THE USE OF ARTIFICIAL INTELIGENCE IN EDUCATIONAL DIVERSITY MANAGEMENT

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Abstract: *The use of Artificial Intelligence (AI) has been steadily growing across various industries and sectors, and education is no exception. One area where AI has the potential to play a significant role is in diversity management in education. With the help of AI, educational institutions can create a more inclusive and diverse environment for students, teachers, and staff.*
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Introduction

Artificial Intelligence (AI) has become a well known tool in many scientific domains, including the field of education. Not only does the integration of artificial intelligence in education have the potential to revolutionize the way we approach teaching, learning, but also one area where AI is gaining attention is in educational diversity management. Diversity has been a critical issue in education due to multiple factors, such as migration, globalization and multiculturalism, and schools worldwide are under pressure to ensure that all students have access to equitable learning opportunities. Artificial intelligence tools are beginning to be used in addressing this challenge in order to provide personalized learning experiences that cater for the diverse needs of students. In this article, we will explore the use of artificial intelligence in educational diversity management and examine its potential benefits and challenges. We will also discuss some of the current applications of artificial intelligence in this area and explore future possibilities for using artificial intelligence to create more inclusive learning environments.

Literature review

So far, various scientist and computer experts have approached the dimensions of using artificial intelligence. To begin with, Nick Bostrom, a Swedish philosopher and author of *Superintelligence: Paths, Dangers, Strategies* (2014), examines the potential risks and benefits of artificial intelligence. One of the main concerns raised by Bostrom (2014) is the risk of an "intelligence explosion," where an AI system becomes smarter than humans and is able to rapidly self-improve, leading to an exponential increase in intelligence. Bostrom argues that if this were to happen, it could be difficult to control the actions of the superintelligent AI, and it could pose an existential risk to humanity. On the other hand, Bostrom also acknowledges the potential benefits of AI, such as increased productivity,

improved healthcare, and scientific breakthroughs. He suggests that the key to realizing these benefits while minimizing the risks is to ensure that the development of AI is aligned with human values and goals, while Ray Kurzweil (2005), a futurist, inventor, and author of *The Singularity Is Near* which explores the potential implications of advanced AI and other emerging technologies argues that we are rapidly approaching a technological singularity, which is a point in the future when artificial intelligence will surpass human intelligence. Kurzweil suggests that this singularity will happen around the year 2045, as technological progress continues to accelerate exponentially, leading to a world where machines and humans merge, creating a new type of being that is part-human, part-machine, which he names the "transhuman" with individuals able to enhance their physical and mental capabilities using technology, such as brain implants, nanobots, and biotechnology.

Another author to explore the potential impact of machine learning on society is Pedro Domingos (2015), a computer scientist and author of *The Master Algorithm: How the Quest for the Ultimate Learning Machine Will Remake Our World* who develops the idea that there is a "master algorithm" which could be applied to any data in order to derive the most accurate predictions and insights. He also suggests that this algorithm will evantually be able to learn and adapt from any type of data, without requiring any prior knowledge or assumptions about the data, and will build significant improvements in education by providing more accurate predictions and personalized learning programes, personal recommendations, objective assessement and individual counseling. In their works, *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy* (2021), Cathy O'Neil as a mathematician, examines the potential dangers of using AI and algorithms to make important decisions, and Max Tegmark as a physicist and author of *Life 3.0: Being Human in the Age of Artificial Intelligence* (2017) explores the potential implications of advanced AI for humanity, such as the potential risks and challenges associated with the artificial intelligence, including concerns around privacy, bias, the potential displacement of jobs, and the need for careful consideration of the ethical and societal implications of AI.

Methodology

As the specialists listed in the reviewed literature have shown, keeping in mind that there are concerns and warnings regarding its use, artificial intelligence could be capitalized in several different ways to promote diversity management in education.

