Artificial Intelligence in Higher Education: Ethical Concerns for Students with Disabilities

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Abstract

Many literature reviews on artificial intelligence (AI) in higher education or in education in general have focused on the different applications of AI in this domain, the AI techniques used, and the benefits/risks of the use of AI. One of the greatest potentials of AI is to personalise higher education to the needs of students and offer timely feedback. This could benefit students with disabilities tremendously if their needs are also considered in the development of new AI educational technologies (Edtech). However, current reviews fail to address the perspective of students with disabilities. This perspective is essential because AI is likely to bring several ethical concerns for people with disabilities. For instance, AI can treat people with disabilities as outliers in the data and end up discriminating against them. For that reason, two questions were raised: To what extent are ethical concerns relevant for students with disabilities considered in articles presenting AI applications assessing students in higher education? What are the potential risks of using AI that assess students with disabilities in higher education? This extended abstract presents summarised results of a scoping review that will be published in a journal. The goal of this article is to start a discussion within the AI ethics community to raise awareness about the issues that students with disabilities may face and to collaboratively explore solutions. Results suggest that there is a lack of ethical reflection on AI technologies and an absence of discussion and inclusion of people with disabilities. Moreover, risks associated with utilising AI for students with disabilities relate to the choice of data, reliance on simplistic classification, face monitoring, and the low involvement of students.

Keywords

AI Ethics, AI Edtech, Accessibility, Students with Disabilities, Higher Education

1. Introduction

Many researchers have systematically reviewed the literature on the use of artificial intelligence (AI) in higher education or education in general [1]–[9]. According to Bartneck and others who discussed three prominent definitions of AI, "AI involves the study, design and building of intelligent agents that can achieve goals" (p.8) [10]. Several reviews have identified different applications of AI in education [1]–[7]. Existing reviews also identify the benefits and risks of using AI in higher education. On the one hand, Ouyang et al. [5] suggest that AI enables administrative staff and lecturers to take informed decisions based on predictions of student performance, learning status or satisfaction, AI also provides students with learning recommendations, and AI improves academic performance as well as online engagement and participation. On the other hand, researchers point out to several risks and ethical concerns in using AI. Authors stress the lack of pedagogical perspective as research mostly focusses on the technical aspects of the development of AI applications [2], [5], [6], [11]. Others also warn against biases in AI due to a lack of data diversity [5], [6], [8], [12]. There are also concerns about the privacy of students and security issues [6], [7], [9], [12].

With AI, higher education is expected to be more flexible and personalised, and thus more accessible to students with disabilities. In 2006, the signatories of the United Nations Conventions on the Rights

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of Persons with Disabilities pledged their responsibility in guaranteeing that people with disabilities have access to tertiary education [13]. From a socio-medical perspective, a disability is the result of the "interaction between individuals with a health condition […] and personal and environmental factors" [14]. There is an increasing recognition that there is no one-size-fits-all approach to education. According to the Universal Design for Learning approach, every learner has a unique way to understand information, to be motivated, and to express their knowledge [15]. The flexibility and personalisation that AI provides is precisely what could help people with disabilities study at the tertiary level. For instance, students with impairments may benefit from a flexible course schedule with differentiated learning pace because attending courses requires a lot of effort and concentration [16]. However, this can only happen if the needs of people with disabilities are considered from the beginning. Heiman and others [17] explain that the accessibility of technology should not be an afterthought because it makes the adaptations more expensive, and it takes more time for people with disabilities to get the help they need.

However, existing literature reviews fail to make a deeper analysis on the impact AI could have for students with disabilities. Very few papers mention people with impairments in the reviews [2], [9]. Ensuring algorithmic fairness for people with disabilities is challenging because disabilities are diverse, multiple, and diverse, and are as a result often treated as outliers in the data used to train algorithms [18]. AI fairness means that the AI does not discriminate negatively or is not biased against a certain group or individual [18]. Guo et al. [19] identified several risks for the fair use of AI for people with disabilities. According to Morris [20], there are seven ethical concerns for AI and accessibility: inclusivity, bias, privacy, error, expectation setting, simulated data, and social acceptability. AI Edtech raises issues of inclusivity as it may not work properly for people with disabilities and may thus exclude them from using a service or product [20]. For instance, text correction is less likely to work for people with dyslexia [19]. Despite specific concerns regarding the use of AI and disability, there is a lack of research on AI fairness that considers the perspective of people with disabilities [18], [21].

