A rationale for authentic AI integration in South African social sciences and history teacher training programmes

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Abstract

In this conceptual review paper, we discuss the need for integrating AI tools in social science and history teacher training programmes in South Africa. Despite the proliferation of an ever-growing pool of AI tools, their uptake in pre-service teacher training has been limited in South Africa's institutions of higher learning. Without clear policies regarding AI use, decisions on AI integration have often fallen to the responsibility of individual lecturers. Education students have ready access to free and paid AI tools; however, they frequently lack the skills to employ them as supporting tools. Instead, they attempt to shortcut the academic process rather than opting to enrich their learning. By default, these broad concerns within higher education are of paramount importance to didactic modules in professional teacher education degrees that prepare future social science and history teachers. This paper contends that AI integration should look beyond its use in higher education and consider preparing social science and history pre-service teachers for integrating AI into teaching and learning, as well as workplace practices. Without adopting AI integration practices, there is a very real danger of graduating teachers who are essentially untrained due to committing fraud by using AI to complete their assessments during their teacher training programme. This could have serious consequences for learners, the teacher, the schools and provincial departments that employ them as newly qualified teachers. AI tools have the potential to support and streamline tasks in the teaching workspace as well as promote teaching and learning in the classroom. As a conceptual review paper, a broad literature base on AI in education is employed that narrows its focus to social science and

history education. The primary question this paper seeks to answer is "How should AI be integrated into South African social science and history teacher training programs?" This paper found that examining and adapting to the sociocultural-digital context of students, lecturers and future learners is of paramount importance in integrating AI authentically as a tool that can support teaching and learning and decolonial approaches within social sciences and history education. This paper considers the impact of South African university policies on AI integration within social science and history student teacher didactic training. The paper ultimately recommends that South African universities should continue to establish policies and procedures that can support and guide social science and history education lecturers in integrating AI into their modules. The implication is that a hospitable environment to ethical AI integration is crucial to any social science and history education lecturer's attempts to train student teachers to ethically integrate AI as a tool.

Keywords: AI integration; history education; history teacher training; pre-service teachers; social sciences education.

Introduction and background

Despite the proliferation of research literature extolling the benefits of AI in higher education, social science and history education students in South Africa have been left to their own devices in a policy-scarce environment. Undergraduate education students are experiencing unprecedented pressures in 2025, often working while studying, difficulties accessing reliable funding and are often unable to find accommodation close to residential, face-to-face universities (Mlambo & Mpanza, 2024). Without supportive policy frameworks, social science and history lecturers are presented with unmitigated risk in their attempts to navigate AI integration in their modules. The primary pedagogical concern is that final year students have not developed their academic literacy any further since 2022. The implication is that final year social science and history students have been using (or misusing) AI since the first year. Therefore, any student depending on AI to replace them for assessment has only the skills bequeathed to them by the primary and secondary schooling.

The concern is that these 'graduates' with essentially plastic degrees will then teach social sciences and history through the intermediate, senior and FET phases, with calamitous consequences for social sciences and history in those phases (Roe et al., 2025). Furthermore, their product will enter the tertiary system within several years from the FET phase, while more 'plastic' newly qualified teachers (NQTs) join the in-service teacher

cohort. We have already sent three years of BEd and PGCE social science and history teachers into the field. 2026 will be the first year when NQTs will have had access to AI for the duration of their entire BEd programme.

Higher education institutions (HEI) have been caught largely unprepared by the sudden and unprecedented proliferation of generative AI (GenAI) from 2022. Their response to AI has been neither cohesive nor timely. While COVID necessitated digitisation within the higher education sector due to online learning and social distancing, AI has not received a similar sense of urgency. Awareness of AI has spread among staff slowly, compounded by academics who fall into the digital immigrant and refugee categories. Even digital natives find themselves immigrants within AI in education.[1] While AI has perhaps been a rude and recent awakening for those in the academic space, AI has been with us since the 1950s. AI originated from the Dartmouth workshop in 1956 (Doruodi, 2022). Intelligent-based tutoring systems and computer-based learning environments were conceived in the mid-1960s. Education has been entwined with AI since its inception and has undergone various phases of development and progression. GenAI is simply the latest waypoint of that journey.

