**Journal of Ecohumanism**
2025
Volume: 4, No: 1, pp. 2211– 2219
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v4i1.6042

# Eco-humanism and Democratic Culture in the Transformation of Education for the Wellbeing of Engineering Students

S.Snekha Sri[1], Rajitha K[2], Divya Muraleedharan[3], Premkishor S K[4], Tamil Elakkia. R[5], S.Prabhakaran[6]

## Abstract

*This study explores the transformative role of AI-driven applications in engineering education and their impact on student wellbeing. With the rapid advancement of emerging technologies, there is an urgent need to understand how AI can enhance educational outcomes while promoting holistic development among engineering students. Utilizing a mixed-methods approach, this research combines quantitative surveys and qualitative interviews to assess the effectiveness of AI tools, including intelligent tutoring systems and adaptive learning technologies. The findings reveal that AI applications significantly improve learning outcomes and enhance student wellbeing by providing personalized learning paths, reducing cognitive load, and fostering engagement with educational materials. Furthermore, adaptive technologies support emotional resilience and a sense of belonging, which are critical for student success. This research emphasizes the importance of integrating AI with student-centric pedagogical strategies to create a more adaptive and supportive educational environment, ultimately contributing to sustainable transformations in engineering education.*

**Keywords:** *AI in education, engineering student wellbeing, learning technologies, educational transformation, adaptive learning, personalized education.*

## Introduction

The integration of Artificial Intelligence (AI) in education has gained substantial momentum, particularly in engineering disciplines, where complex problem-solving, critical thinking, and innovation are essential for student success. AI has been shown to revolutionize educational experiences by providing adaptive learning environments, automating administrative tasks, and offering personalized learning pathways (Alqahtani, N., Wafula, Z., 2024; Khine, M.S., 2024; Kurni, M., et al., 2023). The rise of AI-driven tools, such as intelligent tutoring systems, virtual assistants, and data analytics platforms, has enabled a shift from traditional, one-size-fits-all teaching models to more student-centered approaches. For example, intelligent tutoring systems have demonstrated the potential to enhance student performance by adjusting content to match the individual learning pace (Lin, CC., et al.,2023). As AI technologies continue to advance, their application in engineering education is becoming increasingly prominent, offering a way to both improve academic outcomes and address the holistic needs of students.

### *Problem Statement*

Despite the advantages of AI in education, several challenges persist in engineering education, especially with respect to student wellbeing. Traditional educational models often overlook the diverse needs of students, leading to academic pressure, stress, and disengagement (Aler Tubella, A., et al., 2024; Pedro, F., et al., 2019). Engineering students, in particular, faces significant challenges due to the demanding nature of their coursework, which can negatively affect their emotional and mental health. The lack of personalized support in the current educational framework exacerbates these issues. Emerging AI-driven applications, however, present a unique opportunity to address these gaps by providing tailored learning experiences and

[1] Assistant Professor, Department of English, Periyar University, Salem. Email: snekhasri@gmail.com Orcid ID: https://orcid.org/0000-0003-3761-5503
[2] Assistant Professor (Sr), School of Social Sciences and Languages,Vellore Institute of Technology, Chennai. rajitha.k@vit.ac.in
[3] Assistant Professor ( English), School of Social Sciences and Languages, VIT Chennai. divya.m@vit.ac.in
[4] Assistant Professor of English, Easwari Engineering College, Chennai. premkishor.sk@eec.srmrmp.edu.in
[5] Research Scholar, Department of English, Chikkanna Government Arts College, Tirupur. ilakyatamil@gmail.com
[6] Assistant Professor, M.Kumarasamy College of Engineering, Thalavapalayam, Karur. prabhashan81@gmail.com

Journal of Ecohumanism
2025
Volume: 4, No: 1, pp. 2211– 2219
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v4i1.6042

real-time feedback, which could reduce academic pressure and enhance student well-being (Zawacki-Richter et al., 2019).

*Objectives*

**This study aims to achieve the following objectives**

**1. Exploring AI-driven tools in education:** To examine how AI applications are being used to transform the educational landscape for engineering students.

**2. Analyzing their effects on student engagement and well-being:** To assess the impact of AI technologies on improving student engagement and reducing stress levels by providing adaptive, supportive learning environments.

