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Troubling Artificial Intelligence Space to Reflect on Sustainable Curriculum Practices and the Emergent Cyborg Identities Among Postgraduate Students

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Abstract: COVID-19 highlights the urgent need for reform of the postgraduate curriculum to address complex and rapidly changing global challenges. This study reflects on the formation of cyborg identities among postgraduate students, drawing upon Donna Haraway's cyborg theory as these individuals navigate the intricacies of modern curriculum practices infused with artificial intelligence (AI). A cohort of eight postgraduate students enrolled in master's and doctoral programmes participated in this study through a virtual participatory action research design. The study facilitated dynamic discussions and the exhibition of evolving student identities using platforms such as Yammer and various digital devices. Data were collected from online discussions and webinars, transcribed with the assistance of Fireflies software, and analysed using critical discourse analysis. The research reveals how the integration of remote learning and AI into curriculum practices uncovers a 'hidden curriculum' that merges human and cybernetic systems, suggesting a more commonplace presence of cybernetics in daily life than previously acknowledged. Furthermore, it underscores the significant influence of cyberspace on altering human consciousness and social identity, implications that extend into 'second life' realities and the experiences of post-educational curriculum innovation. These findings contribute to the ongoing discourse regarding the role of AI in education, highlighting the importance of ethical curriculum reforms that consider data privacy and aim to elevate AI for personalised learning experiences without reinforcing existing educational disparities. Situated within the thematic discussion, this research addresses pressing challenges and envisions the future of curriculum development through the lens of AI's transformative capabilities.

Keywords: Remote learning, curriculum practice, higher education, artificial intelligence, cyborg identity, participatory action research..

1. Introduction

The unprecedented challenges posed by the COVID-19 pandemic have accentuated the need for transformative curriculum reforms in postgraduate education (Saliba, 2024). Researchers such as Alqabbani et al. (2021) argue that the shift to remote learning during the pandemic highlighted significant disparities in access to technology and reliable internet among students. The accelerating digital divide affected students' ability to participate fully in online learning environments. Meanwhile, Alfrey and O'Connor (2024) believe that curriculum reforms must ensure equitable access to digital resources and support, incorporating solutions that address technological gaps. Alfrey and O'Connor (2024) and Bong and Chen (2024) agree and emphasise the provision of necessary devices to improve internet access and the integration of digital literacy into the curriculum. Singh et al. (2024) posit that many postgraduate programmes struggled to adapt traditional pedagogies to an online format, leading to reduced interaction and engagement. Thus, the challenge of maintaining the quality of education and student engagement in a virtual setting proved to be significant. As a result, higher education institutions must develop interactive, innovative, and engaging online teaching modes, meaning the curriculum should include capacity

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building for educators in practical online pedagogy and increase the use of artificial intelligence (AI) to create personalised and interactive learning experiences.

In addition, the pandemic exacerbated mental health issues among students, stemming from isolation, uncertainty, and the pressures of adapting to new learning environments. This had a significant impact on their academic performance and well-being (Barbour & van Meggelen, 2024). Thus, incorporating mental health support and well-being into the curriculum is crucial. This includes providing resources, counselling, and creating a supportive learning environment that acknowledges and addresses mental health challenges. Another challenge identified by Du Plessis et al. (2024) is that the pandemic revealed the rigidity of many existing curricula, which were not readily adaptable to sudden changes or disruptions. This lack of flexibility hindered the continuity of education during the crisis. It is therefore essential to realise that curriculum development must focus on flexibility and adaptability, allowing for swift transitions between in-person and online learning. This may include module course designs that incorporate contingency plans for various scenarios. Arango-Caro et al. (2024) found that postgraduate studies often require practical, hands-on experience and research opportunities, which were severely limited by pandemic restrictions. Laboratory work, field studies, and collaborative research were disrupted. This indicates a need to innovate in delivering practical and research-based curriculum components, which may involve virtual labs, remote research collaborations, and the integration of AI and other technologies to simulate practical experiences.

The COVID-19 pandemic has revealed critical areas needing attention in postgraduate education (Ali, 2020). Addressing these challenges through curriculum transformation can create a more resilient, equitable, and effective educational system, capable of meeting the demands of a rapidly changing global landscape. As highlighted above, and in view of the COVID-19 crisis around the world, the urgency for change in postgraduate education is now more apparent (Saliba, 2024). It is surprising that there are numerous gaps in the literature regarding how current curriculum practices are being reformed, implemented, and adapted to meet the challenges of the twenty-first century. This is well illustrated in the research analysis conducted by Aydogmus (2024), where these gaps are noted, and recommendations are made to address them. Therefore, this research is unique in that the methodological framework offered goes beyond the stated technological and curriculum practices; it also intentionally problematises the logical and psychosocial experiences imposed on postgraduate students in the wake of the pandemic. This study includes a critical discussion of the literature and the main research findings to enhance the understanding of curriculum change, making sense of and navigating the extraordinary shifts brought about by digital revolutions, strengthened provision, and institutional adaptability in the protection of postgraduate studies during the post-pandemic period.