AI in Education (AIED) has the potential to positively impact three main areas in higher education, namely the student, the lecturer and the administrator (Holmes & Tuomi, 2022). Of note are the possibilities of scaffolding learning for students and implementing tutoring support in more sophisticated ways than earlier models. AIED has the potential to personalise learning in ways that would usually be impossible in large lecture groups. AI also presents opportunities for innovation in both assessment and teaching strategies (Rudolph, Tan (Samson) et al., 2023). AI can reduce the research workload by assisting with planning, conducting and presenting research (Rudolph, Tan (Shannon) et al., 2023). It can also serve as a catalyst for the decolonial project at South African HEIs in terms of multilingualism.

The use of AI in assessment has presented some challenges. Concerns have been raised regarding academic integrity as well as the degree to which GenAI produces falsified information. Assessing students has become problematic as AI has been used in a variety of ways to write assessments. AI can be used to evaluate student assessments, however,

[1] Digital natives who are born during the advent of digital technologies and find it easy to adapt to digital technology. Digital immigrants were born before the digital age, but have been able to adapt to the various advances of digital technology. Digital refugees are those who have had their lives disrupted by digital technology and find it extremely challenging to adapt advances in digital technology.

there may be less obvious biases due to the nature of the data sets that the AI tool may have been trained with. Pervasive AI use by students may cast doubt on whether they meet the graduate competencies or attributes outlined in modules (De Villiers-Botha, 2024). Integrating AI in higher education modules could have a positive impact on students' employability in the workplace. University AI policies, or lack thereof, further compound these challenges. As of May 2023, 26.3 per cent of the top 500 universities had AI policies, while 32.6 per cent had banned ChatGPT and AI outright (Xiao et al., 2023). This is indicative of a slow response globally to integrate AI in education that is hardly unique to South Africa, despite the clear potential of AI and evidence of its benefits (Hutson et al., 2022). Calls for the integration of AI in education have adopted an augmentative position where AI is used to enhance teaching and learning. This would necessitate a training focus for both students and lecturers.

The misuse of AI has significant pedagogical implications for social sciences and history teacher training. Content training is either completed prior to, or during didactic training, depending on the faculty. Without a policy on AI in education, any online assessment is conceivably vulnerable to AI misuse and academic misconduct. In terms of history or geography content, in the case of extensive AI misuse, the content level of the student remains the same as when they joined the university after matric. Therefore, any newly qualified social sciences and history teachers from a university with a poor policy environment are less likely to have any university-level content knowledge. The same holds true for didactics training. The aim is to equip pre-service social sciences and history students with the professional skills that they will practice throughout their careers. If a poor policy environment exists in conjunction with a lack of attendance policies, poor attendance stemming from AI misuse will result in only a portion of students being trained in various professional skills. Assessment would also not be a true reflection or measurement of achievement and module outcomes would not be met by most students. These issues are, however, not limited to subject specialist didactic modules, they impact teacher training programmes in their entirety. Even teaching practice may not fully serve its purpose. Without AI screening, there would be no indication that students can prepare lessons and their support materials independently of AI.

This review seeks to demonstrate the urgency and seriousness of the research problem and propose several paths that future research should take to address it. The proposed paths will go beyond mere policing of AI and move toward creating an ecosystem that promotes ethical and authentic use of AI in teacher training modules for social sciences and history

pre-service teachers. A salient theme of this paper is the impact of AI on the decolonial project at South African HEIs. This study is limited to pursuing research paths for social sciences and history teacher training. Despite a real and growing need, proposing research interventions for in-service social science and history teachers who lack various skills expected in the profession, is beyond the scope of this conceptual review paper.