To address this research gap and ethical concerns, the authors followed the methods for a PRISMA scoping review [22] and looked for all literature presenting AI applications in higher education that assess students to form or inform a decision taken by lecturers or administrative staff at the university. The following two research questions were raised:

- Research Question 1: To what extent are ethical concerns considered in articles presenting AI applications assessing students in higher education?
- Research Question 2: What are the potential risks of using AI that assesses students with disabilities in higher education?

2. Results

In the review, 57 articles presenting an AI-based system that had a clear application in higher education and analysed students to inform or take decisions were selected and analysed.

2.1. To what extent are ethical concerns considered in articles presenting AI applications assessing students in higher education?

More than half of the articles did not address any ethical aspects. When ethical considerations where mentioned, authors primarily focused on privacy concerns, biases, and transparency. Still, these mentions were typically brief, indicating that the authors were aware of the issues and had considered them during the design of the AI Edtech. Additionally, only three out of 57 articles mentioned students with disabilities. Therefore, it is critical to conduct further investigations into the impact of AI usage in higher education for students with disabilities. Failing to do so could lead to a missed opportunities to provide greater accessibility in tertiary education and potentially to increased discrimination towards this group.

2.2. What are the potential risks of using AI that assess students with disabilities in higher education?

To examine the risks of using AI Edtech that assesses students with disabilities, the following information were extracted from the articles: 1) the decision type the application informs or takes, 2)

the decision-maker, 3) the input data, and 4) how the application was evaluated. Decision type is important because not all decisions are equally critical; some will impact individuals' life significantly whereas others will not [23], [24]. Regarding decision-maker, the degree of user control influences how algorithmic bias affects users, as they can be empowered to reject or refuse the decision of the AI [24]. The type of input data was extracted because data are often a source of AI bias [21]. Finally, how applications are evaluated matter because of the risk of evaluation bias that arises from data that is not representative of the population [25], which is a particular concern for people with disabilities who are often underrepresented in datasets [20], [26].

In total, eight discrimination risks were identified and were fully described in the journal article submitted to the International Journal of Artificial Intelligence in Education. For this extended abstract, the discrimination risks have been summarized into four categories.

First, the choice of data is critical because it can correlate to disability status and can lead to issues of bias and inclusivity. For instance, the use of log data was quite common in the literature to predict at-risk students or to build intelligent tutoring systems. However, the level of accessibility of platforms can affect log data of disabled students [27].

Second, at-risk predictions often relied on simplistic classifications that did not provide further information on why a student was expected to fail in a course. Students with disabilities may require specific interventions that cannot be inferred from such simple systems. For instance, it is possible that a student is predicted to fail, because the prediction is based on log data from an inaccessible platform. In this case, the intervention would not be about how the student learns, but about making the platform accessible. This finding undermines the claim that AI personalises higher education.

Third, a few articles employed facial recognition to monitor students during exams or their attention during lecture. While monitoring faces raise general privacy concerns, there are additional concerns for students with disabilities. Students with anxiety may feel under greater pressure when subjected to monitoring. Moreover, facial recognition may not work with students with unusual facial features or those wearing accessories such as sunglasses [19].

Finally, the presented AI-based applications rarely involved students and merely informed them of decisions. Empowering students with decision-making power and utilising AI as an assistive tool can be highly beneficial for the inclusion of students with disabilities.

3. Conclusion

This extended abstract summarises the findings from a scoping review investigating the potential risks of using AI in higher education for students with disabilities. In essence, the scoping review emphasises the need for increased awareness of the ethical risks associated with employing AI in higher education for students with disabilities. In particular, the authors encourage the research community to report their efforts to mitigate ethical concerns and to actively involve students with disabilities in the design and evaluation stages of AI systems.

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