To Study the Impact of AI in Higher Education

Author-1: Mr. Kamal Kishore (TMV Research Scholar)

Author-2: Prof. (Dr.) Pranati Tilak (Dean, Department of Management, TMV)

Keywords: AI , HEI,

Abstract

Innovative educational technology have transformed the ways in which we teach and learn. Recently, as artificial intelligence has advanced, higher education has begun to embrace new technology. The purpose of this conceptual review study is to examine the emergence of the use of artificial intelligence in education, specifically in teaching and learning. It investigates the educational implications of emergent technologies on the way institutions educate and students learn.

The purpose of this study is to forecast the future nature of education in a world with artificial intelligence. Effective use of artificial intelligence techniques is viewed as a way to enhance the quality of teaching and learning. However, the difficulties associated with incorporating artificial intelligence into educational institutions are discussed. Additionally, the difficulties encountered by students while implementing artificial intelligence are examined in terms of student support, teaching, learning, and administration. This article summarizes recent research to demonstrate the application of artificial intelligence in educational settings. The consequences and future directions for study are discussed.

Introduction

Innovative technology developments and great computing skills of intelligent machines are essentially linked to higher education. Thus, artificial intelligence breakthroughs offer new

opportunities and challenges to higher education for teaching and learning. In addition, artificial intelligence can effectively alter the core design of higher education institutions. The notion of artificial intelligence between philosopher since Aristotle is not defined at all.

Scientists began researching artificial intelligence solutions in the 1950s. Turing gave the first solution to the problem of when a system is thought to be smart. He suggested a game to test a human listener's ability to identify between a machine conversation and a human; if this difference is not detected by the system, we admit that artificial intelligence is available (AI). John McCarthy later in 1956 presented the most thorough descriptions of artificial intelligence: "AI is the premise for assuming that any characteristic of learning, or any other feature of the intelligence, may be precisely characterised as the property of a machine or a programme.

The review in this paper seeks to explore the use of artificial intelligence in the fields of teaching and learning. This work, which examines papers on incorporating AI into education, does so by classifying them by topic and subject. It discovers how present educational systems are using AI and analyses the problems of integrating AI into education. It shows how AI will impact the educational system in the future.

The rise of AI in education

Currently, in universities, students are placed in the middle of learning and teaching issues. Working with AIs in order to help those with disabilities around the world is seen as a type of collaboration or solution. As a result, these technologies can motivate the public to adopt AI in their higher education pursuits. Learning and teaching can be invigorated by motivation. Kelley defines a cyborg as "a hybrid of human and machine" in their Encyclopedia of Science, Technology, and Ethics. Machine learning methods are able to help persons with different types of skills through the use of complicated computing systems. On top of that, they have been shown to perform a number of human-like activities, and they can handle some hard tasks in the world of teaching and learning. This opens the door for new possibilities in higher education.

AI investments have a strong influence on the academic sector. For students in higher education, economic problems may be justification enough to look for AI solutions. The above instances suggest that the joining of a human brain with a computer is possible, and the teachers must find

new ways of teaching and learning in many various circumstances to deal with this issue. The interaction between brain and computer has garnered attention from researchers worldwide. While analysing brain activity and working with existing software systems, experienced computer scientists have come up with several solutions to help manage applications using a brain-computer interface. The brain activity of a subject can be translated into commands and sent to a computer using a brain-computer interface. In addition, it will facilitate communication for persons with motor-function difficulties. We can improve our powers and capabilities by utilizing AI systems, and new technologies appear almost instantly. According to Schleicher, "It's not simply about placing more technology in more classrooms; it's about altering teaching practices to better equip students to succeed in today's global economies".

Educational systems can more effectively attain and manage educational goals with the help of artificial intelligence (AI). A new AI teacher can tell a sluggish learner apart from his classmates to help the class understand the material. If a student is lacking in some areas or does not grasp some topics, AI analysis will provide a report to the instructor or parents, and the instructor can then take appropriate steps to help the student learn.

Additionally, AI may be able to help raise attention to course gaps which lecturers may not be aware of, as they may not always be aware of the educational materials' shortcomings that contribute to student perplexity. Students can be taught according to their background and the material can be made more appealing by giving them access to other subjects and courses. Additionally, AI can assist instructors regarding their students' schoolwork. For example, Coursera, an online course provider with a massive user base, checks for student responses to a problem. The system alerts the teacher if a high number of students submit an incorrect answer on homework, and it also informs new students about how to find the correct solution to an assignment. This AI system assists in the development of a common set of foundational concepts across students and helps to explain course concepts.