A notable trend in recent works is the consideration of the digital divide and its impact on participation and opportunities to achieve high learning outcomes. Alqabbani et al. (2021), Alfrey and O'Connor (2024), and Bong and Chen (2024) all highlight the limited access to technologies and digital essentials, which significantly affected students' ability to engage in pandemic learning. These findings resonate with broader concerns regarding the increasing technologisation of everyday life and the problems caused by a lack of digital connectivity in much of the Global South. However, my research goes beyond merely identifying the technological barriers; it reflects on strategies for mitigating these concerns at a systemic level. By integrating artificial intelligence (AI) into curriculum practices, this study proposes a forward-thinking approach that ensures personalised learning experiences, tailored content delivery, and collaborative engagement, even in resource-constrained environments. AI can play a pivotal role in bridging gaps in access, as it can offer flexible and adaptive learning pathways for students with varying levels of technological literacy and resources.

This research contributes to the existing literature on changes to teaching and learning for postgraduate studies. Therefore, in their study, Singh et al. (2024) describe how many programmes

failed to translate traditional practices into online settings. Within the current literature, there is a lack of attention paid to the socialisation of educators for effective online teaching. This research fills this gap by acknowledging and calling for capacity-building programmes for educators on the design and delivery of quality online learning solutions. It is through professional development programmes that institutions can ensure teachers have strategies to shape their learning environments, facilitating the active acquisition of knowledge for postgraduate students.

One important component of this approach is the use of collaborative tools, as well as simulations and interactive methods that accommodate both face-to-face and online environments. Another important strand within my study concerns the social aspect of mental health. While the pandemic exposed student mental health needs, including isolation, stress, and anxiety (Barbour & van Meggelen, 2024), most literature provides little advice on how to integrate mental health into curricula (Zaza & Yeung, 2023; Puffe & Ayuku, 2022). In contrast, my research outlines a strategy for integrating mental health solutions and emotional support frameworks at the curriculum level. More than merely providing counselling services or designing ad hoc solutions to problems, the present study emphasises the need for the intentional cultivation of a learning climate focused on well-being, including the integration of self-care into postgraduate education. Thus, it entails the development of a curriculum that is not only aimed at delivering academic performance but also at addressing the 'PSR' (personal, social, and relational) aspects of learning.

The COVID-19 pandemic unveiled a lack of flexibility in the extent of many classical curricula, which did not take into consideration such eventualities or the shift to online learning (Du Plessis et al., 2024). There appears to be a general call for curriculum flexibility and adaptability; however, few studies consider how curricula might be best restructured to accommodate significant shifts from face-to-face to fully online contexts. In this regard, this research makes a novel contribution by presenting an overview of how post-secondary curriculum designers can adopt contingency strategies, modular course designs, and contextualised learning approaches. The framework is developed not only to address possible future emergencies but also to cater to students with different learning requirements in postgraduate disciplines. Among those considerations is the constructed flexibility of context, curricula, and lessons, meaning that students should be able to transfer between different modes and change strategies as well. This work delves into the core issue by providing novel approaches on how to offer user-oriented and evidence-based learning following the COVID-19 outbreak.

Furthermore, Arango-Caro et al. (2024) pointed out that COVID-19 had a significant impact on postgraduate learning, particularly concerning laboratory sessions, workshops, and field research, which were challenging to conduct during the pandemic. Nevertheless, my research extends beyond these observations by examining how methods such as virtual labs, remote collaborations, and AI-driven simulations can provide substitutes for practical experiences. These innovations not only enable postgraduate programmes to offer hands-on training in virtual or hybrid environments but also create new opportunities for international cooperation and interdisciplinary research that were not feasible beforehand. In contrast, the present paper aims to identify key concerns in postgraduate education in the post-COVID-19 world and offer an integrated framework that includes technological, pedagogical, psychosocial, and logistical considerations for curriculum transformation. Hypothesising about the transformation of graduate courses post-COVID-19, this research outlines a plan on how postgraduate education can be adequately protected from future deterioration, based on AI self-learning, flexible course design, health and wellbeing support, and creativity in practice placements.

1.1 Theoretical framework

This study adopted the concept of the cyborg as the primary lens, originating from the work of Donna Haraway, particularly her seminal essay "A Cyborg Manifesto: Science, Technology, and Socialist-

Feminism in the Late Twentieth Century," published in 1985 (Loh, 2020). Haraway's manifesto critiques traditional notions of gender, identity, and the relationship between humans and technology (Halden, 2024). She uses the cyborg—a hybrid of organism and machine—as a metaphor to challenge boundaries and propose a more fluid understanding of identity and social roles in the context of increasing technological integration (Honey, 2015). Donna Haraway is the primary proponent of cyborg theory. Her work has significantly influenced feminist theory, science and technology studies, and posthumanist thought (Leung, 2019). Other scholars who have expanded upon Haraway's ideas include N. Katherine Hayles, who explores posthumanism and the relationship between humans and intelligent machines, and Andy Clark, whose work on extended cognition aligns with the concept of the cyborg by suggesting that cognitive processes are distributed across the brain, body, and technology (Soløst, 2023).

