

Assessing AI Impact on Educational Equity and Integrity Challenges and Solutions

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ABSTRACT

As artificial intelligence (AI) increasingly permeates the educational sphere, it revolutionizes student assessment methods and personalized learning environments. The present article focuses on reconsidering the possibilities of AI's application in education, explaining that simultaneously opening extensive perspectives and facing numerous pressing problems is possible. Discussing the crucial issues concerning the application of artificial intelligence in learning institutions, it outlines issues and adverse effects linked to social justice in algorithms, infringements on students' privacy, and cheating. Furthermore, the paper includes an analysis of advanced approaches that can be used to apply AI to create anti-cognitivist and dynamic forms of testing. It also advocated for incorporating these improved technologies into the learning process to ensure that the educational process is not compromised. The discourse continues with practical steps in the fairness and accuracy of assessments that keep students' identities private and accountable for the contactless and fair use of AI in education. Further, the article's authors consider the need for the advancement of AI instruments, which provide new educative needs by constantly evolving AI technology and the interaction of the developers with educators and policymakers respecting ethical standards. It helps adequately instruct AI applications that are culturally acceptable and correct in teaching. In other words, it helps appropriately throw the appropriate training at suitable applications. When implemented in education, AI was not only to bring efficacy to the assessment procedures but also work towards approaching education to cater to unique solutions for individuals, which would overhaul the setups currently in place, meaning that constant development and ethical practices would be needed for the best results.

Keyword: Artificial Intelligence, Student Assessment, Academic Integrity, Educational Technology, Adaptive Learning

1. INTRODUCTION

Artificial intelligence is progressively entering the educational space and changing student evaluation approaches and personalized learning environments. The use of AI in education has and will mark new paradigm shifts on how students will be taught and hence is due to the integration of AI technologies in the education system unique opportunities as well as numerous challenges. In this article, the author discusses various aspects of AI in student assessment and the main problems associated with its use: the problem of AI bias, the violation of students' privacy, and the threat to academic integrity. Furthermore, it discusses various techniques that would capture the vision of using AI to create fair and dynamic tests. This is a crucial development that has given this article an objective analysis of potential future challenges and innovative solutions to AI in education to solve the challenges of educational assessments in the age of Artificial Intelligence. This is coupled with considerations of how these technologies can be integrated with traditional educational values and pedagogy so that the use of technologies does not detract from the learning process.

2. CHALLENGES POSED BY AI IN STUDENT ASSESSMENTS

One of the primary challenges associated with AI in student assessments is the inherent bias that can be introduced by algorithms, complicating the pursuit of universally fair assessments. For the effectiveness of the evaluations, as perceived from equity theory, feelings concerning fair assessment of students are very crucial in the continued

participation of the learners and confidence in the education system (Azizi, 2022). The computer algorithms employ this information and come up with overall scores that will prejudice the students from specific backgrounds solely based on the results of their algorithms, which reflect biased training data. For instance, if an AI grading system that is used to assess students' performance is often trained on data, then it will be found to give unequal results where assessment based on students' performance of a particular demography differs from the rest of the demography which is not accurate reproducibility of abilities and strengths of students (Jiang & Pardos, 2021). Actionable steps towards algorithmic transparency and fairness should be required to improve the trust and reliability of the AI-based assessment proctors so that no student is disadvantaged.

However, when AI-based solutions are executed in learning environments, it leads to multiple doubts about plagiarism and privacy. As per the social contract theory, all the participants involved in education have agreed, albeit implicitly, to adhere to ethical standards which encompass everything from the integrity of the work they produce (Glendinning, 2022). AI and its integrated tools are essential in automating the grading services as well as assisting in the identification of most evident cases of plagiarism, at the same time, it might support students engaged in cheating by offering overly complex and sophisticated instruments. For instance, the intelligent language generators can assist students in writing essays that are entirely beyond the ability of the plagiarism check tools to identify, therefore assisting in the manipulation of original work (Meça & Nirvana Shkëlzeni, 2023). Similarly, using AI monitoring systems during examinations will violate the rights to privacy and data collection of further info and records that are unlawful in the rightful use of the data. To address such problems, it is challenging to implement measures that AI technology can be applied in an institute in a way that would not harm the students' worth or pollute the institute's academic worth. These guidelines must be drawn down to the stakeholders, most importantly students, to minimize instances of involvement in the wrong usage of AI in Assessments. Thus, it will be helpful to preserve the educational process and, at the same time, use the features of artificial intelligence.

However, to solve the problems AI causes in assessments, there should be a constant discussion between designers of AI technologies, educators, and policymakers. This partnership should aim to increase optimistic AI uses in education to be as moral as beneficial. This could include an always-on feedback loop that will aid in identifying current challenging problems like biases or privacy considerations in the AI tools currently being used and work collaboratively in developing rules that are iterative as learning, unlearning, and change happen. From the development of policies and regulations, the stakeholders can be assured that by incorporating AI technologies in education, the ethical standards in learning achievements are raised without degrading the learner's or education status. Moreover, obtaining information from different academic settings promotes the development of AI tools that can be functional in various learning institutions so that all education benefits relatively from technological advancement (Chen et al., 2020). Developing general public trust in AI in learning institutions is also essential.

