).

Arguably one of the most disruptive innovations brought by AI is the ability to mimic the support of an interactive teacher through the presence of intelligent tutoring systems. These models provide feedback and recommendation to learners, correct misconceptions, provide instructions and resources and track the learning and performance of students. Feedback being immediate helps students address their errors. It increases their confidence in the subject matter. This is especially important for students that require additional support and instruction (Nawaz, A et al., 2025).

The tools of generative applied artificial intelligence will support students with writing, coding, research, brainstorming, translation, creative problem-solving, and much more. Large language model (LLM) applications have become ideal educational

partners that encourage self-directed learning. Students have tools to help understand difficult concepts, organize their notes, create practice questions, and develop better critical thinking. Unlike information retrieval systems, modern AI tools foster a dialogue with the student that helps them go beyond the answer, and think more, and learn more (Dwivedi et al., 2023).

Student Mental Health in the Era of Artificial Intelligence

Student mental health has arguably become the most pressing problem facing higher education around the globe. There are a multitude of factors that students face on an even more problematic and destructive mental health journey. The level of academic competition and the pressure to complete demanding coursework and pass stressful exams, combined with the uncertainty of future career opportunities, financial difficulties, and the struggle to form a social support network, result in elevated anxiety, depression, emotional exhaustion, and psychological distress. The recognition of the growing mental health crisis has prompted educators and policymakers to acknowledge the importance of mental health as a fundamental condition of effective learning and achieving educational success (World Health Organization, 2022; Son et al., 2020).

The use of AI in education brings both positive and negative impacts on the mental health of students. Educational systems powered by AI have the potential to lessen stress through tools that provide individualized support and feedback and through learning resources that provide flexibility and that are readily available. Students that are struggling in the classroom receive support continuously and without the socially perceived fears of judgment, increasing self-assuredness and decreasing anxiety. Students can utilize AI systems to help them learn autonomously, and within the parameters of the guidance provided by the systems, thereby supporting the development of self-efficacy and satisfaction with education (Li, H et al., 2025).

While the issues that can arise from behavioral reliance on AI systems remain to be seen, the negative impacts on mental health caused by over-dependence on AI systems are clear. Intelligent systems, in the absence of the support of AI, engenders a fear of surveillance and a host of biases, in addition to a concern over continuous monitoring of performance that causes mental stress, and a loss of self-confidence from diminished ability to solve problems and think critically (Selwyn, 2019).

Balancing Educational Innovation with Psychological Well-Being

The rapid onset of AI-augmented education leaves schools unable to promote new technologies while safeguarding student wellbeing. AI brings the ability to learn faster, more efficiently, and with better access to support, but the psychological cost of developing a dependence on technology is steep. Innovation can—and should—continue, but technology must be integrated into education in a way that strengthens human relationships and the emotional health of students, while upholding the integrity of teaching methods (na Gupta, K, 2026).

To achieve this balance, schools must incorporate human-centered AI, which emphasizes transparent and accountable systems, equity, and student autonomy. Students should understand how their data is collected and the methods used by schools to keep learning algorithms accountable. Trust is built by transparent uses of AI, and the more uncertainty there is about a decision, the greater the need for trust. Universities should also teach Responsible AI (Canton, H, 2021) and the ethical and legal implications of AI, as well as its advantages and disadvantages.

Clearly, teachers have even more of a role to play in an AI-centric learning environment than they do today. Even with the best technologies, classroom learning is impossible without the emotional support, mentoring, and ethical guidance that teachers' interpersonal relationships provide (Guo, K et al., 2025).

Research Objectives

- To examine the impact of AI-supported education on student mental health in higher education institutions.
- To investigate the role of AI-supported education in promoting psychological well-being among university students.
- To explore how educational innovation through AI can be balanced with students' psychological well-being to support sustainable learning environments.

Research Questions

- What is the impact of AI-supported education on student mental health among university students?
- How does AI-supported education influence students' psychological well-being in higher education?
- How can educational institutions balance AI-driven educational innovation with students' psychological well-being to create sustainable learning environments?

Problem Statement

The rapid integration of Artificial Intelligence (AI) into educational environments is transforming teaching and learning through personalized instruction, intelligent tutoring systems, automated assessments, and adaptive learning technologies (Holmes et al., 2022; Zawacki-Richter et al., 2019). While these innovations have improved learning efficiency and educational outcomes, they have also introduced psychological challenges that remain insufficiently explored. Existing research has largely focused on the educational benefits of AI, including learning effectiveness, technology acceptance, and instructional efficiency, with limited attention given to its impact on students' mental health and psychological well-being (Richter et al., 2019). Consequently, there is a significant research gap regarding the psychological implications of AI-supported education, particularly in higher education where AI technologies are increasingly integrated into teaching and assessment. This lack of empirical evidence limits the ability of higher education institutions to implement AI in an ethical, responsible, and human-centered manner. Therefore, this research aims to examine the effects of AI-supported education on students' mental health and psychological well-being, providing evidence to support the responsible adoption of AI in higher education (Holmes et al., 2022; UNESCO, 2023).

Significance of the Study

This study's significance lies in its contributions to the integration of artificial intelligence (AI) in higher education and the implications this integration has on the mental and psychological health of students. Most studies have only focused on the use of AI in the classroom and its benefits to students, which include, but are not limited to, the personalization of learning, the boosting of student engagement, and greater educational efficiencies. This study recognizes the relationship between the use of AI in education and the mental health of students, and in doing so, strives to develop a multifaceted understanding of the influence of modern technology on the emotional health of students in contemporary educational systems. This research has the potential to provide mental health insights to university leaders, teachers, policymakers, educational and mental health technology professionals, and offer mental health support during the creation of AI learning systems. This study also aims the development of evidence-based policies in higher education systems that promote the ethical, safe, and equitable use of AI and protect the mental health of students. From a theoretical position, this study aims to expand the literature on the use of AI in education from the technological and psychological positions. Practically, this study offers the use of innovative educational technologies that maximize the use of educational technology, while also offering the creation the safe, inclusive, and human-focused educational environments.