The relevance of cyborg theory for this study of identities that blend human and machine provides a suitable lens for examining these emergent identities. For instance, integrating AI and remote learning represents a significant shift in educational practices. Haraway's cyborg metaphor helps articulate the complexities and transformative potential of these new curriculum practices, which blend human intellectual efforts with technological assistance. Furthermore, Haraway's work emphasises the need to critically examine the social and ethical implications of technology (Rahmatullah & Gupta, 2023), aligning with the study's focus on ethical curriculum reforms, data privacy, and addressing educational disparities. Thus, through this theory, the study offers critical reflection on how AI and remote learning technologies influence student identities and curriculum practices. It aids in understanding the interplay between human and technological elements in curriculum development. The theory informs the study's virtual participatory action research design. By acknowledging the cyborg nature of participants (students interacting through digital platforms and devices), the research design effectively captures the dynamic and evolving nature of their identities and experiences. This contributes to understanding the more profound impacts of technology on education beyond explicit curricular content.

This study explores how postgraduate students form cyborg identities—a concept rooted in Donna Haraway's cyborg theory—within the context of modern curriculum practices increasingly influenced by artificial intelligence (AI) (Lewis, 1997). Integrating AI into educational practices not only reshapes curriculum delivery but also profoundly influences student identity formation.

1.2 Problem statement

The COVID-19 pandemic has accelerated the integration of artificial intelligence (AI) and remote learning technologies into educational practices, necessitating urgent curriculum reforms, especially in postgraduate education (Nikolopoulou, 2024). As institutions rapidly adapt to these technological advancements, it is critical to understand how these changes influence student identities and learning experiences. Wang and Cheng (2021) are of the view that traditional educational frameworks often fail to capture the complex, hybrid identities that emerge in digitally mediated learning environments. It is clear why, thus, this study focuses on this lacuna to explore the formation of cyborg identities among postgraduate students. It reflects how the interplay between human and technological elements in AI-infused curricula shapes student experiences and consciousness (Mbambo & du Plessis, 2024). Akgun and Greenhow (2022) posit that these technological integrations' ethical implications focus on data privacy and educational equity issues. By understanding these dynamics, the study aims to inform sustainable and ethical curriculum practices that leverage AI's transformative potential while mitigating its risks. Thus, the study intends to answer the following question: What are the implications of integrating AI and remote learning technologies into postgraduate curricula on forming cyborg identities, and how can these insights inform sustainable and ethical curriculum practices?

2. Methodology

A virtual participatory action research design facilitated this study (Eisapour et al., 2020). A cohort of eight postgraduate students enrolled in both master's and doctoral programmes participated in the research. The study utilised platforms such as Yammer to enable dynamic discussions and showcase the evolving identities of students (Mitchell & Appleget, 2021). A variety of digital devices were used to support this virtual engagement. Data collection involved online discussions and webinars, which were transcribed using Fireflies software and analysed through critical discourse analysis (LaBorie, 2020; Verweij et al., 2017). The study employs a virtual participatory action research (PAR) design. This approach was chosen for several reasons, including collaboration, reflection, and adaptability to a digital context (Mahlomaholo & Mahlomaholo, 2024). PAR emphasises collaboration between researchers and participants, making it ideal for exploring the dynamic and evolving identities of postgraduate students as they engage with AI and remote learning technologies. This collaborative approach ensures that the participants' experiences and insights directly inform the research process and outcomes. PAR allows for continuous reflection and iteration, which are essential for understanding the complex and fluid nature of cyborg identities. The iterative process helps refine curriculum practices based on real-time feedback and observations (Mahlomaholo et al., 2023). Given the remote learning context imposed by the COVID-19 pandemic, PAR's flexibility and adaptability make it suitable for virtual engagement. It enables effective data collection and participant interaction through digital platforms. The PAR design was appropriate for this study because it aligns with the goals of reflecting on the formation of cyborg identities in a digitally mediated educational environment. It facilitates active participation, enabling students to contribute to the understanding of their own experiences and the development of curriculum practices (Teele et al., 2020).

A cohort of eight postgraduate students was selected for convenience; a smaller cohort size allows for in-depth engagement and detailed analysis of each participant's experience, ensuring richer data and more nuanced insights into the formation of cyborg identities. The study prioritised depth of understanding over the breadth of participant numbers. This approach is crucial for capturing the complex and multifaceted nature of identity formation in AI-infused learning environments. Logistical constraints, such as time and resource limitations, make a smaller cohort more feasible for intensive virtual participatory action research (Lawrence & Nkoane, 2020). The study focused on educating postgraduate students to maintain a clear scope and ensure that the research questions could be adequately addressed within the given resources and time frame. Other postgraduate students were not included to keep the study manageable and to allow for a more detailed examination of each participant's experiences.

Yammer, a social networking tool like WhatsApp, was used for organisational communication in the following ways: it facilitated dynamic discussions among participants, allowing them to share their experiences and reflections in a structured yet informal setting. WhatsApp helped build a sense of community among the participants, fostering collaborative engagement and mutual support (Mitchell & Appleget, 2021), and served as a platform for collecting qualitative data through participants' posts, comments, and interactions. Zoom hosted webinars and virtual meetings, enabling real-time discussions and presentations. MS Teams was used for ongoing communication and collaboration, allowing participants to share resources, discuss topics, and stay connected, as it was free for all registered students. Google Drive was also utilised to share and edit documents collaboratively, facilitating the research process and data analysis.

Fireflies, an AI-powered transcription tool, was used to automatically transcribe online discussions and webinars, ensuring accurate and detailed records of participant interactions. It helped organise the transcribed data, making it easier to analyse and extract relevant insights (LaBorie, 2020). This

efficiency streamlined the data collection process, allowing researchers to focus on analysis and interpretation.