As a result, professors that use technology in their teaching methodology can benefit from students' automatic data produced by student interaction. Because these digital information systems are so good at instantly storing and processing massive volumes of information, These tools might assess student involvement levels and make sense of their behavioural patterns, and then share the information with the teacher. AI tools can help teachers manage their classrooms

and also help them save time on paperwork, allowing them to use their time in other ways. We are the only ones who have gone into detail about the various technologies that will define AI's future role in education.

Challenges of Artificial Intelligence Solutions

Following a thorough analysis of the literature, we identified the following problems associated with integrating AI technologies into educational institutions:

Cost: Initial investments in software and cloud support are prohibitively expensive for educational systems. Additionally, not only are the expenses of continual staff training high, but so is the cost of ongoing AI system training if organisational procedures change.

Conflict of cultures: Any alterations could have been viewed suspiciously by the organisations. Due to the fact that there are several technology possibilities, it is difficult to narrow down the available options and choose the most effective implementation approach.

The implementation of artificial intelligence has been a very enticing answer in educational systems. Additionally, there are also additional motivations for the application of AI, such as the large student population and larger financial concerns. Thus, these types of elements transform colleges into markets capable of attracting a huge number of students and increasing enrollment.

Conclusion

Given the potential for artificial intelligence solutions to revolutionise university administrative functions, teaching and learning may face an entirely new set of issues. According to Perez, AI solutions can do automated tasks. However, it is improbable that they could perform the more complex activities associated with higher education. The current article discusses some examples of how artificial intelligence is being used to improve teaching and learning in educational systems. However, there are inherent limitations to the application of technology; AI will never

be able to completely replace teachers. Today, computational algorithms have the ability to influence every area of people's lives, from their credit scores to their employability. To date, higher education has been at the epicentre of this rapid upheaval, presenting both extraordinary potential and risks. This critical subject requires academic attention and investigation. Thus, in the field of education, we should seek solutions, and technological advancement will serve as a common solution.

The deployment of technology in higher education is appropriate when it enhances research, teaching, and learning possibilities and capacities. The purpose of this study is backed by the objectives of previous research in this field, such as the one titled "National Strategic Plan for Artificial Intelligence Research and Development." According to the Report, AI enhanced human capacities and gradually eroded the barriers between people and artificial intelligence.

Indeed, the advancement of machine learning and artificial intelligence in institutions of higher education has created both opportunities and obstacles. However, it is critical to keep in mind that education is not a technological answer, but rather a human-centered endeavour. Despite rapid advancements in artificial intelligence, complete reliance on technology is incorrect. As a result, it is critical to emphasise the notion that human beings should perceive problems and risks on their own. Additionally, they should raise some critical considerations about privacy and control over the demand for developing creativity. Additionally, they should allow for serendipity in the process of learning and teaching. The motivation for AI is similar to that of a panacea in higher education, leaving people in its path at the mercy of reality. However, a critical aspect of education is the maintenance of intellectual scepticism. In general, we must consider the goal of cultivating responsible citizens and educated minds.

References

1. Bayne, S. (2008). Higher education as a visual practice: Seeing through the virtual learning environment. Teaching in Higher Education. https://doi.org/10.1080/13562510802169665

2. Beam, A. L., &Kohane, I. S. (2016). Translating artificial intelligence into clinical care. JAMA - Journal of the American Medical Association. https://doi.org/10.1001/jama.2016.17217

3. Bengio, Y., Courville, A., Vincent, P., Seliya, N., Wald, R., Muharemagic, E., … Mu, J. (2013). Representation Learning: A Review and New Perspectives. IEEE Transactions on Pattern Analysis and Machine Intelligence. https://doi.org/10.1109/TPAMI.2013.50

4. Billings, M. E., Lazarus, M. E., Wenrich, M., Curtis, J. R., &Engelberg, R. A. (2011). The Effect of the Hidden Curriculum on Resident Burnout and Cynicism. Journal of Graduate Medical Education. https://doi.org/10.4300/JGME-D-11-00044.1

5. Caplar, N., Tacchella, S., &Birrer, S. (2017). Quantitative evaluation of gender bias inastronomical publications from citation counts. Nature Astronomy.https://doi.org/10.1038/s41550-017-0141

6. Council, N. R. (2011). SucceSSful K- 12 identifying effective approaches in Science. SocialSciences.

7. Dacre Pool, L., &Qualter, P. (2012). Improving emotional intelligence and emotionalself-efficacy through a teaching intervention for university students. Learning and IndividualDifferences. https://doi.org/10.1016/j.lindif.2012.01.010