Literature Review

One of the most important technological innovations that is impacting the future of higher education is artificial intelligence (AI). AI innovations have begun to change the passive teaching and learning practices of the past into intelligent, adaptive, and personalized educational experiences. As stated by Carlomagno, N et al. (2024), AI in education describes the use of computer systems that use human-like intelligence to perform educational tasks, such as providing personalized learning, intelligent tutoring and feedback, automated testing and assessment, learning analytics, and academic support and guidance. AI systems used in higher education institutions enable the analysis of educational data in large volumes, the discovery of students' learning patterns, the prediction of students' academic performances, and the design and provision of personalized learning to cater to students' different educational requirements. Yang, H., & Rui, (2025) claimed the AI revolution has fostered the shift in educational practices from the universal and standardized educational instructional practices to those that are centered on the learner. Different students are the focus and design of educational frameworks and environments that are flexible and cater to diverse educational needs.

AI tools and learning systems have contributed remarkably to educational practices by providing modern innovations to enhance the quality of teaching and uplift the standards of higher education pedagogy. The combination of several rapidly advancing

technologies has resulted in increased adoption of AI-assisted learning. According to Delello, J et al. (2025), intelligent educational systems can collect learner data and analyze it in real time, allowing educational systems to provide real time feedback and even suggest learning materials tailored to an individual student, or identify students who need additional help.

Feature of AI-supported education is the ability to tailor learning experiences at the individual student level. According to Shifa, S et al. (2025), Personalized learning makes the continuous monitoring and assessment of an individual student by AI systems possible, thus even the instructional materials can be adjusted to match the specific learning needs of that student. These materials provide students the educational assistance they need to attain their learning goals, and allow the students the privilege to manage their learning and progress through the system of their own volition. According to Albikawi, Z et al. (2025), the use of technologies of adaptive learning to tailor learning solutions to the specific needs of the student reduces learning challenges and significantly boosts learning performance. According to Kundu, A., & Bej (2025), adaptive learning systems built on research of AI, foster and support the educational engagement and satisfaction of the learner through learning systems that match the cognitive learning needs of the individual learner. Traditionally, the learning systems used in the classroom are of a universal design and thus do not take into consideration the varying and specific individual student learning needs and preferences. These systems of learning do instructional material provision that is basically the same for all the students.

In higher education, AI continues to reshape assessment and educational management by automating the mundane administrative tasks and creating opportunities for managers to make evidence-based decisions regarding education. AI assessment solutions offer an instant assessment option for assignments, class tests, and exams. Automated assessment solutions also offer students constructive feedback. Automated assessment and feedback systems lessen the burden of administration on faculty, thus allowing faculty to spend more time on mentoring, support, and developing the curriculum. Learning analytics can also be used to predict student risk by analyzing attendance, learning patterns, and assessment results. According to Ifenthaler and Yau (2020), the predictive nature of analytics can be used to implement educational interventions for increased student retention and decreased institutional dropout and to achieve educational effectiveness within the institution. These administrative and instructional functions of AI illustrate that the scope of AI in higher education is beyond teaching and learning.

Student Mental Health and Psychological Well-Being in Higher Education

Student mental health and psychological well-being have taken prominence in higher education with the reported cases of emotional, psychological and academic distress of university students continuing to rise. Mental health is the state of well-being in which an individual is able to cope with the normal stresses of life, is productive and contributes to his/her community (World Health Organization [WHO], 2022). In the context of higher education, psychological well-being refers to the emotional balance and resilience, self-esteem and satisfaction with life and relationships, as well as the management of academic challenges. Ryff (2014) argues that psychological well-being is a multi-faceted construct that includes self-acceptance, mastery of the environment, growth and autonomy, as well as an active life and positive relations. Each of these aspects influences students' motivation and engagement, as well as their academic and disciplinary choices, and their accomplishments in the educational process. In light of the ongoing competition and innovations in technology in many universities, the establishment and the promotion of students' mental health and the sustainability of learning becomes imperative for improving educational outcomes in the long term.

Higher education presents students with new academic, personal, and social challenges that can impact psychological health. Beiter et al. (2015) identified a number of stressors for university students, including coursework, exams, finances, career-related worries, and social and interpersonal issues. When university students lack the support needed to counter these stressors, they can experience anxiety, depression, and burnout, and their academic performance can suffer. Son et al. (2020) described the impact of new social and educational environments on university students as related to increased psychological distress, social isolation, and uncertainty regarding the progress of one's education. According to Stallman (2010), due to the combination of emerging adulthood and academic expectations, students in higher education experience more psychological distress than members of the general population. As a result, universities are beginning to view the promotion of mental health as a critical element of educational quality and the success of students.

The dimensions of psychological well-being, related to Deci and Ryan (2008), influence student persistence in higher learning, their cognitive processing, and the motivation to learn, especially in the context of psychological well-being and higher education. Positive psychological well-being leads to the development of intrinsic motivation, the ability to cope with educational challenges, and the enhancement of self-discipline and persistence (Deci and Ryan, 2008). Keyes et al. (2021) point out that positive mental health and

psychological well-being have a positive effect on learning and are related to improvement in concentration, creativity, problem-solving, and other social skills. Students who positively appraise their psychological well-being are most likely to maintain good interpersonal relationships with their important others and are most likely to cope with the stress of the daily changing educational requirements. On the contrary, the prolonged deterioration of psychological well-being and mental health will lead to the deterioration of educational motivation, learning, and the increased intention to quit (Diener et al., 2018). From this, we can conclude that psychological well-being and mental health are both an educational goal and the major factor affecting the sustainability of academic achievement.

The Relationship Between AI-Supported Education and Student Mental Health

The role that AI based learning has on student mental health is an area of growing concern in educational research. We have only recently begun to see the effects of advanced technologies on the teaching and learning processes on mental health. AI based learning programs have greatly advanced the education industry. Examples of such programs are adaptive learning, intelligent tutoring, auto-graded feedback, and support and assessment services provided to students continuously. An instance of research done in this field (Hmoud, M et al. 2025), stated that by using AI technologies, it is possible to design learning environments that are much more engaging for students, and learning becomes more student-centred. Karayer, M. (2024) stated that AI based educational programs provide students with immediate support, enhance the effectiveness of learning, and provide students with confidence and support through the personalization of teaching. This personalization of teaching and learning through AI in education may have a positive influence on mental health and reduce frustration towards learning, thus improving student self-efficacy and increasing students desire to learn. It has now become of the utmost importance for educational researchers and psychologists to expand their studies and recognize how learning based artificial intelligence impacts emotional and psychological wellbeing of students, in addition to academic performance.