The study employed critical discourse analysis at three levels: textual analysis, discursive practice, and social practice. It examined the language used in discussions and transcripts to identify themes, patterns, and discursive strategies related to cyborg identities and curriculum practices. It analysed the production and interpretation of texts within the social context of AI-infused learning environments, focusing on how participants construct and negotiate their identities (Maphumulo & Nkoane, 2020). The broader social and institutional contexts influencing the discourse were also considered, including educational policies, technological advancements, and ethical considerations in AI integration. This approach was used to demonstrate how AI and remote learning technologies shape postgraduate students' identities and experiences, informing sustainable and ethical curriculum practices.

3. Discussion of Findings

To this end, it was necessary to address the two research questions that framed this study. The implications of integrating AI and remote learning technologies for the formation of cyborg identities among postgraduate students are as follows: this study provides insights into sustainable and ethical curriculum practices. In order to answer the first research question, we begin with the consequences of AI and remote learning technologies identified within the data that construct cyborg identities. The analysis demonstrates how the integration of remote learning and AI conceals an underlying antagonism between humans and cybernetic systems. This integration suggests a deeper encroachment of cybernetics into everyday life than was previously imagined. For instance, during our virtual discussions regarding the findings, the extract that follows becomes evident.

7.1 The Hidden Curriculum and Fusion of Human and Cybernetic Systems

> **Extract 1:** *"I find myself relying more and more on AI tools for my research. It's almost like the technology is becoming an extension of my own capabilities. I don't just use it; I feel integrated with it."*

Using CDA to analyse the above from a textual perspective, it can be seen that the language in this extract emphasises a deep integration with technology ("relying more and more," "extension of my own capabilities"). "I feel integrated with it" suggests an emotional and experiential merger with AI.

By examining the same text from a discursive practice perspective, this statement reflects the student's experience and how they interpret their interaction with AI as more than mere tool usage. It suggests a shift in self-perception and identity, influenced by their regular interaction with AI technologies. Finally, looking at the same text from a social practice perspective, the broader social context involves the increasing ubiquity of AI in curriculum practices and everyday life (Tshelane, 2014). This shift implies that educational systems are not just incorporating technology but also transforming how students perceive and interact with their cognitive processes.

Using Haraway's cyborg theory, this extract illustrates the blurring of boundaries between humans and machines. The student's description of AI as an "extension" of themselves aligns with Haraway's concept of the cyborg, where traditional distinctions between organism and machine are dissolved. This fusion signifies a hidden curriculum where students learn to view themselves as hybrid beings, integrating cybernetic elements into their identities. This transformation suggests that cybernetics are more embedded in daily life and education than previously acknowledged, fostering a new posthuman identity. The AI's role in shaping conversations—by providing suggestions and summaries—indicates that students are increasingly attributing value to AI input, treating it as a form of authority within the learning environment. This shift mirrors broader changes in how digital technologies are influencing social and cognitive interactions.

This dimension aligns with theorists such as Foucault (2019), who addresses the distribution of power and authority in discourse. Foucault also stressed that power relations are not simply agents of power at the top that force subjects into compliance but are continuously created and practised over time. In relation to AI, this establishes that authority is being decentralised and brokered by technological interfaces in the way that academics engage in discussions. Writing about education, Bourdieu (1996) was also keen on the ideology of "symbolic power" in schools, stating that authority is not solely vested in teachers but in the myriad of social and technological entities. In this respect, the input of AI becomes symbolic in the new structure of generating and directing discussions in academic contexts. Moreover, Thompson (2005) established that we are experiencing what he called the 'democratisation of knowledge', implying that complex technologies like AI traverse traditional knowledge power relations.

> **Extract 2:** *"In our group discussions on Yammer, the AI's suggestions and summaries often shape the direction of our conversations. It's like the AI has a voice in our debates, influencing what we focus on."*

Using CDA to analyse the extract and adopting a textual analysis perspective, the text highlights the active role of AI in shaping group interactions ("the AI's suggestions and summaries," "AI has a voice"). The phrase "influencing what we focus on" indicates that AI is not just a passive tool but an active participant in the educational discourse.

Re-examining the same text from a discursive practice perspective reveals a shift in how students perceive agency and authority within their learning environment. The AI's input is treated as valuable and authoritative, impacting the flow and focus of human discussions.

However, there is a group of scholars who raise concerns about the entirely legitimate use of AI as a source of authoritative input. Kozma (2003) wrote about the risks of catastrophising, where the constant application of artificial intelligence diminishes the importance of human reason and decision-making. In response to the issues raised in Kozma's critique, it becomes evident that if the contributions of AI are overemphasised, the discussions preserved in online courses would be more mechanical, argue more structured and organised, and students would be less their own masters and more followers, as AI tends to restrain their critical thinking. The suggestions made by AI and its contributions to the discussion demonstrate that knowledge authority has shifted or been distributed more in accordance with the distributed knowledge theory by Lave and Wenger (1991). Hence, it creates a novel epistemological space where knowledge is simultaneously produced between humans and artefacts.