Research design and methodology

Purpose and justification

The chief purpose of this conceptual review paper is to establish a robust rationale for authentic AI integration in social sciences and history teacher training programmes through various research pathways. As such, pertinent literature will be reviewed with the aim of delineating an appropriate gap in research and buttressing the salient arguments of this paper. While this paper focuses specifically on social sciences and history didactics modules, the paths for future research could inspire similar projects in future AI research in a range of school subject didactics modules within the South African HEI context. Pivotal to this rationale, will be a frank assessment of the impact of environmental factors on AI in higher education and its impact on social sciences and history teacher training modules.

There is a lack of published data on the AI habits specific to social science and history pre-service teachers. General studies also tend to focus on interviews and surveys, rather than examining assessments. This limits the effectiveness of departmental and lecturer responses towards AI. Data limitations impact on the design of AI policies. The research emanating from this paper may allow policymakers to consider the impact of policy at the module level. Currently, the lack of AI policies, except for UCT, has created a vacuum, where policy is devolved to HODs and individual lecturers. South African HEIs have been slow to adopt AI policies, opting for guidelines or position statements where several HEIs are still in the process of drafting them. This conceptual review paper is a necessary step toward research projects that seek to further AI integration in social sciences and history education modules.

Problem statement

AI integration in social science and history didactic modules is neither authentic nor cohesive. This stems largely from students misusing AI and not perceiving AI as a tool within an environment, lacking policies that mandate ethical use and integration of AI. As a result,

there is a tangible risk of pre-service teachers not meeting their graduate competencies and attributes through flawed assessment practices and teaching strategies. This should be of grave concern to the teaching profession as NQTs may have a qualification and South African Council for Educators registration, yet possess few of the requisite skills to perform their duties. A lack of AI integration in teacher training programmes would also negatively impact pre-service teachers' preparedness for authentic AI integration in a school setting and the classroom.

Methodology

This is a conceptual review paper that will make an argument for research that will further authentic AI integration applications in social science and history teacher training. This theory will guide the discussion and the aim of the future research that this conceptual review paper aims to motivate. The research will use a qualitative approach to engage with research literature and allow for a more thematic analysis. Themes were derived from components of the environment that are considered high impact in terms of enabling or disabling the advent of more authentic AI integration in social science and history teacher training programmes. Sources that were considered pivotal to those themes were essentially analysed on that thematic basis and how they contributed to the theme. The lack of research literature specific to AIED in social sciences and history education has necessitated the focus of the review on AI in education more broadly in South African higher education before discussing various themes at the level of social sciences and history teacher training programmes.

Vygotsky's (1978) theories on the use of tools and reading of the Zone of Proximal Development (ZPD) in relation to the use of tools is the theoretical lens by which this paper considers the research problem and engages with research literature in the discussion and findings. According to Vygotsky (1978), children's use of tools is a crucial aspect of their development. By extension, the same could be said regarding university students. In the case of children, using tools often begins with imitating adults. It would follow that the social sciences and history lecturers would then need to demonstrate ethical AI integration before expecting students to do the same. Vygotsky (1978:55) writes, "the tool's function is to serve as the conductor of human influence on the object of activity". The tool is seen as an externally orientated instrument in the way it leads to change on the object (Vygotsky, 1978). This is crucial for understanding how AI is a tool that is designed to assist humans with a specific task. The author adds that "if one changes the tools of thinking available

to a child, his mind will have a radically different structure" (Vygotsky, 1978:126). The ready availability of AI for undergraduate social sciences and history education students and its impact on them is hardly quantified in research literature. Vygotsky (1978:127) stated "Like words, tools and non-verbal signs provide learners with ways to become more efficient in their adaptive and problem-solving efforts." AI certainly allows students to give the superficial impression that they are advanced in this regard. However, misusing AI beyond its design as a tool is detrimental to the development of students in terms of academic skills.

