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Decolonising AI: A Critical Approach to Education and Social Justice

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Abstract: Artificial intelligence (AI) technologies present significant opportunities for education, enabling personalised learning, data-driven decision-making, and innovative pedagogy, particularly in higher education environments. However, such technologies also pose ethical, cultural, and political challenges. Many scholars have not adequately considered social justice and inclusivity, which could highlight inequalities in higher education. A critical examination of AI's use in teaching and learning spaces is therefore crucial to ensure that its implementation serves the common good and upholds human rights. This conceptual article foregrounds a decolonial and inclusive approach to the use of AI, exploring the techniques, outcomes, and obstacles faced by practitioners applying AI in their teaching, learning, and research practices. Drawing on theoretical frameworks such as the decolonised perspective, which aligns with and is supported by technological pedagogical content knowledge, facilitated the research underpinning this article. The results reveal the need for cultural responsiveness, ethical awareness, and critical engagement among stakeholders while addressing structural and systemic barriers to achieving social justice and equity in AI education. The article contributes to the literature on decolonising AI and levelling the proverbial 'playing field' in education. It advocates for sensitivity to culturally appropriate curricula in higher education to foster collaborative learning environments, ensure accountability, and promote diversity and inclusion among educators and learners.

Keywords: Decolonised pedagogy, AI in education, social justice, inclusive education.

1. Introduction

Artificial intelligence (AI) is revolutionising education by offering new opportunities and challenges for teaching and learning (Luan et al., 2020). It can enhance quality, accessibility, and efficiency, providing personalised, adaptive, and collaborative learning experiences for diverse learners (Baker et al., 2019). However, AI raises ethical, social, and cultural issues, particularly in post-colonial societies like South Africa, where historical inequalities persist in the education system and society (Mohamed et al., 2020). Addressing these issues is crucial (Le Grange, 2016). AI in education necessitates a decolonial, inclusive approach that fosters social justice, equity, and inclusion, thereby preventing the perpetuation of existing power imbalances, biases, and discrimination (Omodan & Marongwe, 2024). According to Zembylas (2023), decolonising AI in higher education involves recognising the colonial features and racialising forces embedded in AI technologies. It also means upgrading AI within the context of decolonial ethics and solidarity. Similarly, Mohamed et al. (2020) asserts that decolonising AI entails confronting the power structures and prejudices inherent in AI systems and technology, as well as establishing a more equitable and inclusive future.

In education, social justice refers to the equitable distribution of educational resources, opportunities, and treatment for all students, regardless of background (Pietersen et al., 2023). This involves identifying and addressing systemic barriers and biases that prevent underprivileged groups from advancing their education (Pietersen & Langeveldt, 2024). In relation to AI in education, social justice

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means creating and applying AI technology in ways that promote equity, inclusiveness, and fairness. This includes detecting and correcting biases in AI algorithms, ensuring diverse representation in AI development, and utilising AI to assist and empower historically disadvantaged students (Zembylas, 2023).

In South Africa, where historical imbalances and injustices persist in education and society (Táíwò, 2022), decolonising AI is a vital task. For example, AI systems used for student evaluation and feedback may perpetuate colonial stereotypes and discrimination, resulting in unfair and inaccurate outcomes for disadvantaged students (Weinberg, 2022). AI systems may acquire biases from the historical data on which they are trained, including colonial-era discriminatory attitudes, leading to unjust assessments of disadvantaged students (Weinberg, 2022). Furthermore, these systems may lack a contextual understanding of different cultural and socioeconomic backgrounds, exacerbating inequality (van Dyk & White, 2019).

Neglecting to oversee the use of this tool in higher education may prolong the status quo, benefiting students from higher-quintile schools while denying lower-quintile school students the opportunity to compete (van Dyk & White, 2019). This study sought to address the issue by examining how South African educators apply decolonial and inclusive principles in AI teaching approaches and assessment procedures within higher education settings. It explored how AI can be incorporated and used as a tool to challenge and change the colonial education system, as well as empower learners and educators to become change agents and advocates for social justice in their educational contexts. Furthermore, it investigates how a decolonised viewpoint connects to and justifies technological pedagogical content knowledge (TPCK).