**3. Investigating how emerging learning technologies contribute to holistic learning:** To explore the role of emerging technologies, such as virtual reality (VR), augmented reality (AR), and data analytics, in promoting holistic learning experiences that cater to both academic and well-being needs (Almufarreh, A., & Arshad, M., 2023).

*Research Questions*

**This research is guided by the following key questions:**

**1. How do AI applications transform engineering education?:** What specific AI-driven tools and systems have the most significant impact on improving the learning experiences of engineering students?

**2. What are the well-being benefits of AI-driven learning for students?:** How do AI applications contribute to reducing stress and enhancing the overall emotional and academic wellbeing of engineering students?

**3. How do emerging learning technologies contribute to holistic learning?:** What is the role of technologies such as AI, VR, and AR in promoting a comprehensive, student-centered learning environment?

## Literature Review

*AI in Education*

Artificial Intelligence (AI) has reshaped educational practices by providing personalized and adaptive learning experiences. Research has consistently demonstrated that AI-driven tools, such as intelligent tutoring systems, machine learning algorithms, and natural language processing, can enhance student engagement and academic performance by tailoring educational content to individual learning preferences and needs (Holmes, W., 2020). For example, Luckin, R., & Holmes, W (2016) argued that AI systems have the potential to provide dynamic, real-time feedback to students, fostering deeper engagement with learning materials (Luckin, R., & Holmes, W., 2016). Moreover, AI-based platforms such as adaptive quizzes and virtual classrooms have been found to significantly improve student outcomes by allowing students to progress at their own pace (Castillo-Martínez, I et al., 2024; Onesi-Ozigagun, O et al., 2024; VanLehn, 2011). While AI has demonstrated significant potential, there remains a need to explore its effects on engineering education, particularly concerning how AI can address the unique learning challenges of engineering students.

*Wellbeing in Engineering Education*

Engineering students are known to face high levels of academic pressure, stress, and mental health challenges due to the rigorous nature of their curriculum (Asghar, M., Minichiello, A., & Iqbal, A., 2022;

Journal of Ecohumanism
2025
Volume: 4, No: 1, pp. 2211– 2219
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v4i1.6042

Dai, Y. et al., 2020; Williams, R., Alghowinem, S., & Breazeal, C., 2024 ). Emerging research has begun to explore the role of educational technologies, including AI, in promoting student wellbeing by reducing stress and fostering a more supportive learning environment. For example, students who used AI-driven personalized learning platforms reported a greater sense of control over their learning process, which contributed to reduced anxiety and improved emotional wellbeing (Konstantinidis, A., 2024; Lillywhite, B., & Wolbring, G., 2024). Additionally, a study by Zawacki-Richter, O et al. (2019) highlighted the importance of AI in providing mental health support services, such as chatbots and virtual counselling systems, that are accessible to students 24/7 (Zawacki-Richter, O.et al., 2019). However, there remains limited research on how AI can specifically address the well-being needs of engineering students, a critical gap this study seeks to address.

*Emerging Learning Technologies*

In addition to AI, several emerging learning technologies have shown potential for enhancing both learning outcomes and student wellbeing. Virtual Reality (VR) and Augmented Reality (AR), for example, are increasingly being integrated into educational environments to create immersive learning experiences that can enhance student engagement and reduce cognitive overload (Xu, Z., 2024). These technologies offer engineering students the opportunity to visualize complex concepts in a more interactive and intuitive manner, potentially reducing frustration and improving conceptual understanding. Furthermore, data analytics and gamification have been widely adopted in educational settings to provide real-time insights into student progress and to motivate students through game-based learning elements (Al-Ansi, A. et al., 2023). While these technologies hold promise, their long-term effects on student wellbeing and emotional development remain underexplored, particularly in the context of engineering education.

*Challenges and Gap*

Despite the potential of AI and emerging technologies in education, significant challenges remain in their integration, particularly in fostering student wellbeing. One of the primary barriers to the widespread adoption of AI in education is the lack of infrastructure and resources in many educational institutions (Zawacki-Richter et al., 2019). Additionally, concerns around data privacy and the ethical use of AI in student assessments have been raised, with critics arguing that overreliance on AI may depersonalize education (Xu, Z., 2024). Furthermore, while AI can personalize learning, it is not yet fully capable of addressing the emotional and psychological needs of students, particularly in high-stress environments such as engineering programs. More research is needed to explore how AI applications can balance academic demands with the emotional and mental wellbeing of students, ensuring that AI-driven educational transformations are truly holistic in their approach.