The ZPD is an area of learning where children can learn with some assistance from a teacher or peers. It is the gap between what they can do unaided and what they are not able to do without help (Vygotsky, 1978). The effect of AI misuse on AI development is evident from a close reading of how tools interact with the ZPD. Tools serve a similar purpose in assisting learners in the ZPD, where teachers would also provide scaffolding and assistance. Misuse of AI brings an assessment task into the easiest section of the ZPD, where little effort is required on the part of the student. Therefore, according to how the ZPD functions, no further development can take place while a student remains in the first phase, as all the tasks are reduced to the easiest category. Assessment also loses its value as a tool of measurement in terms of outcomes, "only the independent activity of children, not their imitative activity, indicates their level of mental development" (Vygotsky, 1978:88). An important consideration is the design of AI tools. According to Leont'ev (1978:47), "a tool is a material object in which are crystallised methods and operations and not goals". For example, a wood saw is designed for cutting wood and used by a man who must saw wood. For all the hype around AI, they are tools and misusing them as a substitute for academic effort in assessment keeps students from developing academic skills, as well as any module outcomes. The strength of AI is in its use to assist and enhance within the actual ZPD, in conjunction with lectures and tutors.

This paper will use a pivotal strategy in selecting research literature that has a significant impact on the various themes under discussion. The focus of the discussion is on making a case for future research pathways that will promote a more ethical and authentic engagement with AI integration in social sciences and history education modules. The study uses the following inclusion criteria: peer-reviewed journal articles published between 2022 and 2025. The articles should constitute South African research written in English. A variety of search commands designed around AI in education and teacher training programmes in South Africa will be used. The exclusion criteria are as follows: No non-journal articles

will be used except for relevant chapters; no non-English articles will be used; papers that do not focus on AI in higher education and universities in South Africa will not be used; only articles in a PDF format will be used; other media, such as video, will not be used. The review will make use of Google Scholar, Google and Research Gate as information sources. These criteria will support the screening of journal articles. Due to a scarcity of specific research literature on AI integration in social sciences and history education in South Africa, the literature survey will focus on AI in higher education in South Africa.

The findings and discussion will explore AI integration in social science and history teacher training and the role that research could play in promoting the use of AI as a tool in line with its role in terms of the ZPD. The intention of this paper is to make a well-supported recommendation for future research on AI integration in this specific area. The narrow focus of the conceptual review papers has several limitations to consider. As this conceptual review paper used a pivotal strategy in selecting papers and screened papers mainly due to geographical criteria, it can hardly purport to be an exhaustive review of AI integration in higher education within or outside South Africa. The scope of the review is to make arguments for future research that is focused on promoting ethical and authentic AI integration in social sciences and history teacher training programmes in South Africa. Therefore, it does not purport to make similar arguments for the whole of the higher education sector in terms of teaching and learning. Possible inference to other modules is purely incidental, though it may be considered of interest given the pervasiveness of AI use and misuse at South African universities.

Literature survey

COVID-19 Pandemic

The COVID pandemic precipitated the shift of South African HEIs to digitisation. This period demonstrated the possibility of changing education systems and practices rapidly. (Mhlanga et al., 2022). It has also resulted in the establishment of digital infrastructure and moderately digitally competent staff with ongoing professional development (Moloi & Salawu, 2022).

Potential of AI in South African higher institutions of education

The provision of digital infrastructure and improvement of digital literacies have created a platform for the integration of AI in higher education. From the outset, the recent advances

in AI have resulted in calls for curriculum reform, particularly in digitalising course offerings with online learning (Wessels & Wyk, 2022). Integration of AI and digitalisation of university degrees would prepare students for the twenty-first-century workplace (Nhleko & Westhuizen, 2022). AI also presents the possibility for personalised virtual tutors. AI can provide feedback on the assessment (Wessels & Wyk, 2022). AI's potential regarding university support services and the enhancement of teaching and learning are recurring themes in South African research on AI in HEIs (Van Wyk, 2022). AI may be helpful in proofreading at South African HEIs, saving time and reducing the financial burden on academic staff (Tarisayi, 2024).

