ADOPTION OF ARTIFICIAL INTELLIGENCE IN THE POST COVID NEW NORMAL AND ROLE OF NEW TECHNOLOGIES IN EDUCATION: A LITERATURE REVIEW

Ms. Mamatha Varier[1],

Assistant Professor, Christ Academy Institute for Advanced Studies, mamathav@caias.in

Ms. Noonu Mary Jose[2],

Assistant Professor, Christ Academy Institute for Advanced Studies, noonum@caias.in

Ms. Reny Raphael[3],

Assistant Professor, Christ Academy Institute for Advanced Studies, renyraphael@caias.in

---

Abstract

The current education system holds the traditional and modern methods of teaching and learning. In order to develop the critical thinking and cognitive skills of students, teaching and learning methods are more inclining towards the modern methods – technology led. Education through technology involves the adaptation of artificial intelligence into education. The purpose of the study was to understand the current scenario of teaching and learning through artificial intelligence and to project the future prospects. Adapting a narrative methodology to achieve the objectives, the scope of the study was limited to the available literature on artificial intelligence in education. From the extensive literature on artificial intelligence in education, study has concentrated on articles from 2019, to project the new dimension of education posed post COVID 19. Artificial intelligence in education eases the process for teachers, learners and administrators. This has led to better teaching and learning experience also reducing the administrative burden on teachers. Learning being a lifelong process, AIEd aids in doing the same, ensuring a personalized learning experience for the learners.

Keywords: Artificial intelligence, Education, Teaching-Learning, Post Covid, Literature review

---

Introduction

Collaboration and information sharing is a crucial theme in improving the quality of education. It ignites the spark of enhancing the teaching and learning environment. However, a teacher's intervention in the virtual world is the major problem identified. There are various possibilities among policymakers to bring improvement in higher educational institutions. Besides the policies framed by the policymakers, the teaching-learning and evaluation processes can be improved through the new pedagogies in education, with the use of Artificial Intelligence . The development of diverse educational techniques and channels is made possible by modern technology.

The COVID-19 pandemic brought to light the importance of discussing the use of technology in pedagogical practices, from early childhood education to high school and universities (Carius, 2021).Until the global COVID-19 pandemic, technology integration in education advanced slowly in comparison to the other economic sectors (Olszewska, 2020). Virtual platforms could take the role of traditional face-to-face training in the wake of COVID-19's abrupt lockdowns and isolation (Pathiranage & Karunaratne, 2022, Sangster & Stoner, 2020). Teachers are in charge of handling technology in terms of seeking, learning, comprehending, designing, utilizing, and—most importantly—bridging pupils with technology, even if universities normally give hardware facilities for information and communication technology (Zhao & Watterston, 2021). Consequently, in the digital age, technology has progressively evolved into one of the crucial components of the list of prerequisites (Mtebe & Raphael, 2018). In the digital age of higher education, modifications to instructional methods are necessary that call for significant improvements in the teaching and learning processes.The authors discuss the tactics in which information technology is used to implement strategies to transform the educational sector, specifically Artificial intelligence in education.

Research Methodology

The review started by developing a review protocol establishing main research questions, search keywords, inclusion and exclusion criteria, and the quality criteria (Gough, 2007). The main research questions that motivated the review process were: *What is the current scenario of artificial intelligence in education? What are the future prospects of it?* The search strings were keywords relating to artificial intelligence and educational institutions were applied in various search engines including Emerald, Sage, ProQuest Taylor and Francis, and Springer.

Number of inclusion and exclusion criteria were laid down to set boundaries for the literature review. Studies were included that focused on artificial intelligence in education, technological adaptation of educational institutions in the post-covid era, however the infrastructure and technical models of artificial intelligence in educational institutions were excluded. Only publications from 2019 were selected since the post-covid scenario is concentrated. Studies not written in English were excluded. Only journal articles were included in the literature review.

Synthesis of Literature Review

Artificial intelligence is associated with computers. But it also ecompasses the technology or machines that have the capability to perform like human beings, including cognitive learning, decision making and adapting to the environment (Chen et al., 2020).Artificial intelligence is one tool that can make learning interesting, improving the cognitive and critical thinking skills of learners.

Artificial intelligence has become a major part of the educational process. Today, notes are taken down in devices instead of books, writings are in touch, instead of pens and the students also expect technology driven education rather than the traditional system of education. Initially use of computers or computer softwares were only considered to be a part of advanced teaching learning component, however COVID-19 imposed a new dynamic to educational contexts, which involved a total transfer to virtual learning environments, where the use of Information and Communication Technology (ICT) has been an essential element for educational innovations and online entrepreneurial methodologies (Deroncele-Acosta, 2023). Artificial intelligence in terms of machine learning, natural language processing, tutoring platforms, Radio Frequency Identification (RFID) card recognition are some of the artificial intelligence tools that ease the processes of educational institutions for teachers, students and administrators.