Empirical studies show that the integration of AI-based technologies in educational settings is beneficial for student mental health. It appears that these technologies assist in the reduction of learning-induced stress, and cultivate positive mental health. For example, Pappa, D et al. (2024) suggest that adaptive learning systems offer personalized learning opportunities, and enable students to progress through learning activities, and thus, learning-induced stress linked to the anxiety of learning in a competitive and standardized environment is minimized. Likewise, Dey, D (2024) noted that intelligent tutoring systems provide students with ongoing support and instant feedback. This allows students to recognize and rectify errors, not only without fear of losing face, but also builds strong self-efficacy and motivational levels. According to Jing, F (2024), AI technologies promote self-regulated learning, control of personal learning goals, and academic satisfaction, all enhancing emotional resilience. This collection of studies shows that the use of AI in the educational space, when implemented ethically, can address students' psychological needs as they learn, thereby creating a more psychologically healthy learning environment.

While there are educational advantages to using AI in schools, evidence is emerging that suggests there are potential mental health concerns for students, stemming from an over-reliance on AI in the classroom. Using smart teaching systems is likely to cause the use of technology to become even more tedious; an overload on cognitive function, eyes glued to a screen, and a significant decrease in the level of interpersonal contact. All this is likely to increase emotional exhaustion and psychological distress. Excessive use of teaching technology also has the potential to undermine a student's ability to think critically and independently, and greatly diminish the level of interpersonal engagement. Both are key to healthy emotional and psychological development. Using generative AI in the classroom is likely to raise even more issues related to the over-reliance of technology, academic dishonesty, the use of AI technologies, and the uncertainty of genuine learning. There is a possibility students may become stressed by the constant tracking of algorithms, performance metrics, and the increased lack of privacy. These concerns create a strong case that while AI technologies bring a high level of educational value, the emotional and psychological cost to the student creates a solid argument against the use of these technologies.

AI-Driven Educational Innovation and Its Influence on Psychological Well-Being

AI-powered modern education tech is changing the face of traditional education from basic instruction to advanced technological constructs. Modern innovations in education (particularly at the higher education level) include intelligent tutor systems, adaptive learning technologies, learning analytics, automated assessments, predictive analytics, virtual learning assistants, and generative AI. These innovations, pioneered and/or made possible by artificial intelligence, create flexible and modern education systems. As Chen, X et al. (2025) report, the innovations use the power of AI to give educational institutions the ability to create learning systems

and customize them to the learning styles, thinking patterns, and educational needs of individual students. Unlike traditional teaching systems and practices, AI-powered educational systems monitor student performance and provide individualized feedback in real time to help develop a high level of understanding and promote constructive and beneficial performance. Carrasco, D et al. (2025) add that AI is fast becoming the most important and dominant force of educational innovation and transformation, mainly because of its ability to create inclusive learning frameworks and structures, foster and promote the concept of lifelong learning, and improve and increase the capacity of educational institutions to quickly adapt to the evolving global educational needs.

Ed-tech has seen a massive boost since the advent of generative AI. Learners of all ages can now use smart tech that aids in learning to write, conduct research, code, practice a new language, think critically, and creatively solve problems. Yang et al (2026) argue that generative AI is an interactive teaching assistant that provides students with outside the classroom support of instant Feedback, academic instruction, and learning support. This promotes learning and helps students develop the skills and confidence to complete challenging tasks. Vannoy et al. (2026) also argued that AI tools used in teaching and learning promote creativity, innovation, and collaboration because of the ability to engage learners in activities that promote multiple perspectives and the use of advanced thinking skills. The psychological impact of these teaching innovations is positive as they foster a nurturing learning environment where students feel secure, competent, and confident. All of these combine to positive encourage students to take on new academic ventures, improve mental health, and content with the learning process.

Even with these beneficial impacts, several psychological concerns with AI-enhanced educational applications remain. UNESCO (2023) states that an overreliance on AI may contribute to digital fatigue, prolonged exposure to screens, cognitive overload, and less face-to-face contact, which may all adversely affect the emotional well-being of students. Al-Nasa'h, M et al., (2026) stated that though AI positively impacts the educational process, an overreliance on smart technologies may negatively impact the development of reasoning, critically, and communication skills, which are all important for healthy psychological development. Moreover, students may feel anxious about the use of AI to assess their performance, the protection of their privacy, plus the psychological impact of AI and the use of generative AI in education. ElSayary, A et al. (2026) argued that AI innovations with no institutional control or ethical frameworks may actually increase psychological stress. Because of these concerns, there should be a balance between preserving students' mental health and emotional resilience, along with the necessary innovations.

Research Gap

Existing literature investigates the role of AI in Personalized Learning, Intelligent Tutoring Systems, and Adaptive Instruction, as well as improvements in educational outcomes and student performance. However, there has been limited focus on the impact of AI on the mental health and psychological well-being of students. Previous literature has focused on technology acceptance, learning and teaching effectiveness, student engagement, and academic performance; however, the psychological impact of AI-on students learning for extended periods has not been studied. Additionally, the few studies that focus on educational innovations have examined the initiatives in the context of educational innovations and student mental health as separate entities, ignoring the AI-based educational innovations that may improve student learning and at the same time impact student emotional and psychological well-being. The rapid advancement of Generative AI has introduced new educational and psychological challenges of technology reliance and digital fatigue, cognitive overload and privacy, responsible AI queries, and the unknown of its ethical and safe use, however, there is an absence of research in the context of higher education. Additionally, there is a lack of research addressing the situation in developing countries, especially in the rapidly AI adopting educational systems in higher education, given the varied mental health and technology support systems. With this study, we aim to address some of the aforementioned challenges and investigate AI education in higher learning systems and its impact on student mental health. Additionally, we wish to examine educational systems focused on psychological well-being to foster sustainable, ethical, and human-centered design learning systems in higher education.

Research Hypotheses

H1: There is a significant positive correlation between AI-supported education and student mental health.

H2: AI-supported education significantly predicts student mental health.

H3: There is a significant difference in student mental health based on gender among students using AI-supported education.

H4: There is a significant difference in student mental health across different academic year levels among students using AI-supported education.