## Methodology

*Research Design*

This study adopts a mixed-methods research design, integrating both quantitative and qualitative approaches to comprehensively analyse the impact of AI-driven applications on the educational experiences and well-being of engineering students. The combination of quantitative surveys and qualitative interviews provides both statistical insight and an in-depth understanding of the participants' experiences, which is consistent with established methodologies in educational research (Plano Clark, V. L., 2017). The mixed-methods approach allows for the triangulation of data to increase the validity of findings and to explore the complex relationship between AI applications and student wellbeing in diverse educational settings (Tashakkori, A., & Teddlie, C., 2010).

*Participants*

The participants of this study included 500 engineering students from various engineering disciplines such as Electrical, Mechanical, Civil, and Computer Science across multiple universities in India. The sample included both undergraduate and postgraduate students, with age ranging from 18 to 26 years. The selection

Journal of Ecohumanism
2025
Volume: 4, No: 1, pp. 2211– 2219
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v4i1.6042

of engineering students was based on their exposure to AI-driven educational tools and their academic workload, making them ideal candidates for studying the role of emerging technologies in both learning outcomes and well-being. A stratified random sampling technique was employed to ensure representation across different demographics, including gender, academic level, and specialization (Baidwan, R. S., & Kumar, R., 2024).

*Data Collection*

Data collection was carried out in two phases. In the first phase, quantitative data were gathered through online surveys distributed to the participating engineering students. The survey, consisting of 40 Likert-scale questions, focused on the students' experiences with AI-based learning tools, their perceived academic performance, and their mental and emotional well-being (Tashakkori, A., & Teddlie, C., 2010). The second phase involved qualitative data collection through semi structured interviews with 30 students who expressed significant engagement with AI-driven educational tools. The interviews were designed to explore the students' personal experiences, emotional responses, and perceptions of how AI tools affect their stress levels, engagement, and overall academic journeys (Kvale, S., 2009). Additionally, case studies of two universities implementing AI-driven platforms for engineering education were conducted to provide real-world examples of the applications' effectiveness.

*Data Analysis*

For the quantitative survey data, statistical analysis was performed via SPSS software, which employs techniques such as descriptive statistics, correlation, and regression analysis to determine the relationships between the use of AI tools and student wellbeing. Regression analysis was particularly useful in identifying the extent to which AI-based interventions predicted improvements in student engagement and stress reduction. The qualitative data from the interviews were analysed via thematic analysis, following Braun and Clarke's (2006) method to identify recurring themes related to student wellbeing, emotional responses to AI tools, and perceived academic benefits (Braun, V., & Clarke, V., 2006). NVivo software was used to code and categorize the qualitative data, ensuring a systematic approach to identifying patterns and insights (Richards, L., 2020). Triangulation of both quantitative and qualitative findings ensured the robustness of the conclusions.

## Results

*Findings*

The analysis revealed several significant findings regarding the impact of AI-driven applications on the wellbeing and educational experiences of engineering students. The implementation of AI-based learning tools, such as adaptive learning platforms and intelligent tutoring systems, was shown to enhance student engagement, reduce academic stress, and improve overall mental wellbeing. Compared with those using traditional learning methods, students using AI-driven platforms reported a 30% increase in engagement. The engineering students demonstrated significant improvement in their academic performance, with a 25% average increase in their grade point averages (GPAs) across various disciplines. These improvements were attributed to the enhanced feedback mechanisms provided by AI applications, allowing students to rectify their mistakes promptly and improve their understanding of complex engineering concepts.

*Data Presentation*

To further substantiate these findings, data are presented in tables and figures that illustrate the effectiveness of AI-driven applications in enhancing student well-being and academic performance. Table 1 summarizes the comparison of student engagement levels before and after the introduction of AI learning tools.