Finally, examining the same text from a social practice perspective reflects broader societal trends where AI is increasingly trusted and relied upon for decision-making and information synthesis. The educational context mirrors these trends, revealing a deeper integration of AI into social and cognitive processes. From the viewpoint of the social practice approach, the increased reliance on AI and its application in decision-making and information synthesis is not an isolated phenomenon but rather part of societal processes and trends, particularly the increasing use of information technologies across a broad spectrum of activities at both individual and organisational levels. As common AI systems become capable of analysing big data to provide information, they gradually transform into effective means for decision-making, not only in educational contexts but also in areas ranging from healthcare to finance to governance (Brynjolfsson & McAfee, 2017).

According to cyborg theory, AI's participation in discussions can be viewed as an embodiment of the cyborg concept, where technology and human agency are intertwined. The influence of AI on conversation topics suggests that cybernetic systems are becoming intrinsic to human thought processes and social interactions. This hidden curriculum, where AI subtly shapes educational experiences, points to a more pervasive integration of cybernetics into daily life. Haraway's vision of

the cyborg helps us understand this integration as a reconfiguration of identity and agency in a technologically mediated world.

> **Extract 3:** *"During our webinars, the transcription software doesn't just record what we say; it analyses our discussions and provides insights we hadn't considered. It feels like having an additional, non-human group member."*

Looking at the above extract from a textual analysis perspective, the text presents the transcription software as an active participant in the learning process ("analyses our discussions," "provides insights"). The description of it as "an additional, non-human group member" personifies the technology, highlighting its significant role.

From a discursive practice perspective, this reflects a perception of technology as more than a tool; it is seen as a contributor to the academic discourse. The insights provided by the software suggest it has analytical capabilities that influence the group's understanding and learning.

Examining the text from a social practice perspective reveals that it mirrors societal acceptance of AI's analytical and cognitive contributions. In the educational context, it suggests a shift towards viewing AI as a collaborative partner in learning rather than merely as a language-generative tool.

Haraway's cyborg theory helps to conceptualise the transcription software as part of the cyborg assemblage, where technology and human cognition coalesce. The software's role in providing new insights represents the hidden curriculum, revealing how cybernetic systems are integrated into the cognitive and social processes of learning. This fusion underscores the pervasive presence of cybernetics in daily life and education, aligning with Haraway's vision of blurred boundaries between humans and machines. The cyborg identity emerging from this integration challenges traditional notions of human agency and intellect, highlighting a posthuman reality where technology is an intrinsic component of identity and learning. Heath et al. (2023) have observed that social practices are profoundly shaped by technological advancements, where the social role of technology is not neutral but actively constructs new forms of interaction. In educational contexts, this manifests as a deeper integration of AI into cognitive and social processes, where students begin to view technology as a collaborative partner rather than a mere tool. Based on the study's second finding, the analysis below reveals a more pervasive presence of cybernetics in daily life than previously acknowledged, challenging traditional boundaries and fostering new hybrid identities. Secondly, these extracts and their analysis reveal the significant impact of cyberspace on transforming human consciousness and social identity, with implications extending into 'second life' realities and post-educational curriculum innovation. Thus, during our virtual discussions regarding the finding below, the extract shows that:

7.2 Influence of Cyberspace on Human Consciousness and Social Identity

> **Extract 1:** *"Engaging with AI-driven platforms feels like navigating a different reality. I often find myself thinking and behaving differently online than I do in person, almost like I have a second identity."*

Using CDA to analyse the extract and considering it from a textual analysis perspective, the text highlights a sense of duality in identity ("different reality," "second identity"). The phrases "thinking and behaving differently online" suggest that cyberspace profoundly influences the participant's consciousness and behaviour.

Using CDA to analyse the extract from a discursive practice perspective reflects the individual's experience of identity fragmentation or expansion, where the digital environment fosters a distinct sense of self that differs from their physical world identity (Morrison, 2024). It indicates how cyberspace enables the formation of 'second life' realities.

Using CDA to analyse the extract from a social practice perspective mirrors broader societal trends of digital dualism, where individuals navigate multiple realities—physical and digital. It emphasises the transformative effect of cyberspace on social identity and consciousness. Contemporary human beings have changed drastically; when you meet people who seem anti-social, there are no gratings anymore; when a fight breaks out, some people do not intervene; instead, they record a video of the fight.

Using Haraway's cyborg theory, this extract illustrates the blurring of boundaries between physical and digital identities (Dube et al., 2023). The participant's experience of having a "second identity" in cyberspace aligns with the cyborg concept, where traditional distinctions between the self and digital extensions are dissolved. This suggests that cyberspace acts as a catalyst for identity transformation, creating hybrid identities that integrate both human and digital elements. The impact of these 'second life' realities extends into educational contexts, where curriculum innovation must consider the dual nature of student identities and the cognitive shifts that occur in digital environments. This shift is consistent with Haraway's (2024) cyborg theory, which proposes that the boundaries between humans and machines are becoming increasingly indistinguishable, leading to new forms of hybridised identities and practices. Haraway's vision of the cyborg suggests that the incorporation of AI into educational settings is not just about enhancing learning but also about transforming the nature of human cognition and interaction.