Conceptual Framework

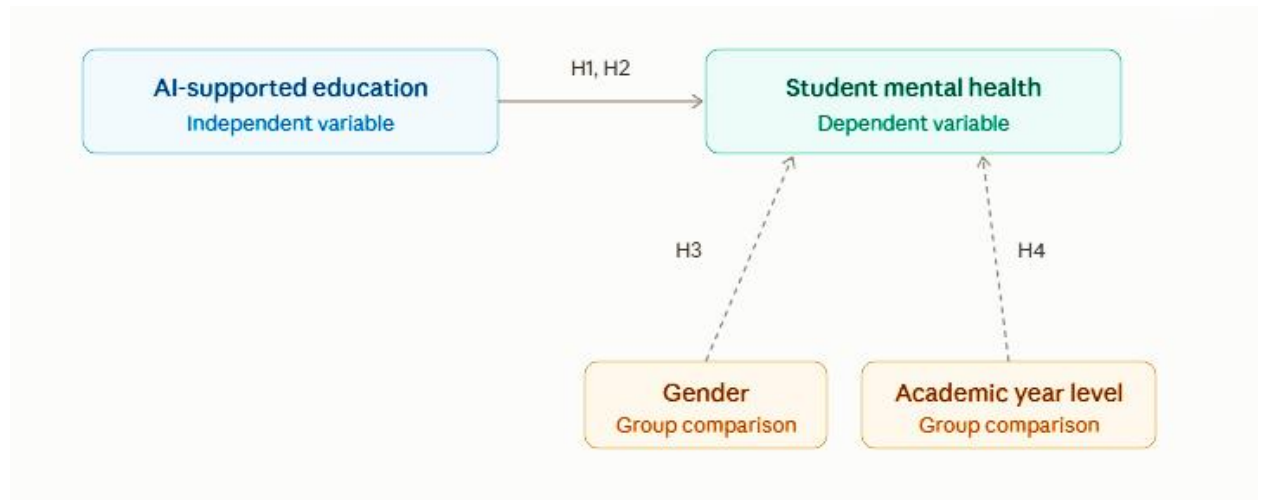


Figure 1.1 conceptual Framework

Methodology

Research Design

This study used quantitative data and a cross-sectional survey research design. A structured questionnaire was adopted and used as the primary data collection tool. This design proved convenient for precise, time-efficient, and large-scale data collection. The selected approach allowed for the statistical examination of the association between AI-supported education and student mental health. The cross-sectional design was appropriate for the data collection with regard to the students' contemporary thoughts and feelings toward AI-supported education and mental health. The chosen design proved sufficiently appropriate for the demand of the study, yielding findings that were objective and reliable and could be generalized.

Population

The subjects of this research were undergraduates and postgraduates from both public and private higher education institutes located in the Punjab and Sindh provinces of Pakistan. This study comprised attendees of the following institutions: Bahauddin Zakariya University (Multan), The Women University Multan, Muhammad Nawaz Sharif University of Agriculture Multan, University of Education Multan Campus, Government College University Faisalabad, University of the Punjab Lahore, University of Engineering and Technology (Lahore), Islamia University of Bahawalpur, COMSATS University Islamabad (Lahore Campus), Shah Abdul Latif University Khairpur, University of Sindh Jamshoro, Mehran University of Engineering and Technology Jamshoro, Foundation university medical college, NED University of Engineering and Technology Karachi, and the University of Karachi. These universities were chosen as they are continually modernizing and adopting digital technologies along with AI-based educational tools in teaching and learning processes. This sample of students constituted varying academic disciplines and levels of study sufficient to assess the engagement of AI-based educational technologies and the mental health of students.

Target Audience

This study targeted both undergraduate and postgraduate students who possessed an active interest and knowledge of AI-based educational technologies. The extent of participation was defined by the use of AI-based educational tools such as intelligent tutoring

systems, adaptive learning tools, AI-enabled learning management systems, educational chatbots, and generative AI tools (i.e. ChatGPT, Microsoft Copilot, Google Gemini). Participants from various faculties (i.e. social sciences, business, engineering, computing, education, health and natural sciences) were considered to assess the intersection between the use of AI-based learning tools and mental health.

Sampling Technique

Convenience sampling methods were used to obtain the sample for the current study. Due to the rapid acceptance of AI-supported learning among students, this sampling technique was deemed fit for the study since it allowed the researcher to approach students who were most available and involved in AI-supported learning. Convenience sampling was done by eliminating barriers to participation. This facilitated the recruitment of participants through university communication systems and the online networking systems. This sampling technique helped to achieve the responses of students from different universities in Punjab and Sindh, and it helped to achieve the diversity of gender, academic disciplines, and year of study.

Sample Size

In total, 457 participants were surveyed in this study. The sample size was sufficient for the correlation, multiple linear regression analysis, Independent Samples t-test, and One-Way Analysis of Variance (ANOVA). This sample size helped to understand the phenomena and contexts of this study, to address the issues of the study, and to enhance the interpretability and applicability of the study.

Data Collection

To gather primary data, a structured questionnaire based on validated measurement tools was adapted and utilized. This tool had two sections. The first section gathered demographic data (gender, age, year of study, and university). The measurements of the study variables were contained in the second section.

The AI-Supported Education scale was a modified, adopted version of the tool of Holmes et al. (2022) and Kasneci et al. (2023). This line of research is concerned with students' perceptions of personalized learning and intelligent tutoring, as well as adaptive learning, AI-based educational resources, automated feedback, and AI-based academic support. The Student Mental Health (Psychological Well-Being) scale is a Ryff (1989) scale and is supported by Tennant et al. (2007). This scale assesses emotional well-being, self-acceptance, and resilience, as well as purpose in life, positive relations, and the mastery of one's environment. All items in the questionnaire were assessed on a five-point Likert scale, where 1 = Strongly Disagree and 5 = Strongly Agree.

The tool was designed as a Google Form, and the link to the survey was emailed, posted, and shared in academic groups and communities on WhatsApp, Facebook, and other academic social media platforms. Before completing the questionnaire, respondents were given a description of the study. This method of data collection was the most efficient in accessing students from numerous universities in Punjab and Sindh, while overcoming the limitations of geographical and administrative barriers. After the data collection, all responses recorded in the Google Form were exported and used in the planned statistical analysis.

Ethical Considerations

During the entire research process, ethical standards were at the forefront. There was no consequence for those who opted not to participate. Prior to answering the questionnaires, the participants were made aware of the aim and objectives of the study. Electronic informed consent was obtained. Assurances were made regarding the anonymity and confidentiality of the participants and that their information would only be used for research. There was no need to provide personal information. Participants had the option to leave/ decline to participate at their discretion. Information collected was locked away and inaccessible to anyone but the researcher. This was to uphold the confidentiality of the participants and to protect their privacy.

Data Analysis

After the completion of the data collection process, responses were downloaded from Google forms, and for the initial screening of the data, were uploaded to Microsoft Excel. The cleaned data was then imported to IBM SPSS Statistics Version 27 for the statistical analysis.