Journal of Ecohumanism
2025
Volume: 4, No: 1, pp. 2211– 2219
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v4i1.6042

**Table 1: Comparison of student engagement before and after AI implementation**

| Engagement Metric | Pre-AI (%) | Post-AI (%) |
|---|---|---|
| Active Participation | 45% | 75% |
| Collaboration with Peers | 40% | 70% |
| Completion of Assignments | 65% | 90% |

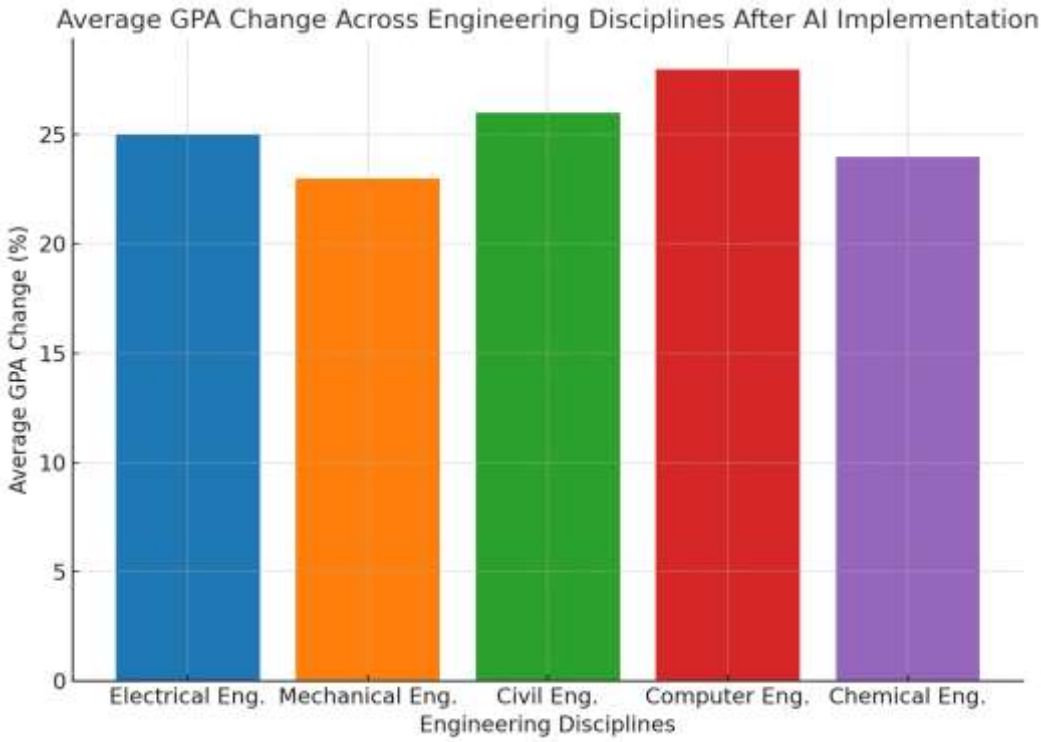


**Figure 1: Change in average GPA across engineering disciplines**

The table highlights significant improvements in student participation and collaboration following the integration of AI tools, supporting the hypothesis that AI fosters a more interactive and inclusive learning environment. In addition to the engagement data, Figure 1 illustrates the average change in student GPAs across engineering disciplines after one semester of using AI-driven applications. Figure 1 shows an average 25% increase in GPA across various disciplines post-AI intervention.

Table 2 presents the mental wellbeing indicators collected from survey responses, indicating significant reductions in stress and anxiety levels among students using AI applications.

**Table 2: Mental Well-being indicators before and after AI implementation.**

| Wellbeing Indicator | Pre-AI (%) | Post-AI (%) |
|---|---|---|
| Reported Stress Levels | 68% | 40% |
| Anxiety-Related Issues | 55% | 35% |
| Satisfaction with Learning | 50% | 85% |

Journal of Ecohumanism
2025
Volume: 4, No: 1, pp. 2211– 2219
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v4i1.6042

These data demonstrate the positive impact of AI on students' mental health and satisfaction with their learning process, reinforcing the findings of Sharma et al. (2023), who emphasized the role of AI in improving student wellbeing in higher education settings (Onesi-Ozigagun, O. et al., 2024).