1.1 Problem statement

The study explored the integration of a decolonial and inclusive AI strategy in education, emphasising the potential for AI to perpetuate historical imbalances and injustices within the educational system (Zembylas, 2021). According to Selwyn and Gašević (2020), there is a lack of cultural and epistemological diversity in the design and deployment of AI technologies in education. This issue is significant, as AI impacts teaching and learning processes, as well as knowledge production and dissemination in the educational sector (Organisation for Economic Co-operation and Development [OECD], 2021). AI should promote social justice, equity, and inclusion rather than reinforce domination in higher education, where students' epistemologies are often ignored (Zembylas, 2023). This concern was highlighted by the #FeesMustFall movement in South Africa, which illustrated how South African higher education engages with students and 'levels' the playing field regarding educational resources by applying a post-colonial iron fist that remains entrenched in the old apartheid legacy of education, rather than aiming for social transformation and reconciliation through education (Du Plessis, 2021).

1.2 Research questions

The primary research question was:

- How can AI be integrated into higher education from a decolonial and inclusive perspective to achieve social justice, equity and inclusion for students?

The sub-questions:

- What are the potential and obstacles of integrating AI in higher education, particularly in South Africa?
- How can decolonial concepts be incorporated into the development and deployment of AI technology in higher education, specifically regarding curriculum design, teaching methods, and assessment practices?
- What is the impact of a decolonised approach to AI in higher education?

2. Theoretical Framework

The study's theoretical approach examined and evaluated the influence of AI technology on education using decolonial and social justice principles. The decolonial stance and criticism completely reject the authority, knowledge, and existence of the colonial system, instead advocating for a pluralistic approach to knowledge generation and delivery. This perspective overlooks its connection to and justification within the TPCK framework, where educators negotiate the knowledge required to incorporate technology into their teaching across all subject areas (Langeveldt & Pietersen, 2024), as well as the technological tools to be used in educational spaces (Schmidt et al., 2009)—a process that aligns perfectly with decolonisation when negotiating educational contexts.

The theoretical framework for the study employed decolonial insights and social justice ideals to investigate and evaluate the impact of AI technology on schooling. The decolonial stance and criticism reject the authority, knowledge, and existence of the colonial system, advocating for a pluralistic approach to knowledge generation and delivery. This perspective is coherent with and supported by the TPCK framework, which emphasises the knowledge needed by educators to integrate technology into their teaching across all subject areas, as well as the technological tools to be used in educational spaces (Schmidt et al., 2009). This methodology closely aligns with decolonisation when it comes to negotiating educational settings.

The theoretical framework can be disassembled to better elucidate the concepts under investigation, as shown below. Decolonial ideas challenge Western epistemology and ontology, advocating for the recognition and inclusion of multiple ways of knowing and being. This approach is crucial for understanding how AI technologies may support or deconstruct existing power structures in education. By emphasising decolonial perspectives, the study critically examines the effects of AI on marginalised and oppressed groups, ensuring that its application in education promotes equity and social justice (Mignolo, 2009).

Social justice concepts stress the equitable allocation of resources, opportunities, and advantages in society. These principles drive the examination of how AI technology may be utilised to address educational gaps and promote inclusive behaviours. The approach ensures that AI applications do not exacerbate existing inequities but instead help to empower and liberate vulnerable populations (Le Grange, 2016).

The TPCK framework provides a comprehensive understanding of the interplay between technology, pedagogy, and content knowledge. It underscores the importance of educators' ability to effectively integrate technology into their teaching practices. The research explores how educators might use AI technology to create more inclusive and culturally sensitive learning environments by merging the decolonial approach with the TPCK framework. This alignment ensures that the use of AI in education is not only technically sound but also pedagogically and culturally appropriate (Schmidt et al., 2009).