Risks of AI in HEI

Despite its potential, AI presents many risks to HEIs. De Villiers-Botha (2024) has raised a series of ethical risks that can only be fully mitigated by AI policies. These are as follows: Unfairness; privacy violations; misinformation; lack of transparency and threats to autonomy. Of particular importance to the South African context is the impact of the digital divide on the use of AI in education. Students facing socio-economic challenges find it more difficult to access digital technology and improve their digital literacy levels. This, in turn, impacts access to AI and AI literacy (De Villiers-Botha, 2024). Despite the evident potential for AI in Education, there is also considerable scope for risks in Higher Education. Like any tool, AI can be both beneficial and harmful. The most pertinent ethical risk for social science and history education is in terms of autonomy. According to De Villiers-Botha (2024:176), "Students may fail to acquire important skills if they become too reliant on LLM-based and/or other AI systems." Scholars who are familiar with the South African context may go a step further and suggest that the level of risk is high, as many students entering the university system arrive with low levels of literacy, academic literacy, as well as socio-economic challenges that severely impact the digital divide. The marketing and hype around using AI could easily persuade such students to misuse AI in order to contend well with the university environment and assessment. This points to where ethical and unethical use of AI leads to considerable benefits or severe damage to the development of academic skills, with a vastly diminishing middle ground.

Challenges in integrating AI in South African HEIs

The challenges experienced when integrating AI at HEIs only serve to compound ethical risks. Teaching and learning at South African HEIs are faced with integrating a student body mainly comprised of millennials and post-millennials, with academic staff primarily

consisting of baby boomers and Generation X (Wessels & Wyk, 2022). These students generally demand greater flexibility and delivery modes that allow ready access to education (Wessels & Wyk, 2022). While AI has the potential to improve teaching and learning, it can also be used by students as a shortcut for completing academic assessments. Traditional plagiarism software is unable to detect AI use (Makeleni et al., 2023), which makes it difficult to detect cases of academic dishonesty. However, Turnitin has introduced an AI detection tool that can assist lecturers. Concerns have been raised regarding the limited language options of AI tools and the limited data sets trained on English data rather than African languages. (Makeleni et al., 2023).

While AI could be used to manage the workload of staff effectively, it may also promote laziness and encourage an overreliance on AI that may limit the ability of staff to do tasks manually (Makeleni, 2023). However, the prevailing challenge is contextual; the show of Apartheid creates severe socio-economic divides that exacerbate the digital divide, which in turn impacts the AI divide among the student body.

Fourth Industrial Revolution and the impact of the digital divide in South Africa

The digital divide in South Africa has resulted in an uneven distribution and access to GenAI. Some research has opted to contextualise AIED within the Fourth Industrial Revolution (4IR). While the 4IR is being adopted at the administrative and management level, its adoption in teaching and learning has been slower due to a variety of 1st and 2nd order barriers. Namely, lecturers' varying perceptions of the 4IR and the availability of infrastructure (Lubinga et al., 2023). However, efforts at South African HEIs to align with the 4IR are obfuscated by inequality. The realities of the prevailing socio-economic context of students have implications for AI integration and are set to further widen the digital divide. South Africa has not fully achieved the Third Industrial Revolution (3IR) in terms of ICT and internet access. The gains of the Second Industrial Revolution (2IR) are also brought into question due to load shedding and a lack of provision of electricity in some rural areas (Hlatshwayo, 2022). The legacy of Apartheid and post-Apartheid government policies has bequeathed a fragmented context whereby different parts of South Africa have asynchronous development in terms of IR 2, 3 and 4. This, in turn, fragments the student body in how it is able to access and engage with AI during their studies. One cannot assume homogeneous literacy, academic literacy, ICT literacy, or even AI literacy in any undergraduate cohort. This fragmentation speaks to the need for more differentiated approaches required for equitable access to AI in education (Faloye & Ajayi, 2021).