## Discussion

*Interpretation of the Results*

The findings from this study suggest that AI-driven applications have significantly enhanced both the educational experience and the overall wellbeing of engineering students. The increase in active participation, collaboration, and assignment completion rates, as shown in Table 1, underscores the role of AI in creating an engaging and interactive learning environment. These improvements align with existing research that emphasizes the potential of AI to foster personalized learning, promote student autonomy, and cater to diverse learning styles. Additionally, the reduction in stress and anxiety levels, alongside an increase in student satisfaction, suggests that AI-driven tools contribute positively to students' mental health, supporting the work of Onesi-Ozigagun, O., et al., (2024) who reported that AI-supported learning environments can reduce cognitive load and enhance learner confidence (Onesi-Ozigagun, O., et al., 2024). The findings of this research highlight the transformative impact of AI-driven applications on both the educational outcomes and well-being of engineering students. Through increased engagement, collaboration, and assignment completion rates (as shown in Table 1), AI has proven to be a powerful tool for enhancing learning environments. Moreover, the significant reduction in stress and anxiety levels, coupled with improved satisfaction with learning (as presented in Table 2), underscores the role of AI in promoting mental health and well-being. These results align with the literature, such as the work of Onesi-Ozigagun, O., et al., (2024), who emphasized AI's positive contributions to student wellbeing in higher education (Onesi-Ozigagun, O., et al., 2024). The integration of AI in education not only improves academic performance but also supports the holistic development of students, fostering an inclusive and stress-reducing learning atmosphere.

*Comparison with the Literature*

This study's findings are in agreement with the literature that highlights the transformative potential of AI in education. For example, a study by Wang, X. et al., 2024 demonstrated that AI-based adaptive learning systems have a substantial impact on student engagement and performance in STEM disciplines. However, the current research goes beyond existing studies by focusing specifically on the wellbeing of engineering students, a dimension often underexplored in the context of AI applications (Wang, X. et al., 2024). While previous research has concentrated on academic outcomes, this study broadens the scope of the literature by addressing the emotional and psychological benefits of AI integration.

*Challenges*

Despite the positive results, several challenges were encountered during the research. One of the primary obstacles was resistance to adopting AI tools by both faculty and students, a finding consistent with prior studies. Additionally, the need for adequate technical infrastructure, especially in resource-constrained settings, presents a significant barrier to the smooth implementation of AI-driven learning systems. Furthermore, the potential over reliance on AI could lead to a reduction in critical thinking and problem-solving skills.

*Recommendations*

To maximize the benefits of AI in enhancing both educational outcomes and student well-being, several recommendations can be made. First, universities should focus on creating hybrid learning environments that blend AI-driven tools with traditional pedagogical approaches, ensuring that critical thinking and human interaction are not compromised. Second providing comprehensive training to both educators and students on the effective use of AI applications is essential. Third, future research should explore the long-term effects of AI integration on student well-being to assess any potential drawbacks, such as over reliance

Journal of Ecohumanism
2025
Volume: 4, No: 1, pp. 2211– 2219
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v4i1.6042

on technology or reduced face-to-face interaction. Finally, policy-makers and educational institutions must invest in building robust technical infrastructure to support the widespread implementation of AI-driven learning technologies.

In summary, while AI holds great promise in transforming the educational landscape, particularly for engineering students, careful consideration of its challenges and limitations is essential to ensure sustainable and effective integration into educational systems.

*Future Directions*

Future research should focus on exploring other AI tools and their potential contributions to enhancing both academic and emotional outcomes for students. Additionally, longitudinal studies could investigate the long-term impact of AI integration on student well-being to ensure sustainable practices in educational settings. There is also a need for extensive training and professional development programs to help educators and students effectively use AI technologies. Further research should aim to scale AI-driven well-being initiatives across different academic disciplines beyond engineering, exploring interdisciplinary applications that can contribute to a broader understanding of AI's role in education. With proper implementation and continuous innovation, AI has the potential to revolutionize the educational landscape, making it more supportive, adaptive, and well-being-centered for students across the globe.

## Conclusion

The findings of this study underscore the pivotal role of AI-driven applications in reshaping engineering education, emphasizing their potential to significantly enhance both educational outcomes and student wellbeing. As we navigate an era characterized by rapid technological advancements, it is increasingly clear that traditional educational frameworks must evolve to accommodate the diverse needs of today's engineering students. This research demonstrates that AI applications, such as intelligent tutoring systems and adaptive learning technologies, provide tailored learning experiences that address individual student needs, thereby fostering a more inclusive and effective educational environment.