Descriptive statistics were used to summarize respondent demographics. Reliability analysis using Cronbach's Alpha was performed to test the internal consistency of the measurement scales. While examining the relationship between AI-supported education and student mental health, Pearson Product-Moment Correlation Analysis was performed. AI-supported education's predictive effect on student mental health was assessed using Multiple Linear Regression Analysis. In investigating the impact of gender on student mental health, an Independent Samples t-test was applied. A One-Way Analysis of Variance (ANOVA) was used to test the existence of significant differences in student mental health among the different year levels. The 95% level of confidence was applied to all statistical analyses, whereas the significance of the statistical tests was set to $p < .05$.

Table 1 Demographic Characteristics of the Respondents (N = 457)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	221	48.4
	Female	236	51.6
	Total	457	100.0
Age	18–20 Years	97	21.2
	21–23 Years	174	38.1
	24–26 Years	126	27.6
	Above 26 Years	60	13.1
	Total	457	100.0
Academic Year	1st Year	96	21.0
	2nd Year	117	25.6
	3rd Year	129	28.2
	4th Year and Above	115	25.2
	Total	457	100.0
Level of Study	Undergraduate	302	66.1
	Postgraduate	155	33.9

Demographic Variable	Category	Frequency (n)	Percentage (%)
University Type	Total	457	100.0
	Public University	284	62.1
	Private University	173	37.9
	Total	457	100.0
Province	Punjab	301	65.9
	Sindh	156	34.1
	Total	457	100.0

Describes the demographics of the surveyed 457 respondents, with females being 51.6% (n = 236) and males being 48.4% (n = 221). The age distribution was as follows: 38.1% (n = 174) 21-23 years, 24-26 years (n = 127, 27.6%), 18-20 years (n = 97, 21.2%), and over 26 (n = 60, 13.1%). The largest year distribution was as follows: 28.2% (n = 129) respondents were third year, 25.6% (n = 117) second year, 25.2% (n = 115) fourth year and above, and 21.0% (n = 96) first year respondents. The largest degree distribution was as follows, 66.1% (n = 302) respondents were undergraduates and 33.9% (n = 155) respondents were postgraduates. The respondents were as follows: 62.1% (n = 284) respondents were from public universities and 37.9% (n = 173) respondents were from private universities. In terms of geography, 65.9% (n = 301) were respondents from universities in Punjab and 34.1% (n = 156) were respondents from universities in Sindh. The demographic profile of the respondents provides a representative sample of university students from various levels, institutions, and regions of university education and afford the opportunity to study the relationship between AI-supported education and student mental health.

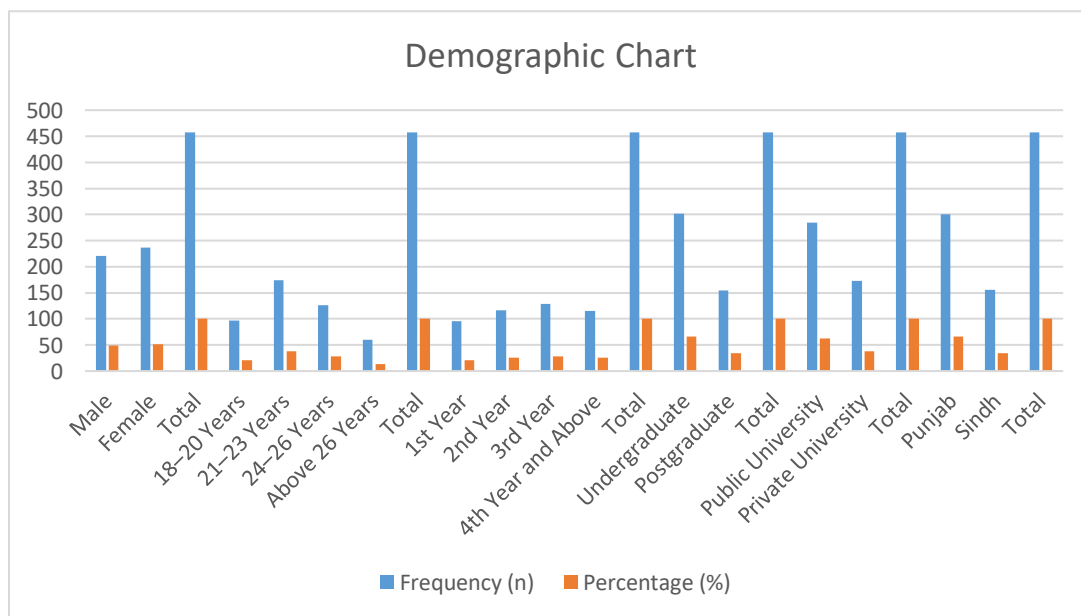


Figure 1.2 Demographic Chart

Table 2 Pearson Correlation Analysis Between AI-Supported Education and Student Mental Health (N = 457)

Variables	1	2
1. AI-Supported Education	1	.684**
2. Student Mental Health	.684**	1
Sig. (2-tailed)	—	.000
N	457	457

This section results from a Pearson correlation analysis highlighting the relationship between AI-integrated education and student mental health. The study involved 457 participants. AI-integrated education and student mental health positively correlate ($r = .684$, $p < .001$). The positive correlation suggests that the more participants benefitted from AI-integrated education, the more they reported improvements in mental health and psychological well-being. The moderately strong positive correlation suggests that the perceived effectiveness of AI-integrated Education is essential to the psychological well-being of students. The correlation is significant at the .01 level. Therefore, the study results imply a positive correlation between AI-integrated Education and student mental health.

Table 3 Multiple Linear Regression Analysis of AI-Supported Education Predicting Student Mental Health (N = 457)**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.684	.468	.467	.421

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	71.526	1	71.526	403.298	.000
Residual	80.674	455	.177		
Total	152.200	456			

Coefficients

Predictor	Unstandardized B	Std. Error	Standardized Beta	t	Sig.
(Constant)	1.128	.136	—	8.294	.000
AI-Supported Education	.701	.035	.684	20.082	.000

Presents the results of the multiple linear regression analysis on the impact of AI-supported education on student mental health with a sample of 457 university students. The model summary results show a correlation of $R = .684$, $R^2 = .468$. Thus, AI-supported education accounts for 46.8% of the variance for student mental health, while the other 53.2% of the variance is attributed to other

factors that are not specified in the model. The ANOVA results also show the regression model is significant ($F = 403.298$, $p < .001$), suggesting the model is a good fit for the data. The results of the coefficient analysis also show that the regression of AI-supported Education is a significant positive contributor to student mental health ($B = .701$, $\beta = .684$, $t = 20.082$, $p < .001$). The results state a positive relationship exists where increased use of AI-supported Education results in an increase in positive student mental health and well-being. Based on the results, AI-supported Education is the most important variable that determines student mental health of university students.