GenAI and ChatGPT

Equitable accessibility to GenAI would support leveraging its potential across the university. Sevnarayan's (2024) study has made a crucial contribution to this corpus by investigating the experiences of both lecturers and students from a distance learning and E-learning university. Sevnarayan (2024) considers the relationship between the perceptions of staff and students using ChatGPT with various challenges experienced during its use. While some lecturers perceived GenAI as an obstacle for students in the development of their academic voice, others saw the potential for developing critical thinking and research skills. It was clear from student interviews on assessment that they held concerns regarding laziness and saw AI as a collection of support tools that would help navigate academic pressure. Realising the potential of AIED will require collaboration between students, lecturers and administrators. It is evident that lecturers must upskill in the face of AI or risk becoming obsolete (Sevnaraya & Potter, 2024). Singh (2023) followed a similar line of research, interviewing South African professors in senior management positions. Through ChatGPT, Singh (2023) established that assessment design flaws were more of an issue than plagiarism. Questions were raised about the fairness of academic literacy expectations, given the limited nature of assessment feedback in large lecture groups. Generative AI was seen as a useful academic literacy tool for students who did not speak English as a first language (Singh, 2023). Research on how ChatGPT was used by postgraduate students showed that students used it to refine research topics, paraphrase and improve academic writing and grammar (Chauke et al., 2024). Bosch et al. (2023) found that undergraduate students use of AI primarily involved supporting and enhancing academic writing.

There is a continual tension between the advantages and challenges that AI can present. ChatGPT performs well enough on online traditional assessments that academic dishonesty and cheating can bypass learning. This is the counterweight to the perceived benefits of GenAI in providing an interactive search engine that can save time and promote critical thinking skills (Naidu & Sevnarayan, 2023). This may necessitate a return to invigilated and oral exams, as advanced proctoring and AI detection software are not entirely foolproof (Naidu & Sevnarayan, 2023). It was contended that ChatGPT had greater potential for integration in teaching and assessment practices. It could, for example, assist lecturers in marking and feedback (Naidu & Sevnarayan, 2023). However, these studies relied on surveys and interviews and did not triangulate data with evidence of student assessment. Cox et al. (2024) demonstrated the efficacy of using GenAI to develop open-access learning resources for medical students.

South African review papers

South African research is not limited to empirical studies. There is a growing body of literature reviews on AI in higher education in South Africa. They have been predominantly systematic literature reviews focusing on a narrow year range of papers. Some have been more general reviews, such as Khoalenyane and Ajani (2024) and Funda and Piderit (2024). In comparison, Funda and Mbangeleli (2024) focused their review on how AI could be used to overcome various challenges faced by South African HEIs. This theme was partially shared by another systematic review that considered both the potential benefits of AI against its various challenges at South African HEIs (Ajani et al., 2024). This paper made a more global review and was not limited to South African peer-reviewed journal articles. One paper specifically focused on the integration of AI at South African universities, however, took a general focus rather than narrowing the lens on individual disciplines or faculties (Mogoale et al., 2025). Mogale et al. (2025) concluded that training and ethical standards were crucial in order to integrate AI in teaching and learning in higher education in South Africa.

AI Policy in South Africa at the national and university level

South Africa's national policy guidelines and legal framework, or lack thereof

The policy environment at South African universities functions in the context of national AI policy and law in South Africa. There is currently no legal framework in South Africa that can allow for the protection of rights regarding the use of AI in any part of South Africa (Brand, 2022). However, as of August 2024, a national policy framework was designed to lay a guiding framework for a future National AI Policy (Department of Communications and Digital Technologies, 2024). This position is not unlike that of the North-West University referred to below. There is no legal requirement or national imperative that requires South African universities to develop their own AI policies (Brand, 2022). This lack of legislation presents a significant challenge to senior management when considering the need for policy, against a legal landscape that is hardly supportive of the process. However, there have been several papers proposing approaches to drafting a future national regulatory framework. Mtuze and Morige (2024) point to the urgent need for legislation to be developed sooner rather than later. The crux of these authors' proposal lies in an imperative to align this legislation with the Constitution of South Africa. This means that both the university and

the lecturer concerned are open to liability in any case of AI misconduct on the part of the student. Even if the university or lecturer could prove beyond a reasonable doubt that a student used AI unethically, without a law or university policy in place, it would be unclear how a judge would rule in such cases.