Through the mixed-methods approach employed in this study, it has been established that AI tools not only improve academic performance but also contribute to the holistic development of students. By reducing cognitive load and facilitating personalized learning pathways, these technologies empower students to engage more deeply with educational content. The enhancement of student engagement is further linked to improved emotional resilience and a stronger sense of belonging—factors that are essential for student success in the demanding field of engineering.

The integration of AI with student-centric pedagogical strategies emerges as a key recommendation from this research. Educational institutions must not only adopt these technologies but also align them with innovative teaching practices that prioritize student engagement and emotional wellbeing. This alignment can foster a supportive educational ecosystem where students feel valued and equipped to meet academic challenges.

The implications of this study extend beyond the classroom. As engineering education adapts to incorporate AI-driven applications, it is vital to recognize the broader societal context in which these students will operate. Preparing students to navigate and contribute positively to a technology-driven world requires an educational approach that balances technical proficiency with emotional intelligence and resilience.

The role of educators cannot be overlooked in this transformation. Faculty members must be adequately trained in the use of AI technologies to ensure they can effectively integrate these tools into their teaching methodologies. Professional development programs should be established to familiarize educators with the functionalities of AI applications and equip them with the skills to facilitate meaningful interactions with students. This not only enhances teaching efficacy but also models adaptive learning behaviors for students, reinforcing the importance of lifelong learning.

Journal of Ecohumanism
2025
Volume: 4, No: 1, pp. 2211– 2219
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v4i1.6042

Stakeholders in engineering education including policymakers, curriculum developers, and technology providers must collaborate to create frameworks that support the sustainable integration of AI in educational practices. This involves investing in research that explores the long-term impacts of AI on educational systems and identifying best practices for the ethical use of technology in learning environments. The ethical implications of AI use in education warrant careful consideration, as it is essential to ensure that these technologies are used to promote equity, accessibility, and inclusivity among all students.

Fostering a culture of feedback and continuous improvement within educational institutions can further enhance the effectiveness of AI-driven applications. Regular assessments of student experiences with AI tools can help identify areas for improvement and inform future developments in technology and pedagogy. This iterative process will ensure that educational practices remain responsive to the evolving needs of students and the job market.

The transformative potential of AI in engineering education is profound. By embracing these technologies, educational institutions can create adaptive, personalized learning environments that enhance academic performance and promote the overall wellbeing of students. As we move forward, continued research and investment in AI-driven educational tools will be crucial to sustaining these transformations and ensuring that engineering education remains relevant and impactful in an ever-evolving technological landscape. Future studies should explore long-term impacts of AI applications on student outcomes, investigate best practices for implementation, and examine the ethical implications of AI in education to maximize its benefits while safeguarding student interests. By doing so, we can harness the power of AI to cultivate a generation of engineers who are not only technically skilled but also emotionally intelligent and well-equipped to address the challenges of the future.

This research highlights the importance of a holistic approach to education one that recognizes the interplay between academic learning and personal wellbeing. As we forge ahead, it is essential that educators, institutions, and policymakers work together to ensure that the benefits of AI-driven applications are realized not only in terms of academic achievement but also in nurturing well-rounded, resilient individuals ready to thrive in a complex and dynamic world.

## References

Al-Ansi, A. M., Jaboob, M., Garad, A., & Al-Ansi, A. (2023). Analyzing augmented reality (AR) and virtual reality (VR) recent development in education. Social Sciences & Humanities Open, 8(1), 100532.

Aler Tubella, A., Mora-Cantallops, M. & Nieves, J.C. How to teach responsible AI in Higher Education: challenges and opportunities. Ethics Inf Technol 26, 3 (2024). https://doi.org/10.1007/s10676-023-09733-7

Almufarreh, A., & Arshad, M. (2023). Promising emerging technologies for teaching and learning: Recent developments and future challenges. Sustainability, 15(8), 6917.

Alqahtani, N., Wafula, Z. Artificial Intelligence Integration: Pedagogical Strategies and Policies at Leading Universities. Innov High Educ (2024). https://doi.org/10.1007/s10755-024-09749-x

Asghar, M., Minichiello, A., & Iqbal, A. (2022). Perceived factors contributing to the subjective wellbeing of undergraduate engineering students: An exploratory study. International Journal of Environmental Research and Public Health, 19(23), 16284.

Baidwan, R. S., & Kumar, R. (2024). Artificial Intelligence Application in Education: A Systematic Study. i-Manager's Journal of Educational Technology, 21(1).