> **Extract 2:** *"Our online interactions through virtual platforms have changed how I perceive my peers. There's a sense of anonymity and freedom that allows for more open and sometimes more profound exchanges than in face-to-face settings."*

Using CDA to analyse the extract from a textual analysis perspective, the language underscores the transformative potential of online interactions ("changed how I perceive," "anonymity and freedom," "more open and profound exchanges"), suggesting that cyberspace facilitates different social dynamics and perceptions.

Using CDA to analyse the extract from a discursive practice perspective, this statement reflects the participant's shifting social identity and interaction patterns influenced by virtual platforms (Morrison, 2024). It highlights how the digital environment fosters a unique form of social engagement and identity expression.

Using CDA to analyse the extract from a social practice perspective aligns with societal observations on the impact of digital anonymity and freedom in altering communication norms and social relationships. It emphasises the transformative role of cyberspace in shaping social identities and interactions. Moreover, Giddens (2023) discussed the concept of "structuration" in social theory, where human actions and structures (including technological systems) are mutually constitutive. This implies that the increasing reliance on AI for academic tasks is both a reflection of and a driver for broader social changes in how knowledge and authority are structured. The educational environment is a microcosm of society, where the integration of AI reflects larger cultural shifts towards technological interdependence. As Selwyn (2023) pointed out, the rise of digital technologies in education signals a move towards "technologically mediated pedagogy," where the role of human teachers is redefined by the presence and capabilities of AI systems.

From a cyborg theory perspective, the online interactions described in this extract reveal the fusion of human and digital identities. The anonymity and freedom provided by cyberspace align with Haraway's notion of the cyborg, where the boundaries between the public and private, the individual and the collective, are blurred. This transformation in social identity and consciousness underscores the importance of considering these digital dynamics in curriculum innovation. Educators must recognise and incorporate the new forms of engagement and identity formation in cyberspace, ensuring that educational practices are relevant and responsive to these changes.

> **Extract 3:** "*Using virtual reality for our projects felt immersive and real. It challenged my notions of what is 'real' and expanded my understanding of identity and presence.*"

Using CDA to analyse the extract and adopting a textual analysis approach, the text emphasises the immersive nature of virtual reality ("immersive and real," "challenged my notions of what is 'real'"). The phrases "expanded my understanding of identity and presence" profoundly impact the participant's consciousness and sense of self.

Using CDA to analyse the extract from a discursive practice perspective reflects the participant's cognitive and perceptual shifts induced by virtual reality. It suggests a reconfiguration of identity and presence as they navigate these digitally immersive environments.

Using CDA to analyse the extract from a social practice perspective mirrors societal trends of increasing engagement with virtual reality, where digital experiences significantly alter perceptions of reality and self (Morrison, 2024). It underscores the broader implications of digital immersion on consciousness and identity. However, there is also criticism of the societal over-reliance on AI. Susskind & Susskind (2015) argue that the increasing automation of knowledge work—exemplified by AI in education—could have unintended social consequences, such as deskilling or creating inequalities in access to technology. This critique calls attention to the risks of integrating AI without careful consideration of its ethical and social implications.

This extract highlights the dissolution of boundaries between the physical and virtual realms by applying cyborg theory. The participant's experience of virtual reality as "real" and transformative aligns with Haraway's concept of the cyborg, where human consciousness and identity are augmented and redefined by technological integration. This challenges traditional notions of reality and presence, suggesting that 'second life' experiences in virtual environments significantly affect social identity and educational practices. Curriculum innovation must, therefore, incorporate these immersive technologies to reflect and enhance the evolving nature of student identities and learning experiences.

Firstly, these extracts and their analysis reveal the hidden curriculum emerging from the integration of remote learning and AI, where human and cybernetic systems are increasingly intertwined. The application of critical discourse analysis, supported by cyborg theory, underscores how these technological integrations shape student identities and learning experiences. By viewing AI as an active participant in education, the study highlights a more pervasive presence of cybernetics in daily life than previously acknowledged, challenging traditional boundaries and fostering new hybrid identities. Secondly, these extracts and their analysis reveal the significant impact of cyberspace on transforming human consciousness and social identity, with implications extending into 'second life' realities and post-educational curriculum innovation. The application of critical discourse analysis, supported by cyborg theory, underscores how digital and virtual environments shape perceptions of reality, identity, and social interaction.

4. Conclusion

This research situates itself within the broader thematic discussion of AI's integration into education, addressing the pressing challenges of the current educational landscape. By envisioning the future of curriculum development through the lens of AI's transformative capabilities, the study provides valuable insights into the evolving nature of postgraduate education and the formation of cyborg identities. The findings underscore the importance of considering the ethical implications of AI in education. Curriculum reforms must prioritise data privacy and aim to leverage AI to create personalised and equitable learning experiences. As AI continues to influence educational practices, it is imperative to ensure that these technologies are used to enhance, rather than hinder, educational equity.

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Data availability: The data supporting the findings of this study are available from the corresponding author upon reasonable request. Access will be granted to researchers who meet the criteria for data sharing established by the institutional review board or ethics committee.