AI Policies, Position Statements, Policy Frameworks and Guidelines at South African Higher Institutions

Without national legislation in place, public universities in South Africa have no legal imperative to create AI policies. While this paper is not intended to be an exhaustive review of AI policy in South African HEIs, these polices, or lack thereof, form an integral part of the ecosystem that social science and history education lecturers and students must operate in. The University of Cape Town (UCT) is the only university at the time of writing that has published binding AI policy components as part of its August 2024 Digital and Online Education Policy (UCT, 2024). UCT have taken significant steps towards creating an environment that is both hospitable to ethical AI use among staff and students, while creating a more inhospitable environment for the unethical use of AI with various academic misconduct safeguards. Stellenbosch University (SU) relies on a different framework that is based primarily on a senate ratified position statement on the use of AI in academic activities. It is unclear how binding this policy would be in practice when faced with cases of AI academic misconduct. That said, the statement refers to AIgerism and links the statement to pre-existing plagiarism policies (SU, 2024). The University of Johannesburg (UJ) has no AI policy and relies on a series of guidelines (UJ, 2023). North-West University (NWU) also has AI guidelines, but has published a policy framework that is aimed at developing a concrete AI policy in the foreseeable future (NWU, 2024). The University of the Free State (UFS) has no published guidelines. However, UFS are in the process of drafting such guidelines, four years after the fact. This lack of regulatory structure is indicative of an environment where unethical AI usage can thrive unchecked. Thus, the risk of unethical AI is unmitigated; neither students nor staff have a framework to guide the use or integration of AI in academic pursuits. Perhaps such universities without any AI framework should make the sagacious decision to formulate and adopt policies and principles for AI in higher education. Until then, research recommended by this paper may remain unpracticable in environments unsuited to unethical AI integration.

Therefore, aside from UCT, no university in South Africa, to date, has a legal standing to manage staff or student use of AI. Without formal policies, students could argue that

they were not aware that AI usage could constitute plagiarism. A policy review would allow for fair notice of what constitutes plagiarism in the context of AI (Tarisayi, 2025). While current university AI guidelines refer to older plagiarism policies, legal ramifications could ensue from attempts to penalise students for AI usage. Chauke et al. (2024) recommend designing innovative AI policies at HEIs that are cognisant of the complexities of AI use beyond copying from generative AI. While Turnitin may highlight a body text lifted directly from ChatGPT as well as text paraphrased from a student's original work, AI-enhanced writing should be distinguished from blatant plagiarism (Chauke et al., 2024).

AI and ethics at South African HEIs

An important aspect of AI policy in South African HEIs is their alignment with ethics in AI. According to Goffi (2023), international codes on AI ethics are based on Western perspectives and philosophy. These Global North codes of AI ethics are seen by scholars of the Global South as inherently supportive of Western vested interests (Goffi, 2023:15). According to Goffi (2023:15) "Western concerns are presented as universal". This runs the risk of African concerns and interests being largely ignored in favour of Western ones. GenAI has been trained on datasets that largely perpetuate the Western bias in responses. Ayandibu (2024) posits that HEIs should "continuously evolve an ethical and policy support framework" for AI in education. This is a laudable argument. However, HEI's decision-making processes are lengthy and cumbersome, which has led to a preference for guidelines that are easier to evolve and update as needed in HEIs

The principles that De Villiers-Botha (2024) outlines could also assist in formulating and framing policy, as principles are likely to evolve far more slowly than specific regulations, and could create a framework where only aspects of an AI policy would need to be updated. Briefly, the principles are as follows: Beneficence or the good or benefits that would stem from AI. Non-Maleficence: AI would not cause harm. Also impacting autonomy and rights enshrined in law. Justice and fairness, which would consider fair access as well as inclusivity, explainability and transparency and a form of due process before incorporating AI systems into teaching and learning, for example (De Villiers-Botha, 2024).

Decolonising education at South African HEIs

Integrating AI in South African HEIs without a policy framework may impact the decolonial project negatively, rather than using AI as a catalyst. Historically, the colonisers of Africa have used education to manage and control the colonised (Du Plessis, 2021). According to

Fatar (2018), decolonising education means the complete integration of all of humanity's varied knowledge systems into the curriculum at the tertiary level. However, while the curriculum has often been the focus of decolonial theory (Ajani & Gamede, 2021), there are myriad aspects that are crucial to the ongoing decolonisation process in higher education in South Africa. For example, how we teach and assess, as well as the continued dominance of English, a colonial language, as the medium of instruction at South African universities. The cost of multilingual education before the recent advances in AI in 2022 was considerable. It is challenges like this that create a degree of friction that impedes the decolonisation policies that South African universities have in place.