3. TECHNOLOGICAL DISPARITIES AND ASSESSMENT ADAPTABILITY

Cognitive achievement gaps are evident in different forms of technology, making a difference when the implementations are in the area of education; this shows a need for equity. Resource-based theory posits that equality in technology is critical in ensuring fairness and effectiveness in learners and institutions (Gibson et al., 2021). In many areas, including low-income areas or areas with inadequate resources, students and instructional facilities have high difficulties due to scarce access to the required technology. For example, a school in a poor neighborhood will not be able to give the students an efficient intro to AI learning and tests for the high-speed Internet and devices needed (Salloum et al., 2024). This will result in uneven coverage through education and assessment, potentially deepening the gap between a school's financial capabilities and adequate learning and assessment outcomes. Efficient interventions imply a commitment to enhancing access to the relevant infrastructure and resources for all learners to leverage the potential of AI technology regardless of their economic status.

Integrating AI into the assessment tools requires modifications that will enhance education delivery to all students. Students have different learning profiles, according to the theory of multiple intelligences. Hence, it is likely that there are different kinds of learning disability for which educational assessments should allow adequate coverage to capture all students' potential (Ferrero et al., 2021). AI can be used to develop formative and summative assessments tailored to each learner's learning style and requirements to foster an actively inclusive differentiated learning process. For instance, it can be designed to present questions with a different level of difficulty if the student chooses incorrect answers often or designed to change the medium of the question for students with specific

disabilities such as blindness or deafness. However, to realize these benefits, education institutions need to consider adopting AI from a technological perspective and a learning perspective that will encompass all students regardless of their backgrounds (Saputra et al., 2023). This way not only is its mandate of improving learning outcomes met, but all the learners also get an equal opportunity to showcase their potential in the subject they are learning in a classroom that is sensitive to their needs.

4. AI-ENHANCED SOLUTIONS FOR MODERN ASSESSMENTS

AI-augmented solutions present a vision of sustaining academic integrity while keeping student data private, which is very important in today's learning environments. Drawing from game theory, individual decisions affect collective outcomes; AI technologies can thus be programmed to follow any student's activity that shows symptoms of cheating without infringing privacy (Allen & Kizilcec, 2023). For instance, AI technologies can track typing patterns and time spent on a question that deviates from a student's regular practice without observing what the student is typing. This method helps institutions maintain integrity without using somewhat intrusive strategies that are likely to compromise student's trust and privacy. This is because the security of these tools is paramount in maintaining fairness in the test while reciprocating respect for students' personal space and individual rights. Moreover, this approach considers all the individuality of the digital generation who care about their digital lives and fairly incorporates technology into educational assessments. With assessing being a significant role of technology in schools, we believe that there is a middle ground to be achieved where technology can play a massive role in assessment while not infringing on the individual rights of students, hence providing a model for the ethical use of AI in education.

Educator training is therefore crucial in technology-enhanced assessments, where AI tools should be effectively applied to get the intended benefits from this kind of principle. The proposed TAM proclaims that the propensity to adopt new forms of technology in learning largely depends on how instructors perceive it and how well they can use it (Al-Rahmi et al., 2021). Institutions need to offer extensive training sessions for trainers and enlighten them about the functional efficiencies of AI instruments. They also need to impart adequate knowledge on how to incorporate the new technologies into the teaching frameworks. For example, workshops could show how AI can be incorporated into developing tests and assessments that align with the learners' styles and learning requirements to increase effectiveness (Tapalova & Zhiyenbayeva, 2022). Such training guarantees that one understands the ability and capability to apply and utilize AI applications' potential in students' learning processes and in modifying teaching tactics to meet the required AI standards. These training sessions not only enhance the stakeholders' preparedness of the educators so that they can help to improve the understanding of the handling of the new technology but will also guide any ethical and logistical complications that may arise as a result of artificial intelligence application in the assessment process. When institutions endorse educators, they can create a more welcoming climate, and each condition can benefit students and the teaching and learning process.

AI-driven assessment methods to be effective and ethical, institutional readiness must be ensured through strategic planning and policy development. Based on the diffusion of innovations theory, the recommended AI technologies in educational assessments depend on the capacity of institutions to continue adopting and maintaining them (Ayanwale & Ndlovu, 2024). This must involve supplying the right technologies, including the hardware and software needed, and establishing the right policies to define how AI will be ethically used in the assessments. For instance, a university can adopt AI to design intelligent examinations but must have a standard policy concerning the use and management of data (Maghsudi et al., 2021). Such strategies ensure that AI instruments are used competently and naturally applied to the learning environment. At the same time, enshrine technology progressivity for supporting its aims apart from endorsing its ethical use. To build on this, knowledge of AI working and its ethics must be given regularly to the staff members. Therefore, there should be a requirement for these policies to be reviewed and updated frequently due to the dynamic development of AI technologies to enhance fairness to students and protect the learning process.

5. CONCLUSION

The integration of AI in the teaching-learning process is revolutionizing methods of testing and evaluating students; on the other hand, the integration comes with several issues that require control. About the topic of this article, this paper has focused on how AI strengthens and also reinforces the limits of learning measures, including prejudices of

algorithms and confidentiality concerns. AI use in learning has voiced concerns on the issue of cheating, besides achieving an equal distribution of advanced AI technology so that students from all sorts of status levels benefit equally from AI technology. Continuing in our journey of using AI in the learning process, we see that the integration of technologies now seems to be moving towards strengthening education more and more, which means that to achieve the desired results, it is necessary to apply artificial intelligence more creatively and constructively. The more we progress, the more critical it is to ensure proper integration of educators and policymakers in creating new techniques that use Artificial Intelligence for assessment that would be as effective as it is now technologically possible but also as effective in learning theories and ethical norms. As such, this call to action seeks to encourage conditions in which technology can contribute positively toward learning processes addressing equity, honesty, and customer sensitivity to privacy issues.

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