8. Drigas, A. S., &Ioannidou, R. E. (2013). A Review on Artificial Intelligence in SpecialEducation. In Communications in Computer and Information Science.https://doi.org/10.1007/978-3-642-35879-1_46

9. Elsayed, N., Thomas, B., Marriott, K., Piantadosi, J., & Smith, R. (2015). Situated Analytics.In 2015 Big Data Visual Analytics, BDVA 2015. https://doi.org/10.1109/BDVA.2015.7314302

10. Ferguson, R., Clow, D., Beale, R., Cooper, A. J., Morris, N., Bayne, S., & Woodgate, A.(2015). Moving through MOOCS: Pedagogy, learning design and Patterns of Engagement. InLecture Notes in Computer Science (including subseries Lecture Notes in ArtificialIntelligence and Lecture Notes in Bioinformatics).https://doi.org/10.1007/978-3-319-24258-3_6

11. Gal, Y. (2016). Uncertainty in Deep Learning. PhD Thesis.https://doi.org/10.1371/journal.pcbi.1005062

12. Hayes, S. (2015). MOOCs and Quality : A Review of the Recent Literature. QAA MOOCsNetwork.

13. Hillier, J. (2015). Performances and performativities of resilience. In EvolutionaryGovernance Theory: Theory and Applications.https://doi.org/10.1007/978-3-319-12274-8_12

14. Kelley, T. R., Knowles, J. G., Abell, S., Lederman, N., Bandura, A., Bandura, A., Williams,D. (2016). A conceptual framework for integrated STEM education. International Journal ofSTEM Education. https://doi.org/10.1186/s40594-016-0046-z

15. Kena, G., Musu-Gillette, L., Robinson, J., Wang, X., Rathbun, A., Zhang, J., … Velez, E. D.(2015). The Condition of Education 2015. U.S. Department of Education, National Centerfor Education Statistics. https://doi.org/10.4135/9781412963916.n394

16. Kerr, S. (2017). Exploring the impact of artificial intelligence on teaching and learning inhigher education. https://doi.org/10.1186/s41039-017-0062-8

17. Lanctot, M., Lanctot@, D., Zambaldi, V., Vzambaldi@, D., Unas, A. ‾, Deepmind, G., Tuyls, K. (2017). A Unified Game-Theoretic Approach to Multiagent ReinforcementLearning. In 31st Conference on Neural Information Processing Systems (NIPS 2017).

18. Martin, F. G. (2012). Will massive open online courses change how we teach?Communications of the ACM. https://doi.org/10.1145/2240236.2240246

19. Mason, M. (2010). Sample Size and Saturation in PhD Studies Using Qualitative Interviews.Forum Qualitative Sozialforschung / Forum: Qualitative Social Research.https://doi.org/ISSN 1438-5627

20. Moles, J. j moles deakinedu au, & Wishart, L. llewwllynwishartdeakinedu au. (2016).Reading the Map: Locating and Navigating the Academic Skills Development of Pre-ServiceTeachers. Journal of University Teaching & Learning Practice.

21. National Research Council. (2011). A Framework for K-12 Science Education:Practices,Crosscutting Concepts , and Core Ideas. Social Sciences.

22. Rajasingham, L. (2009). The Impact of Artificial Intelligence Systems on Future UniversityParadigms. Journal of Online Learning and Teaching.https://doi.org/https://dx.doi.org/10.1108/17506200710779521

23. Ratliff, N. D., Bradley, D., Bagnell, J. A., &Chestnutt, J. (2006). Boosting StructuredPrediction for Imitation Learning. Advances in Neural Information Processing Systems.

24. Russell, S. J., &Norvig, P. (2010). Artificial Intelligence: A Modern Approach. ArtificialIntelligence. https://doi.org/10.1017/S0269888900007724

25. Schleicher, A. (2012). Preparing Teachers and Developing School Leaders for the 21stCentury: Lessons from Around the World. OECD Education and Skills.https://doi.org/10.1787/9789264174559-en

26. Schölkopf, B. (2015). Artificial intelligence: Learning to see and act. Nature.https://doi.org/10.1038/518486a

27. Secundo, G., Vecchio, P. Del, &Passiante, G. (2015). Creating innovative entrepreneurialmindsets as a lever for knowledge-based regional development. International Journal of

28. Knowledge-Based Development. https://doi.org/10.1504/IJKBD.2015.074301Shulman, C., & Bostrom, N. (2012). How hard is artificial intelligence? Evolutionaryarguments and selection effects. Journal of Consciousness Studies.