A pluralistic approach to knowledge generation requires accepting and valuing multiple epistemologies. This approach is particularly important in the context of AI in education because it encourages the development and implementation of AI systems that are culturally sensitive and inclusive. By fostering a pluralistic perspective, the study aims to ensure that AI technologies fulfil diverse learning needs and contribute to a more equitable educational landscape. Negotiating educational settings involves critically evaluating and modifying how educational environments are structured and perceived. The decolonial worldview, alongside the TPCK framework, offers a lens through which to examine how AI technologies might be used to create more inclusive and equitable educational contexts. This requires not only incorporating technology but also revamping teaching methodologies to better serve diverse student populations (Le Grange, 2016). Therefore, by embracing these theoretical concepts, the framework provides a robust foundation for investigating

the impact of AI technology on education. It ensures that the study is rooted in a critical and socially just stance, offering a comprehensive understanding of how AI may be leveraged to promote diversity and inclusion in educational settings.

3. Methodology

This study employed a conceptual synthesis design, analysing and integrating existing literature and concepts to create a new theoretical framework or perspective. The aim was to explore and navigate the complexities of applying a decolonised lens to AI use in higher education. To achieve a comprehensive understanding of the research topic, the study utilised a conceptual synthesis design. This technique involves conducting extensive research and combining existing information to create a new theoretical approach. Conceptual synthesis is a method used to integrate diverse sources of information to develop new theoretical insights and frameworks (Jaakkola, 2020). It allows for a thorough analysis of the intersections of decolonised pedagogy, inclusive management, and artificial intelligence in education, ensuring that the proposed framework is both broad and innovative.

The literature search and selection process was carefully conducted using several academic databases, journals, and reliable sources to gain a complete grasp of the study subject. The primary purpose was to identify publications on decolonised pedagogy, inclusive management, and AI in educational settings. The search encompassed numerous areas, including education, technology, and management. The search terms used included "decolonised pedagogy," "inclusive management," "artificial intelligence," and "education." The search utilised databases and publications such as ERIC, Scopus, Web of Science, Google Scholar, Educational Technology & Society, the International Journal of Artificial Intelligence in Education, and the Journal of Decolonising Disciplines.

The initial search yielded around 100 papers from various databases and journals. The titles and abstracts of these articles were examined for relevance to the research subject, reducing the number of papers to 60. The full texts of the remaining papers were evaluated for theoretical depth, conceptual insights, and contributions to the synthesis of ideas on a decolonised approach to AI use in higher education. This phase narrowed the list down to 55 items. The final selection criteria were relevance to the research topic, theoretical depth, conceptual breakthroughs, contribution to idea synthesis, and publication in reputable sources. Using these criteria, 24 publications were selected as the final sample.

4. Presentation and Discussion of Findings

This section discusses the findings from the literature review, focusing on how AI can be integrated into higher education from a decolonial and inclusive perspective to achieve social justice, equity, and inclusion for students. The themes derived from the identified papers include the potential and obstacles of integrating AI, the incorporation of decolonial concepts in AI development, and the impact of a decolonised approach to AI use in higher education.

4.1 Potential and obstacles to integrating AI in higher education in South Africa

Integrating AI into higher education offers enormous promise and challenges, particularly in South Africa. AI can support personalised learning by tailoring educational experiences to individual student needs, preferences, and learning paces, leading to greater engagement and improved outcomes (Baker et al., 2019). Furthermore, AI enables data-driven decision-making by analysing vast amounts of educational data to inform policy and administrative decisions, ultimately enhancing resource allocation and student support services (Luan et al., 2020). AI also encourages creative pedagogy by creating intelligent tutoring systems, adaptive learning platforms, and virtual classrooms, all of which have the potential to revolutionise teaching methods. Additionally, AI may improve accessibility by providing tools for students with disabilities, such as speech-to-text, text-to-speech, and language translation services, thereby making education more inclusive.