Table 4 Independent Samples t-Test for Student Mental Health Based on Gender (N = 457)

Gender	N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Male	221	3.74	0.61			
Female	236	3.92	0.58	-3.247	455	.001

Presents the results of the Independent Samples t-test of the 457 respondents and the difference in student mental health based on gender. The results show that female students ($M = 3.92$, $SD = 0.58$) had a higher student mental health than male students ($M = 3.74$, $SD = 0.61$). The t-test results show that there is a significant difference between the two groups ($t = -3.247$, $df = 455$, $p = .001$). Since the significance value is less than .05, the results show there is a significant difference in student mental health based on gender.

Table 5 One-Way ANOVA for Student Mental Health Across Academic Year Levels (N = 457)

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.432	3	2.811	7.684	.000
Within Groups	165.702	453	0.366		
Total	174.134	456			

Here are the results of the One-Way Analysis of Variance (ANOVA) that examined the differences in student mental health among the different academic year levels of the 457 participants. The results show that the ANOVA model holds ($F = 7.684$, $p < .001$). This indicates that the mental health of students in different academic year levels is significantly different. Because the significance is less than .05, the results indicate that students in different year levels of study show different levels of psychological well-being. This can be attributed to the differences in the academic loads, learning experiences, exposure to AI-integrated learning, and the adjustment to life at the university. The results of the study, in general, show that in students of different levels of university study, the year level of study is a significant factor in the differentiated mental health.

Discussion

The current study offers valuable insights into AI-enhanced learning and student mental health in the context of higher education. It identified a positive relationship between AI-integrated learning and student mental health. Specifically, students who utilized AI-enhanced learning tools reported higher levels of psychological well-being. As the teaching and learning practices of higher education institutions continue to embrace the disruptive presence of AI, the current results indicate that if AI is introduced to the teaching and learning process with due diligence and care, it has the potential to be much more than a technological disruption. It can positively impact students' learning and emotional experiences. Given the personalization, immediacy, and adaptiveness inherent in AI-integrated learning, coupled with the flexibility that AI learning systems offer, AI Integrated Learning Systems can help remove learning barriers, and thereby, improve students' confidence and sense of control over their academic challenges. Most importantly, AI-integrated learning systems, in the educational context, have the potential to create both academic achievement and psychological resilience among students.

The results of the correlation analysis showed a positive relationship between AI-based learning and student mental health. The data suggests that the more AI-based learning methods are implemented, the more the university students' mental health starts to become better. These findings are in line with the results of Rehman, S et al. (2026). These researchers stated that AI-based tools create a more learner-centered approach to education because AI-based tools create more adaptive instructional design with educational supports that improve learners' academic self-confidence and emotional engagement. In addition to this, Adilet, G. (2024) stated that AI-based educational systems offer prompt educational feedback and personalized learning support that alleviates educational anxiety, and increases learner satisfaction with the learning process. Lastly, Lin, X (2025) stated that intelligent tutoring systems improve students' educational confidence and autonomy by providing supportive feedback to facilitate self-learning. The findings of this study provide additional evidence regarding the role AI-based learning systems play in balancing educational outcomes with the psychological well-being of students.

Multiple regression analysis indicated AI-supported education has a positive relation to student mental health, which means AI-supported education practices likely make a positive difference for student mental health. Consequently, learning technologies that support personalized instruction, self-paced learning, and ongoing learning support likely have a positive effect on student mental health and emotional resilience. Hosen, A. (2025) reached a related conclusion when he argued that self-adaptive learning systems help learners to better engage with learning by personalizing learning resources to the individual learner and, in turn, helps to develop a learner's self-efficacy and satisfaction. In addition, Beem, V (2025) argued using the Self-Determination Theory, that learning environments that support autonomy, competence, and connection positively support intrinsic motivation and psychological well-being. AI-assisted education incorporates these tools by providing learners with the opportunity to decide how they want to learn and what type of support they want. Because of these reasons, the present study's predictive relation is supported by several psychological theories, and is related to the recent studies of modern education that focus on self-regulated learning and personalization of learning.

According to the Independent Samples t-test, there are significant differences in mental health based on gender. In the current study, it appeared that females had more positive mental health than the males. Most literature finds conflicting results for gender mental health discrepancies, and yet, there have been studies where notable differences in mental health within male and female university students have been found. For instance, Su, S et al. (2024) found that males and females have different forms of academic stress due to different coping mechanisms, emotional expression, and different levels of help-seeking. Similarly, Stallman (2010) stated that the gender and other demographics of students impact the psychological and emotional stress students face from the demands of the university and the mental pressure of the academic system. Therefore, the current results show that universities have to consider gender-related needs when creating AI-based educational programs and student-related support services.

The One-Way ANOVA showed differences in student mental health by level. This correlates with psychological well-being being contingent on students' academic progression, likely due to differences in academic loads, educational goals, workplace technologies, and adaptation to the university environment. Students in different academic years have different educational challenges that affect their emotional well-being and the extent to which they benefit from learning in an AI-enhanced learning environment. Similar findings were made by Son et al. (2020) when they reported that the psychological distress of university students differs by educational challenges, academic transitions, and changing learning environments. Furthermore, the World Health Organization (2022) posits that university students' mental health is affected by a number of academic and environmental challenges that change in the course of students' training. From these findings, it can be concluded that the development of AI-supported educational strategies and the formulation of mental health interventions in the context of a particular educational strategy in the university should take into account the students' academic progression.

Conclusion

This study addressed AI-integrated education, mental health, and the broader implications of educational innovations on mental health. AI-integrated education positively impacts students' mental health and is a strong predictor of mental health. Gender and year differentiated students' mental health, underscoring the need to consider the demographic structure when analyzing students' mental health as it relates to AI-integrated education. When implemented responsibly, AI has the potential to personalize education, increase students' academic engagement and self-efficacy, and reinforce students' emotional well-being. AI uses adaptive learning and offers students timely instructional support on various subjects. These findings demonstrate the need to implement AI technologies in modern higher education in a manner that promotes academic achievement and mental health.

AI-integrated education is a meaningful advancement in teaching; however, it cannot replace the need for teaching and educational support. When developing AI, universities must combine humane and responsible innovations with mental health services, digital wellness, and inclusive teaching. AI developers, educators, and policymakers must improve teaching and protect students' emotional and mental well-being. With a focus on innovation and mental health, universities can develop systems that promote positive mental health, academic achievement, and the comprehensive growth of students while using AI maximally and meaningfully.