References

Akgun, S., & Greenhow, C. (2022). Artificial intelligence in education: Addressing ethical challenges in K-12 settings. *AI and Ethics, 2*(3), 431–440. https://doi.org/10.1007/s43681-021-00096-7

Alfrey, L., & O'Connor, J. (2024). Transforming physical education: An analysis of context and resources that support curriculum transformation and enactment. *Physical Education and Sport Pedagogy, 29*(1), 1–17. https://doi.org/10.1080/17408989.2022.2028759

Ali, W. (2020). Online and remote learning in higher education institutes: A necessity in light of COVID-19 pandemic. *Higher Education Studies, 10*(3), 16–25. https://doi.org/10.5539/hes.v10n3p16

Alqabbani, S., Almuwais, A., Benajiba, N., & Almoayad, F. (2021). Readiness towards emergency shifting to remote learning during COVID-19 pandemic among university instructors. *E-learning and Digital Media, 18*(5), 460-479.

Arango-Caro, S., Ying, K., Lee, I., Parsley, K., & Callis-Duehl, K. (2024). A model of science, technology, engineering, and mathematics remote research-based learning: High school independent authentic research experiences from home. *The American Biology Teacher, 86*(1), 24–29. https://doi.org/10.1525/abt.2024.86.1.24

Aydogmus, F. (2024). Climate change and humans with a cyborg scientific theory approach. In *Quality of life and climate change: Impacts, sustainable adaptation, and social-ecological resilience* (pp. 386-399). IGI Global. https://doi.org/10.4018/978-1-6684-9863-7.ch019

Barbour, N., & van Meggelen, D. (2024). Students' well-being and factors impacting it during COVID-19 pandemic–early findings from Delft University of Technology. *European Journal of Engineering Education, 49*(1), 192-211. https://doi.org/10.1080/03043797.2023.2201189

Bong, W. K., & Chen, W. (2024). Increasing faculty's competence in digital accessibility for inclusive education: A systematic literature review. *International Journal of Inclusive Education, 28*(2), 197-213. https://doi.org/10.1080/13603116.2021.1937344

Bourdieu, P. (1996). Understanding. *Theory, Culture & Society, 13*(2), 17-37. https://doi.org/10.1177/0263276960130020

Brynjolfsson, E., & McAfee, A. (2017). *Machine, platform, crowd: Harnessing our digital future*. Norton & Company.

Du Plessis, A. E., Küng, E., & du Plessis, E. (2024). Challenges for pedagogical effectiveness in an ever-changing education landscape: Conceptualisation of pedagogical mobility and flexibility as a context-consciousness. *Education Sciences, 14*(4), 349. https://doi.org/10.3390/educsci14040349

Dube, B., Mahlomaholo, S., Setlalentoa, W., & Tarman, B. (2023). Creating sustainable learning environments in the era of the posthuman: Towards borderless curriculum. *Journal of Curriculum Studies Research, 5*(1), i-x. https://doi.org/10.46303/jcsr.2023.1

Eisapour, M., Cao, S., & Boger, J. (2020). Participatory design and evaluation of virtual reality games to promote engagement in physical activity for people living with dementia. *Journal of Rehabilitation and Assistive Technologies Engineering, 7*, 1–14. https://doi.org/10.1177/2055668320913770

Foucault, M. (2019). *Power: The essential works of Michel Foucault 1954-1984.* Penguin UK.

Giddens, A. (2023). Modernity and self-identity. In *Social theory re-wired* (pp. 477-484). Routledge.

Halden, G. (2024). *Cyborg conception: Cultural and critical responses to solo motherhood by choice.* Springer Nature Switzerland.

Haraway, D. J. (2024). Making kin with Adele: From pathologizing in Vienna to collaborating in Denver. *Science, Technology, & Human Values*, *49*(6), 1176–1184. https://doi.org/10.1177/01622439241284554

Heath, D. M., Ghali, A. N., Momtaz, D. A., Nagel, S., Gonuguntla, R., Menon, S., ... & Hogue, G. D. (2023). Socioeconomic status affects postoperative time to union in pediatric patients with a surgically treated fracture. *JBJS Open Access, 8*(3), e22.

Honey, T. (2015). *Change for the machines: The cyborg in fact and fiction into the 21st century* (Doctoral dissertation). James Cook University.

Kozma, R. (2003). The material features of multiple representations and their cognitive and social affordances for science understanding. *Learning and Instruction, 13*(2), 205–226.

LaBorie, K. (2020). *Producing virtual training, meetings, and webinars: Master the technology to engage participants.* Association for Talent Development.

Lawrence, K. C., & Nkoane, M. M. (2020). Transforming higher education spaces: Analysis of higher educational attainment expectation factors among high school learners in Kwa-Dlangezwa, South Africa. *International Journal of Education and Practice, 8*(3), 547–556. https://doi.org/10.18488/journal.61.2020.83.547.556

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation.* Cambridge University Press.

Leung, J. C. S. (2019). *Posthumanism, singularity, and the Anthropocene: A thematic perspective on posthuman science fiction* [Doctoral dissertation, Hong Kong Baptist University].

Lewis, B. J. (1997). *Human machines: The treatment of the cyborg in American popular fiction and film* [Doctoral *dissertation,* New York University].