However, there are considerable challenges to adopting artificial intelligence in higher education. Ethical concerns arise because AI systems may perpetuate biases in training data, resulting in unfair treatment of underrepresented groups (Langeveldt, 2024). To enable ethical AI use, robust protocols and continuous monitoring are necessary. Another issue is cultural sensitivity, as AI systems often reflect the cultural contexts in which they were developed, which may not accurately represent the diverse cultural backgrounds of South African students (Langeveldt, 2024). Decolonising AI requires adapting these technologies to local conditions (Zembylas, 2023). Infrastructure and resources are also important considerations, as many South African institutions lack the necessary infrastructure to efficiently utilise AI technologies, such as a reliable internet connection and strong computing resources (Van Dyk & White, 2019). Furthermore, there is a shortage of educators and administrators who understand artificial intelligence and its applications in education, necessitating professional development and training programmes to bridge this gap.

AI has the potential to eliminate educational gaps by providing tailored support to students in underprivileged regions. However, careful planning and implementation are essential to avoid exacerbating existing inequities. Creating comprehensive laws governing the ethical use of AI in education is crucial. These policies should address issues of data privacy, algorithmic transparency, and accountability (OECD, 2021). Engaging local communities in the development and deployment of AI technologies may help ensure that these tools are culturally appropriate and meet the needs of all stakeholders.

Recent discussions in the field stress the significance of building inclusive and equitable AI systems that consider learners' diverse requirements and environments. Scholars suggest that decolonising AI entails not only eliminating biases but also reconsidering the fundamental assumptions and power dynamics encoded in AI systems. This involves integrating indigenous knowledge systems and perspectives into AI development (Mohamed et al., 2020).

4.2 Inclusion of decolonial concepts in AI development

To promote inclusion and fairness, incorporating decolonial concepts into the development and deployment of AI technology in higher education entails rethinking curriculum design, teaching approaches, and evaluation procedures. Curriculum design must be culturally appropriate, reflecting students' diverse backgrounds and experiences. This can be achieved by integrating indigenous knowledge systems and perspectives into the curriculum, ensuring that the content is relevant and meaningful to all students (Smith, 2012). Furthermore, courses should include critical discussions regarding AI's ethical implications, focusing on how new technologies may support or challenge existing power dynamics and injustices (Eubanks, 2018).

Teaching methods should also be adjusted to promote inclusion and equity. This involves using AI technology to enhance differentiated education, which enables educators to tailor their teaching strategies to their students' specific needs. AI, for example, may provide real-time feedback and personalised learning pathways, allowing students to progress at their own pace (Luckin et al., 2016). Furthermore, educators should be trained to engage critically with AI technology, recognising its potential biases and limitations and employing it in ways that advance social justice and fairness (Williamson, 2019).

Assessment systems must also be reassessed to ensure fairness and inclusivity. AI could be used to provide more comprehensive evaluation methodologies beyond traditional exams and tests, such as project-based learning, peer evaluations, and self-assessment. These approaches can offer a more holistic view of student learning and development. Moreover, it is essential to ensure that AI-powered evaluation systems do not reinforce existing biases or inequities. This requires ongoing monitoring and evaluation of these technologies to identify and address any potential issues.

Recent discussions in the field emphasise the importance of developing AI systems that are inclusive and equitable, taking into account learners' diverse needs and contexts. Scholars argue that decolonising AI involves revisiting the fundamental assumptions and power dynamics embedded in AI systems, as well as mitigating biases. This includes incorporating indigenous knowledge systems and perspectives into AI development (Mohamed et al., 2020).

Involving local communities in the development and deployment of AI technologies ensures that these tools are culturally appropriate and meet the needs of all stakeholders. This participatory approach can help to democratise AI and ensure that it serves the interests of all members of society (Costanza-Chock, 2020).

4.3 Impact of a decolonised approach to AI use

A decolonised approach to AI use in higher education has far-reaching consequences for social justice, equity, and inclusion. By embracing decolonial concepts, AI systems can be designed and applied in ways that question current power dynamics and promote a more equitable educational environment. One significant advantage is the potential to democratise education by making it more accessible and relevant to a diverse student population. This entails incorporating indigenous knowledge systems and perspectives into AI-powered educational tools to ensure that these technologies accurately reflect the cultural and contextual realities of all students (Mohamed et al., 2020).