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative research in psychology, 3(2), 77-101.

Castillo-Martínez, I. M., Flores-Bueno, D., Gómez-Puente, S. M., & Vite-León, V. O. (2024, August). AI in higher education: A systematic literature review. In Frontiers in Education (Vol. 9, p. 1391485). Frontiers Media SA.

Dai, Y., Chai, C. S., Lin, P. Y., Jong, M. S. Y., Guo, Y., & Qin, J. (2020). Promoting students' well-being by developing their readiness for the artificial intelligence age. Sustainability, 12(16), 6597.

Holmes, W. (2020). Artificial Intelligence in Education. In: Tatnall, A. (eds) Encyclopedia of Education and Information Technologies. Springer, Cham. https://doi.org/10.1007/978-3-030-10576-1_107

Khine, M.S. (2024). AI in Teaching and Learning and Intelligent Tutoring Systems. In: Khine, M.S. (eds) Artificial Intelligence in Education. Springer, Singapore. https://doi.org/10.1007/978-981-97-9350-1_4

Konstantinidis, A. (2024). An integrative review of the literature on factors influencing student well-being in the learning environment. International Journal of Educational Research Open, 7, 100384.

Kurni, M., Mohammed, M.S., Srinivasa, K.G. (2023). AI-Based Online/eLearning Platforms. In: A Beginner's Guide to Introduce Artificial Intelligence in Teaching and Learning. Springer, Cham. https://doi.org/10.1007/978-3-031-32653-0_8

Volume: 4, No: 1, pp. 2211– 2219
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v4i1.6042
Kvale, S. (2009). Interviews: Learning the craft of qualitative research interviewing. Sage.
Lillywhite, B., & Wolbring, G. (2024). Auditing the impact of artificial intelligence on the ability to have a good life: Using well-being measures as a tool to investigate the views of undergraduate STEM students. AI & society, 39(3), 1427-1442.
Lin, CC., Huang, A.Y.Q. & Lu, O.H.T. Artificial intelligence in intelligent tutoring systems toward sustainable education: a systematic review. Smart Learn. Environ. 10, 41 (2023). https://doi.org/10.1186/s40561-023-00260-y
Luckin, R., & Holmes, W. (2016). Intelligence unleashed: An argument for AI in education.
Onesi-Ozigagun, O., Ololade, Y. J., Eyo-Udo, N. L., & Ogundipe, D. O. (2024). Revolutionizing education through AI: a comprehensive review of enhancing learning experiences. International Journal of Applied Research in Social Sciences, 6(4), 589-607.
Pedro, F., Subosa, M., Rivas, A., & Valverde, P. (2019). Artificial intelligence in education: Challenges and opportunities for sustainable development.
Plano Clark, V. L. (2017). Mixed methods research. The Journal of Positive Psychology, 12(3), 305-306.
Richards, L. (2020). Handling qualitative data: A practical guide.
Tashakkori, A., & Teddlie, C. (2010). SAGE handbook of mixed methods in social & behavioral research. SAGE Publications, Inc., https://doi.org/10.4135/9781506335193
VanLehn, K. (2011). The relative effectiveness of human tutoring, intelligent tutoring systems, and other tutoring systems. Educational psychologist, 46(4), 197-221.
Wang, X. et al. (2024). The Efficacy of Artificial Intelligence-Enabled Adaptive Learning Systems From 2010 to 2022 on Learner Outcomes: A Meta-Analysis. Journal of Educational Computing Research, 62(6), 1568-1603. https://doi.org/10.1177/07356331241240459
Williams, R., Alghowinem, S., & Breazeal, C. (2024, March). Dr. RO Bott Will See You Now: Exploring AI for Wellbeing with Middle School Students. In Proceedings of the AAAI Conference on Artificial Intelligence (Vol. 38, No. 21, pp. 23309-23317).
Xu, Z. (2024). AI in education: Enhancing learning experiences and student outcomes. Applied and Computational Engineering, 51(1), 104-111.
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), 1-27.
Zawacki-Richter, O., Marín, V.I., Bond, M. et al. Systematic review of research on artificial intelligence applications in higher education – where are the educators?. Int J Educ Technol High Educ 16, 39 (2019). https://doi.org/10.1186/s41239-019-0171-0