The data driven model of artificial intelligence in education ensures that the teachers are able to respond to the requirements of the students or a sudden classroom situation in real-time through the platforms. It also assists teachers in carrying out academic and administrative tasks thereby encouraging personalized attention to each student. It will identify students' pain points and provide appropriate recommendations (Roy, M. 2020). Also, the technology aids the teachers in preparing lesson plans, conducting research activities, adopting learner centered teaching methods, and improving critical thinking in students (Huang, 2024).

Numerous artificial intelligence in education applications for a range of uses, including learner profile, performance prediction, assessment, evaluation, customization, adaptive learning, and more, are compiled in a recent study (Zawacki-Richter et al., 2019). It appears that artificial intelligence systems are able to evaluate student input and instantly provide corrective feedback (Roschelle, Lester, & Fusco, 2020; Mirzaeian, Kohzadi, & Azizmohammadi, 2016); create formative assessments and automatic scoring (Zhu, Liu, & Lee, 2020); and assist students with revisions throughout the learning process (Lee et al., 2019). The strengths and weaknesses of a student's present knowledge base may be determined with the use of intelligent tutoring systems (Zawacki-Richter, Marin, Bond, & Gouverneur, 2019). More significantly, intelligent feedback systems are able to quantify not just what is learnt but also how individuals learn (Cutumisu, Chin, & Schwartz, 2019). For instance, machine learning has the ability to accurately identify talented students (Hodges & Mohan, 2019) as well as at-risk or marginal college students (Chui, Fung, Lytras, & Lam, 2020). This information enables educators to make appropriate interventions to support students' academic achievement.

However, it has become imperative not only for the educational institutions to have the infrastructure and knowledge on information technology but also the students must understand how it works. Learner assistance is ensured in artificial intelligence in education in three forms - direct instruction and learning, support and cooperative learning and empowered learning in terms of solving complex problems (Narayanan et al., 2023). Artificial intelligence in education has the potential to provide the learners with an iterative learning environment and personalized learning opportunities (Ouyang & Jiao, 2021). It also ensures a conclusive environment for the learning process. That is, the artificial intelligence in education has also enabled distance learning easier for all at less costs and efforts (Khedrane, 2024).

Artificial intelligence helps to transform boring text into engaging videos with audio and captions. It can generate videos from PDF/text thereby making the students learn with fun (Roy M., 2020). It also provides computer-based step-by-step tutorials through topics in well-defined structured subjects such as mathematics. Digital Games-Based Learning (DGBL) includes artificial intelligence technologies, to adapt gameplay to the individual student. It not only helps to gain knowledge but also retain the information for a longer time. There has also been extensive research into the use of robots in education, especially to support children on the autism spectrum (Holmes, W 2022).

Chatbots have been developed to provide ongoing student support and guidance, in academic services, accommodation, facilities, examinations, IT, health and more. Automatic formative assessment (AFA) applications are researched and commercially available applications that use

natural language and semantic processing together with other artificial intelligence assisted techniques to provide actionable feedback on student writing or other student outputs (Holmes, W 2022).

Moving ahead , the future of education revolves around virtual reality models. With the digital platforms, students are immersed in a realistic imitation of a real or imaginary environment and interact with other learners, teachers, bots and avatars in real time. Virtual reality's potential for language teaching and learning has attracted much attention from researchers and practitioners.

Virtual reality language classrooms will become easier to use, more accessible, and therefore more sustainable. We can imagine a future where language learners can interact orally in three-dimension virtual worlds with generative artificial intelligence chatbots as avatars that have been provided with important information about the learner, such as their proficiency, interests, cultural backgrounds and needs. These chatbots will be able to act as a language coach and conversational partner, and take up any role in role-play activities (Moorhouse, B. L., Wong 2023).

Apart from the benefits of artificial intelligence, the complex issue of student plagiarism has become a significant worry within educational institutions due to the widespread use of technology driven writing tools. The misuse of intellectual property without appropriate citation raises ethical concerns and undermines the academic integrity of the educational process (Grassini, S. 2023). It appears that ChatGPT, due to its ability to generate seemingly original text, can produce content that appears to be genuinely novel, thereby evading detection by traditional plagiarism software. The ease with which ChatGPT can produce relatively good-quality text can incentivize students to employ it as a shortcut, thereby contributing to a culture of academic dishonesty

More empirical research is needed to support technology in education progress, with an emphasis on artificial intelligence technology in authentic teaching and learning environments that meet educational goals and demands (Kabudi et al., 2021). There has been a significant disparity between the promise of artificial intelligence in education and their actual deployments in education, as researchers note in a recent literature study (Kabudi et al., 2021).

Discussion

Artificial intelligence won't ever supplement top caliber, human-driven instructional methods. Keeping that in mind, most models center around improving human-driven education by giving the right artificial intelligence apparatuses that robotize administrative assignments and reduce educators' opportunity to zero in on their art or by giving important preparation about artificial intelligence abilities that assist them with better conveying illustrations on man-made intelligence.

The significant roles played by educators, parents, and educational establishments in the adoption of AI-enabled innovations in education ought to be acknowledged. Successful examples of AI integration in education demonstrate the significance of educational solutions developed in collaboration with students, teachers, and experts. This multi-stakeholder, collaborative approach ensures that solutions meet classroom practical requirements, conform to national curricula, keep up with industry trends, and safeguard student data.