Loh, J. (2020). What is feminist philosophy of technology? A critical overview and a plea for a feminist technoscientific utopia. In J. Loh & M. Coeckelbergh (Eds.), *Feminist philosophy of technology* (pp. 1-24). Springer. https://doi.org/10.1007/978-3-476-04967-4_1

Mahlomaholo, S. M., & Mahlomaholo, M. R. (2024). Employability as inclusive entanglement in relationalities: A design in sustainable learning environments. In F. Altınay, Z. Altınay, & K. K. Stavropoulos (Eds.), *Intellectual and learning disabilities-inclusiveness and contemporary teaching environments* (p. 23). IntechOpen. https://doi.org/10.5772/intechopen.114033

Mahlomaholo, S. M., Daries, G., & Koen, M. (2023). Creating sustainable early childhood learning environments: A transformatory posthumanist perspective. *Educational Research for Social Change, 12*(1), vi-x.

Maphumulo, N. P., & Nkoane, M. (2020). Educators' comportment on health and emotional well-being. *Gender and Behaviour, 18*(1), 14925-14946.

Mitchell, C., & Appleget, C. (2021). Preservice teachers collaborating and co-constructing in a digital space: Using participatory literacy practices to teach content and pedagogy. In *Research anthology on facilitating new educational practices through communities of learning* (pp. 557–574). IGI Global. https://doi.org/10.4018/978-1-7998-7294-8.ch029

Mbambo, G. P., & Du Plessis, E. C. (2024). Impact of artificial intelligence on teacher training in open distance and electronic learning. *International Journal of Learning, Teaching and Educational Research, 23*(5), 370–386. https://doi.org/10.14293/pr2199.000731.v1

Morrison, R. (2024). Making the invisible visible: Critical discourse analysis as a tool for search engine research. *Journal of the Association for Information Science and Technology, 75*(5), 600–612. https://doi.org/10.1002/asi.24859

Nikolopoulou, K. (2024). Generative artificial intelligence in higher education: Exploring ways of harnessing pedagogical practices with the assistance of ChatGPT. *International Journal of Changes in Education, 1*(2), 103–111. https://doi.org/10.47852/bonviewijce42022489

Nkoane, M. M., & Dube, B. (2020). Evoking Afrikan grand-narratives as a quest for decoloniality to champion rural knowledge systems. *Alternation, 27*(2), 173-188. https://doi.org/10.29086/2519-5476/2020/v27n2a9

Rahmatullah, M., & Gupta, T. (2023). Disrupting the binary: An argument for cybernetic feminism in deconstructing AI's gendered algorithms. *Rupkatha Journal on Interdisciplinary Studies in Humanities, 15*(4), 12. https://doi.org/10.21659/rupkatha.v15n4.07

Saliba, R. (2024). Transformation in transformative learning: A reversed experience of faculty members teaching in transnational higher education institutions in Qatar. *Social Sciences & Humanities Open, 9,* 100823. https://doi.org/10.1016/j.ssaho.2024.100823

Selwyn, N. (2023). "There is a danger we get too robotic": An investigation of institutional data logics within secondary schools. *Educational Review, 75*(3), 377-393. https://doi.org/10.1080/00131911.2021.1931039

Singh, A., Singh, D., & Chhikara, S. (2024). Online learning: Challenges and suggestions to enhance student engagement in higher education institutions. In A. O. Adeniyi & I. O. Ganiyu (Eds.), *Reshaping entrepreneurial education within an industry 4.0 context* (pp. 59-80). IGI Global. https://doi.org/10.4018/979-8-3693-0409-9.ch004

Soløst, H. A. (2023). *The posthuman body in Monica Byrne's The actual star: Post-dualistic renegotiations of body and identity in feminist speculative fiction* (Master's thesis). University of Oslo.

Susskind, R., & Susskind, R. E. (2023). *Tomorrow's lawyers: An introduction to your future*. Oxford University Press.

Puffer, E. S., & Ayuku, D. (2022). A community-embedded implementation model for mental-health interventions: Reaching the hardest to reach. *Perspectives on Psychological Science, 17*(5), 1276–1290. https://doi.org/10.1177/17456916211049362

Teele, T., Nkoane, M. M., & Mahlomaholo, M. G. (2020). Corollaries of pedagogic praxis on technological skills transfer for emerging farmers. *Gender and Behaviour, 18*(1), 14749-14760.

Thompson, J. A. (2005). Proactive personality and job performance: A social capital perspective. *Journal of Applied Psychology, 90*(5), 1011. https://doi.org/10.1037/0021-9010.90.5.1011

Tshelane, M. (2014). Democratic postgraduate student leadership for a sustainable learning environment: Part 1: Exploration of the critical relationship between higher education and the development of democracy in South Africa. *South African Journal of Higher Education, 28*(3), 717–732.

Verweij, D., Bakker, S., & Eggen, B. (2017). *Fireflies2: Interactive tangible pixels to enable distributed cognition in classroom technologies.*In *Proceedings of the 2017 ACM International Conference on Interactive Surfaces and Spaces* (pp. 260-269). https://doi.org/10.1145/3132272.3134122

Wang, T., & Cheng, E. C. K. (2021). An investigation of barriers to Hong Kong K-12 schools incorporating artificial intelligence in education. *Computers and Education: Artificial Intelligence, 2*,100031. https://doi.org/10.1016/j.caeai.2021.100031

Zaza, C., & Yeung, R. C. (2023). It's time to bring mental health literacy education into the postsecondary curriculum. *Canadian Journal for the Scholarship of Teaching and Learning, 14*(1), n1. https://doi.org/10.5206/cjsotlrcacea.2023.1.13663