Identifying Bias in Admissions at universities and colleges

Artificial intelligence could help to identify biases in the admissions process. Analyzing data on admissions decisions, identifying biased patterns based on factors such as race, gender or socio-economic status could help institutions to create more objective and fair admissions policies, insuring equal educational opportunities. Stuart Russell et al (2002), in the book *Artificial Intelligence: A Modern Approach* (2002) present a comprehensive overview of the field of artificial intelligence and the different approaches to building intelligent systems. One of the main themes in Russell's et al (2002) work is the importance of designing artificial intelligence systems that are aligned with human values and goals. They argue that current artificial intelligence systems lack the ability to reason about ethical

issues, and this could lead to unintended consequences that are harmful to humans. Russell et al. (2002) also emphasize the need for these artificial intelligence systems to be transparent and explainable, as the lack of transparency in artificial intelligence systems could become a major barrier to their adoption and trustworthy by society.
Moreover, Russell et al. (2002) discuss the challenges of developing artificial intelligence systems that are robust to unforeseen circumstances and can adapt to changing environments, as far as these systems need to be designed to operate in uncertain and unpredictable situations rather than just in highly controlled environments, highlighting a mostly human-centered approach to artificial intelligence taking into account ethical, transparency, and adaptability considerations.

Tracking Student Performance
Artificial intelligence has already been used to track student performance and identify achievement drawbacks between different demographic groups. It can provide real-time data on student progress and highlight areas where certain groups may be struggling. This dimension, related to diversity management, leads to the creation of strategic targeted interventions to support students who need it most.

Supporting Inclusive Teaching Practices
Artificial intelligence can also provide support to teachers by identifying inclusive teaching practices, analyzing teaching materials and provide feedback on areas where inclusivity could be improved. This can help to create a more inclusive learning environment for students and a diversity-conscious approach from the teachers.

Promoting Diversity in Hiring
Through its capacity of deep and rapid analysis of discourse, interpretation of stereotypes, artificial intelligence can identify potential biases in language that could discourage certain groups from applying for certain vacancies or candidates who may have been overlooked due to unconscious biases in the hiring process who, due to their diversity, could bring along added value.

Providing Personalized Learning
When involving artificial intelligence in education generally, or in the educational process of teaching-learning, there could be provided personalized learning experiences that cater for the diverse needs and abilities of individual students, taken as unique human beings. It can adapt to different learning styles and multiple types of intelligences, and provide support to students who may be struggling, ensuring that all students have equal opportunities to succeed. In their work, *Deep Learning* (2016), Yoshua Bengio et al. discuss the importance of developing a deep understanding of the fundamental concepts of machine learning in order to excel in the field. Bengio et al. (2016) emphasize that students need to not only memorize algorithms but also understand the underlying mathematical principles and the intuition behind them, enhancing the importance of hands-on experience and experimentation in deep learning in order for the students to work on practical projects and experiment with different approaches to gain a deeper understanding of how the models work and perform. Moreover, the authors stress the importance of using open-source tools and collaborating with others in the field to gain more practical experience.

Altogether, Bengio et al. (2016) acknowledge that deep learning can be a challenging subject to learn and requires a lot of effort and practice, challenging students to be persistent, not let themselves get discouraged by setbacks, and keep the pace in learning and practicing, as all these lead to excelling in the field of learning with artificial intelligence assistance.

Discussions

While the use of artificial intelligence in diversity management in education has the potential to create a more inclusive and diverse environment, there are also some potential drawbacks that need to be considered. One concern is that the use of AI may perpetuate biases if the algorithms are not properly designed and trained. Also, there is the risk that using AI may lead to a loss of human connection and empathy in the learning process.
Gary Marcus and Ernest Davis, in their book *Rebooting AI: Building Artificial Intelligence We Can Trust* (2019), argue that the current approach to AI is too focused on machine learning algorithms that are not well-suited for more complex tasks, these algorithms lacking the ability to reason, represent knowledge, and communicate effectively. Marcus & Davis (2019) also criticize the hype surrounding AI and suggest that the public and policymakers should have a more realistic understanding of the technology's capabilities and limitations and focus the research more on building systems that can work collaboratively with humans, rather than replacing them. As the current AI systems are prone to making mistakes and exhibiting bias, particularly in areas such as facial recognition and criminal justice, they advocate for more ethical considerations in the development and deployment of AI systems, including greater transparency and accountability, strongly insisting on and underlining the need for a holistic approach to AI, taking into account the cognitive abilities and limitations of both humans and machines as well.

Conclusions

In conclusion, the use of artificial intelligence in diversity management in the field of education has the potential to create a more inclusive and diverse environment for students, teachers, and staff. However, it is important to carefully consider the potential benefits and drawbacks of using artificial intelligence and to ensure that the algorithms are designed and trained in a way that promotes fairness and inclusivity, without raising the risk of human exclusion or discrimination.

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