Recommendations

1. Universities should integrate AI-supported learning tools that promote personalized and student-centered education.
2. Higher education institutions should provide regular mental health counseling and psychological support services for students using AI-based learning platforms.
3. Educators should receive professional training on the effective and ethical integration of AI technologies into teaching and learning.
4. Universities should establish clear policies for the responsible, ethical, and secure use of artificial intelligence in education.
5. AI-supported educational systems should be designed to complement human interaction rather than replace teacher-student engagement.
6. Institutions should promote digital well-being programs that encourage balanced and healthy use of AI technologies to reduce digital fatigue and technology dependence.
7. Future researchers should examine additional factors influencing student mental health in AI-supported learning environments using diverse populations, research designs, and educational settings.

Future Implications

The results of this research show that as AI technology continues to further embed in higher education, research should focus on the impact of AI learning on student mental health and psychological well-being. Research should be extended to include student engagement in a learning context, and teachable skills that enhance learning such as self-efficacy, digital skills, and resilient learning. The research should include theories that explain the impact of technology on human interaction and support. Looking at the different countries, society and culture would broaden the understanding of the evolvement of AI and a comparison of different education systems would develop the research further. Future studies need to focus on rapidly advancing Generative AI and assess the role of Ethical AI Governance and Digital Well-being in balancing psychophysical risks of innovations in education. This would aid in developing a more sustainable and adaptable AI-Enriched education ecosystem that would elevate the level of education while supporting mental health.

References

- Adilet, G. (2024, December). AI and Psychology: Transforming Mental Health Care and Cognitive Engagement through Intelligent Systems. In *Publisher. agency: Proceedings of the 8th International Scientific Conference «World Scientific Reports»(December 5-6, 2024). Paris, France, 2024. 609p* (p. 530). Jean Monnet University.
- Albikawi, Z., Abuadas, M., & Rayani, A. M. (2025, May). Nursing students' perceptions of ai-driven mental health support and its relationship with anxiety, depression, and seeking professional psychological help: Transitioning from traditional counseling to digital support. In *Healthcare* (Vol. 13, No. 9, p. 1089). MDPI.
- Al-Nasa'h, M., Al-Tarawneh, L., Al-Qaralleh, E. A., Allabadi, N., Ghaith, S., & Aldalahmeh, S. (2026). Online Learning Self-Efficacy, AI Anxiety, and Digital Well-Being in Engineering Students: A Predictive Model. *International Journal of Online & Biomedical Engineering*, 22(5), 4.

- Antoninis, M., Alcott, B., Al Hadheri, S., April, D., Fouad Barakat, B., Barrios Rivera, M., ... & Weill, E. (2023). Global Education Monitoring Report 2023: Technology in education: A tool on whose terms?.
- Beem, V. R. (2025). Leveraging AI chatbots to transform university mental health support: A case study. *Journal of Computer Science and Technology Studies*, 7(5), 719-726.
- Beiter, R., Nash, R., McCrady, M., Rhoades, D., Linscomb, M., Clarahan, M., & Sammut, S. (2015). The prevalence and correlates of depression, anxiety, and stress in a sample of college students. *Journal of affective disorders*, 173, 90-96.
- Canton, H. (2021). Organisation for economic co-operation and development—OECD. In *The Europa directory of international organizations 2021* (pp. 677-687). Routledge.
- Carlomagno, N., Vadalà, V., & Battaglia, M. V. (2024, September). AI-Personalized Mindfulness Sessions to Promote the Emotional Well-Being in Higher Education. In *International Conference on Higher Education Learning Methodologies and Technologies Online* (pp. 28-44). Cham: Springer Nature Switzerland.
- Carrasco, D. K. E., Alcántara, M. D. R. P., Vargas, C. G. A. P., Espino, B. M. S. C., Valdera, L. J. D., Cabrera, C. V., ... & Córdova, L. M. A. (2025). Sustainability of AI-Assisted Mental Health Intervention: A Review of the Literature from 2020–2025. *International journal of environmental research and public health*, 22(9), 1382.
- Chen, N., Zhou, M., Dong, X., Qu, J., Gong, F., Han, Y., ... & Zhang, L. (2020). Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *The lancet*, 395(10223), 507-513.
- Chen, X., Samad, S., & Kim, W. (2025). Teacher competence and students' motivation for learning in Chinese higher education: mediating roles of psychological flourishing and student engagement, and the moderating role of AI integration. *BMC psychology*, 13(1), 1378.
- Deci, E. L., & Ryan, R. M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian psychology/Psychologie canadienne*, 49(3), 182.
- Delello, J. A., Sung, W., Mokhtari, K., Hebert, J., Bronson, A., & De Giuseppe, T. (2025). AI in the classroom: Insights from educators on usage, challenges, and mental health. *Education Sciences*, 15(2), 113.
- Dey, D. N. C. (2024). Harmonizing the threads of well-being: AI (artificial intelligence), spirituality, healthcare, and management. *Spirituality, Healthcare, And Management* (April 24, 2024).
- Diener, E., Oishi, S., & Tay, L. (2018). Advances in subjective well-being research. *Nature human behaviour*, 2(4), 253-260.
- Dwivedi, Y. K., Hughes, L., Wang, Y., Alalwan, A. A., Ahn, S. J., Balakrishnan, J., ... & Wirtz, J. (2023). Metaverse marketing: How the metaverse will shape the future of consumer research and practice. *Psychology & Marketing*, 40(4), 750-776.
- ElSayary, A., & Shomotova, A. (Eds.). (2026). *Implications for Students' Mental Health in the Digital Age: AI and Cyber Behavior: AI and Cyber Behavior*. IGI Global.
- Espino Carrasco, D. K., Palomino Alcántara, M. D. R., Arbulú Pérez Vargas, C. G., Santa Cruz Espino, B. M., Dávila Valdera, L. J., Vargas Cabrera, C., ... & Agurto Córdova, L. M. (2025). Sustainability of AI-Assisted Mental Health Intervention: A Review of the Literature from 2020–2025. *International Journal of Environmental Research and Public Health*, 22(9), 1382.
- Guo, K., Zhang, J., & Ansari, H. W. A. (2025). Teacher care and mental wellbeing: Exploring the role of grit, resilience, and AI-interaction in education management. *Acta Psychologica*, 261, 105977.