Guaranteeing monetary feasibility and admittance to artificial intelligence learning potential open doors for all students, is fundamental to forestall extending the current advanced partition and try not to make new differences in training. In addition to the products themselves, significant investments in supporting infrastructure, training, and data protection are required for AI to fulfill its promise in education. We can unlock the full transformative potential of AI to improve educational outcomes for students worldwide by addressing these critical aspects.

Conclusion

Learning from our failures and passing on our knowledge to the next generation is a progressive contribution that the educational process does for society. Our current and future states are eventually consolidated by both formal and informal education. Digital technology and creative learning can overcome resource constraints to enable humankind to live in peace. In the past two years, there have been drastic developments that have never been seen before in terms of boosting self-confidence and achieving global parity. Learning has taken place anywhere, at any time, without the need for a face-to-face, touch-feel, or group setting. The new strategy for technology-enabled customization and education will maintain humanity and culture development for a connected, safe society.

Technology will evolve and advance in terms of teaching and learning processes, however, equitable distribution and inclusivity forms the major challenges of it. Further understanding

of the challenges and shortcomings of technology led education to be a prospect for future research.

References

Acosta, A. D., Palacios-Núñez, M. L., & López, A. T. (2023). Digital transformation and technological innovation on higher education post-COVID-19. *Sustainability*, *15*(3).

Carius, A. C. (2021). COVID-19 post pandemic, blended learning and artificial intelligence: is it the school virtualization. *Research, Society and Development*, *10*(7), 1-11.

Chen, L., Chen, P., & Lin, Z. (2020). Artificial Intelligence in Education: A Review. *Ieee Access*, *8*.

Chin, D. B., Blair, r. P., Wolf, R. C., Conlin, L. D., Cutumisu, M., Pfaffman, J., & Schwartz, D. L. (2019). Educating and measuring choice: A test of the transfer of design thinking in problem solving and learning. *Journal of the Learning Sciences*, *28*(2), 337-380.

Gough, D. (2007). Weight of evidence: A framework for the appraisal of the quality and relevance of evidence. *Research Papers in Education*, *22*(2), 213-228. https://doi.org/10.1080/02671520701296189

Grassini, S. (2023). Shaping the future of education: exploring the potential and consequences of AI and ChatGPT in educational settings. *Education Sciences*, *13*(7), 692.

Holmes, W., & Tuomi, I. (2022). State of the art and practice in AI in education. *European Journal of Education*, *57*(4), 542-570.

Huang, D. (2024). Artificial Intelligence Driving Innovation in Higher Education Management and Student Training Mechanisms. *Applied Mathematics and Nonlinear Sciences*, *9*(1).

Khedrane, S. (2024). The Role of Artificial Intelligence in Distance Education. *International Journal ofSocial Communication*, *11*(1).

Mirzaeian, V., Kohzadi, H., & Azizmohammadi, F. (2016). earning Persian grammar with the aid of an intelligent feedback generator. *Engineering Applications of Artificial Intelligence*, *49*, 167-175.

Moorhouse, B. L., Wong, K. M., & Li, L. (2023). Teaching with technology in the post-pandemic digital age: Technological normalisation and AI-induced disruptions. *RELC Journal*, *54*(2), 311-320.

Mtebe, J. S., & Raphael, C. (2018). Eliciting In-Service Teachers' Technological Pedagogical Content Knowledge for 21st-Century Skills in Tanzania. *Journal of learning for development*, *5*(3), 263-279.

Narayanan, S., Ramakrishnan, R., Durairaj, E., & Das, A. (2023). Artificial Intelligence Revolutionizing the Field of Medical Education. *Cureus*, *15*(11). doi: 10.7759/cureus.49604

Olszewska, K. (2020). The effectiveness of online learning in the era of the SARS-CoV-2 pandemic on the example of students of Polish universities. *World Scientific News*, 108-121.

Ouyang, F., & Jiao, P. (2021). Artificial intelligence in education: The three paradigms. *Computers and Education: Artificial Intelligence*, *2*. https://doi.org/10.1016/j.caeai.2021.100020

Pathiranage, A., & Karunaratne, T. (2022). Investigating Teachers' Transition From Traditional to Online: A Case Study on Accounting Teacher Perspectives. *In 21st European Conference on e-Learning ECEL 2022*, *21*(1). https://doi.org/10.34190/ecel.21.1.615

Roschelle, J., Lester, J., & Fusco, J. (2020). AI and the Future of Learning: Expert Panel Report. *Digital Promise*.

Roy, M. (2020). AI Intervention in Education Systems of India: An Analysis. *Solid State Technology*, *63*(2), 1395-1402.

Sangster, A., Stoner, G., & Flood, B. (2020). Insights into accounting education in a COVID-19 world. *Accounting Education*, 431-562. https://doi.org/10.1080/09639284.2020.1808487 CrossMark LogoCrossMark

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.

Zhao, Y., & Watterston, J. (2021). The changes we need: Education post COVID-19. *Journal of Educational Change*, *22*(1), 3-12.