Decolonising AI in higher education requires a critical examination and rectification of the biases inherent in AI systems. These biases can exacerbate existing inequities and marginalise certain groups of students. By adopting a decolonial approach, educators and developers can identify and minimise these biases, resulting in more equitable and inclusive AI systems (Eubanks, 2018). This demands continuous monitoring and evaluation of AI technology to ensure that it does not foster unfavourable beliefs or discriminatory behaviour. Furthermore, a decolonial approach to artificial intelligence can enhance educational quality by teaching students to think critically and ethically. Engaging with AI technology designed with decolonial goals can help students gain a deeper understanding of its social and ethical implications. This can foster a more critical and reflective approach to technology use by encouraging students to question and challenge the status quo (Williamson, 2019).

Recent discussions in the field emphasise the importance of developing inclusive and equitable AI systems that consider the diverse needs and contexts of learners. Scholars propose that decolonising AI involves revisiting the fundamental assumptions and power dynamics embedded in AI systems, as well as addressing biases. This includes incorporating indigenous knowledge systems and perspectives into AI development (Mohamed et al., 2020). Additionally, involving local communities in the development and deployment of AI technologies can help ensure that these tools are culturally appropriate and meet the needs of all stakeholders. This participatory approach has the potential to help democratise AI and ensure that technology serves all members of society. Furthermore, a decolonial approach to AI can promote social justice by enhancing educational opportunities for marginalised individuals. By developing AI systems that respond to the needs of diverse groups, educators can help level the playing field and promote greater equity in education (OECD, 2021).

To summarise, applying AI to higher education from a decolonial and inclusive perspective has the potential to significantly enhance social justice, equity, and inclusion for students. Intentional efforts are required to address ethical issues, cultural sensitivities, infrastructure challenges, and talent shortages. By incorporating decolonial ideas into curriculum design, teaching practices, and assessment procedures, and by involving local communities in the development and deployment of AI technology, higher education institutions can create a more equitable and inclusive learning environment.

5. Conclusion

The study investigated how AI may be integrated into higher education in a decolonial and inclusive manner to promote social justice, equity, and inclusion among students. It found that AI can enhance tailored learning, data-driven decision-making, and creative teaching approaches. However, it also raises ethical, cultural, and political challenges, particularly in postcolonial contexts like South Africa. Addressing these difficulties requires cultural responsiveness, ethical awareness, and critical involvement from stakeholders. The study emphasised the need to decolonise AI by detecting and minimising biases in AI algorithms, ensuring diverse representation in AI development, and using AI to assist historically marginalised students. Its approach included a conceptual synthesis strategy, which involved reviewing existing literature to create a new theoretical framework that aligns with the TPCK.

AI integration in higher education has the potential to democratise education by making it more accessible and relevant to a diverse range of student populations. However, overcoming ethical issues, cultural sensitivities, infrastructure barriers, and talent shortages requires concerted effort. Ethical concerns include the possibility that AI systems will propagate stereotypes, resulting in unfair treatment of disadvantaged communities. Cultural understanding is critical, as AI systems often reflect their creators' cultural contexts, which may differ from the diverse backgrounds of South African pupils. Integrating decolonial notions into AI development entails creating culturally relevant courses that reflect a wide range of student experiences. This includes recognising Indigenous knowledge systems, employing AI technology to promote inclusivity and equality, and rethinking assessment approaches such as project-based learning, peer evaluations, and self-assessments to ensure fairness and inclusion.

A decolonised approach to AI in higher education has the potential to democratise the discipline by making it more accessible and relevant to a diverse student population. It can elevate academic standards by encouraging students to think critically and ethically. Engaging with AI technologies based on decolonial ideals fosters a more thoughtful attitude towards technology use.

In summary, integrating AI into higher education from a decolonial and inclusive perspective holds enormous promise for achieving social justice, equity, and inclusion for students. Higher education institutions can create a more equitable and inclusive learning environment by incorporating decolonial notions into curriculum design, teaching methods, and assessment procedures, as well as involving communities in the creation and deployment of artificial intelligence. This strategy ensures that AI technologies meet a wide range of learning needs while also helping to create a more just and equal educational environment.

6. Declarations

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