- Hmoud, M., Daher, W., & Ayyoub, A. (2025, July). Who Thrives with AI? A Moderation Analysis of the Impact of AI-Based Learning on Students' Subjective Wellbeing by Learning Style. In *2025 International Conference on Smart Learning Courses (SCME)* (pp. 81-87). IEEE.
- Holmes, W., & Tuomi, I. (2022). State of the art and practice in AI in education. *European journal of education*, 57(4), 542-570.
- Holmes, W., & Tuomi, I. (2022). State of the art and practice in AI in education. *European journal of education*, 57(4), 542-570.
- Hosen, A. (2025). The Role of AI-Driven Art Therapy in Supporting Autism, Mental Health, and Emotional Well-Being: An Umbrella Review. *Mental Health, and Emotional Well-Being: An Umbrella Review (January 01, 2025)*.
- Ifenthaler, D., & Yau, J. Y. K. (2020). Utilising learning analytics to support study success in higher education: a systematic review. *Educational technology research and development*, 68(4), 1961-1990.
- Jing, F. (2024). AI psychotherapists and positive psychology: a systematic literature review of current literature and future directions.
- Karayer, M. S. (2024). *Exploring English Language Teachers' Views on the Use of Artificial Intelligence Tools for Promoting Well-Being* (Master's thesis, Necmettin Erbakan University (Turkey)).
- Kasneci, E., Seßler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., ... & Kasneci, G. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and individual differences*, 103, 102274.
- Keyes, C. L., Sohail, M. M., Molokwu, N. J., Parnell, H., Amany, C., Kaza, V. G. K., ... & Proeschold-Bell, R. J. (2021). How Would You Describe a Mentally Healthy Person? A Cross-Cultural Qualitative Study of Caregivers of Orphans and Separated Children: CLM Keyes et al. *Journal of Happiness Studies*, 22(4), 1719-1743.
- Kundu, A., & Bej, T. (2025). Psychological impacts of AI use on school students: A systematic scoping review of the empirical literature.
- Li, H., Zhang, J., Khan, W. A., & Lamsali, H. (2025). Teacher responsibility, AI integration, and student well-being: The role of peer collaboration in higher education. *Acta Psychologica*, 260, 105532.
- Lin, X. (2025). 101 A STUDY ON THE GENERATION MECHANISM AND INFLUENCE PATHWAY OF UNIVERSITY STUDENTS' EMOTIONAL CAPITAL: IMPLICATIONS FOR MENTAL HEALTH. *Current Opinion in Psychiatry*, 38(e-Supplement 2), e34-e35.
- Luckin, R. (2018). *Machine Learning and Human Intelligence. The future of education for the 21st century*. UCL institute of education press.
- na Gupta, K. (2026). International Students' Subjective Well-Being and AI as Emotional Companion. In *Generative AI for Supporting International Student Well-Being in Higher Education* (pp. 157-180). IGI Global Scientific Publishing.
- Nawaz, A. H., Shahzad, R., Ilyas, S., & Javed, S. (2025). Emotion-aware AI system in education supporting student mental health and learning outcomes. *The Critical Review of Social Sciences Studies*, 3(3), 487-504.
- Pappa, D., Pawlowski, J., Clements, K., & Sotiriou, S. (2024). TECHNOLOGY-ENHANCED EDUCATION IN SCHOOLS: CHALLENGES TO WELL-BEING. In *ICERI2024 Proceedings* (pp. 7362-7371). IATED.
- Rehman, S. U., Rooj, S., & Banerjee, R. (2025). and Monitoring of. *Supporting Digital Mental Health in Educational Environments*, 207.

- Richter, D., Wall, A., Bruen, A., & Whittington, R. (2019). Is the global prevalence rate of adult mental illness increasing? Systematic review and meta-analysis. *Acta Psychiatrica Scandinavica*, 140(5), 393-407.
- Rose, N. N., Hamidun, N., Ishak, A. S., Khalid, F. K., & Othman, N. F. (2026). AI and Mental Health Support in the Workplace. In *AI Influences on Employee Well-Being* (pp. 187-214). IGI Global Scientific Publishing.
- Ryff, C. D. (2014). Self-realisation and meaning making in the face of adversity: A eudaimonic approach to human resilience. *Journal of psychology in Africa*, 24(1), 1-12.
- Selwyn, N. (2019). *Should robots replace teachers?: AI and the future of education*. John Wiley & Sons.
- Shifa, S., Hameed, S., Suhail, H., & Kiren, A. (2025). Emotional Intelligence Meets Artificial Intelligence Affective Computing and Student Well-Being Online Classrooms. *The critical review of social sciences studies*, 3(3), 271-289.
- Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020). Effects of COVID-19 on college students' mental health in the United States: Interview survey study. *Journal of medical internet research*, 22(9), e21279
- Stallman, H. M. (2010). Psychological distress in university students: A comparison with general population data. *Australian psychologist*, 45(4), 249-257.
- Su, S. W., Hung, C. H., Chen, L. X., & Yuan, S. M. (2024). Development of an AI-based system to enhance school counseling models for Asian elementary students with emotional disorders. *IEEE Access*, 12, 159121-159136.
- UNESCO, 2023: <https://unesdoc.unesco.org/ark:/48223/pf0000387163>
- Vannoy, T. K., Cadieux, S., & Lyubomirsky, S. (2026). Human 2.0? AI and the Future of Well-Being, Connection, and Personal Growth: A Narrative Review. *Behavioral Sciences*, 16(6), 909.
- Yang, H., & Rui, Y. (2025). Transforming EFL students' engagement: How AI-enhanced environments bridge emotional health challenges like depression and anxiety. *Acta Psychologica*, 257, 105104.
- Yang, L., Yu, C., Zhang, W., & Tan, W. Y. (2026). Artificial Intelligence and the Transformation of Educational Management: A Theoretical Framework Linking Institutional Adaptation, Student Engagement, and Well-Being. *International Theory and Practice in Humanities and Social Sciences*, 3(1), 52-60.
- Yaru, K., Fernandez, K., & Rasiah, R. (2026). From Classroom Care to Digital Support: Ecological Foundations for Teacher-Responsibility, AI-Integration and Student Well-Being Framework. *International Review of Management and Marketing*, 16(3), 317.
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education—where are the educators?. *International journal of educational technology in higher education*, 16(1), 39.



2026 by the authors; Journal of Global Social Transformation (JGST). This is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC-BY) license (<http://creativecommons.org/licenses/by/4.0/>).