Despite such challenges, AI could help realise the multilingual aspect of the decolonial project at South African universities. A promising, if cautious, study explored the potential for AI and machine translation to convert English study materials into Sintu languages (Senekal & Brokensha, 2023). While translation would assist multilingualism in degree offerings, AI tools could realise this potential in a more ambitious manner. For example, AI could be used to provide mother tongue virtual tutor support, as well as an academic literacy development tutor that could explain academic writing in a mother tongue. Assessment could be translated into the Sintu languages, as well as articles and PowerPoint presentations. Lectures could be recorded, transcribed and translated using AI. However, with the potential to assist in decolonisation, comes various risks that could potentially derail efforts to decolonise South African HEIs.

The first issue that could negatively impact the decolonial project is that AI tools are generally designed in the Global North, regardless of contenders from other regions. With this comes Western bias problems stemming from more Western-centric training data (Goffi, 2023). AI does not yet include all knowledge systems in the way decolonial theorists espouse for higher education in South Africa. While the potential for cheaper translation exists, if students are not trained, they may assume that AI can only function in English. An English that is quite American, where British English is of more use to a South African university student. That assumption may lead to very few attempts to engage AI in mother tongues. While ChatGPT can potentially converse in most of South Africa's official languages, many other AI apps are not able to do this. Furthermore, if South African students lose their autonomy due to misuse and overreliance on AI, this could be considered a second colonisation of the mind that takes place during the decolonisation process. The result would be graduates who are not fit for purpose and would echo colonial and Apartheid efforts to provide substandard education to South African students of

colour.

This literature review has considered the issue of AI integration through research on AI in higher education under the proviso that there is a critical shortage of AIED literature that specifically focuses on social sciences and history education. The discussion that follows explores and argues for the next steps that could be taken in research to promote and facilitate a more authentic integration of AI in social sciences and history teacher training programmes.

Findings and discussion

Social sciences and history teacher training programmes in relation to AI policy environments

The primary challenge to authentic AI integration is the current state of the AI policy environment in South African HEIs. There is considerable variance among AI policy, guides, position statements, frameworks, or anything but a library guide in the sample of South Africa's universities. It follows that it would be crucial to investigate the present impact of these varied environments on how social sciences and history education lecturers are currently navigating the issue of AI integration in their modules. It is not enough to make assumptions in this regard based on UCT's more comprehensive Digital and Online Policy that includes AI (UCT, 2024), or UFS's lack of any kind of document beyond a library guide. Understanding the impact of each of these environments could help motivate the development of more comprehensive policies that could help create a more hospitable environment for the ethical use of AI in such teacher training programmes.

Tool theory, according to Vygotsky (1978), should be considered in relation to the relationship between the environment and the child. However, it is extended to the student and staff member in this case. Perhaps such research could assist policymakers at the universities lagging behind UCT. Certainly, the risk of no AI policy seems quite clear. It could lead to the collapse of the integrity and professional purpose of social sciences and history teacher training programmes. That said, when policy is devolved to heads of schools, heads of departments, module co-ordinators and lecturers, this can lead to significant variations in how AI is integrated within a group of social sciences and history modules and across universities. A policy structure that encourages students to use AI as tools, applied to their actual ZPD when pursuing academic assessment and studies, would be ideal. A policy would support the development of academic literacy and professional teaching skills as intended by the social sciences and history didactic modules.

Social sciences and history staff and student context, perception and use of AI

Context presents serious challenges to AI integration and shapes the perception and use of AI. Intervention research can hardly take place unless the context of staff and students is mapped out sufficiently in relation to their perception and use of AI. South African universities are called to rectify structural inequality in South Africa in the shadow of Apartheid. Therefore, the context of social sciences and history students must be investigated and include an assessment of their basic literacy, academic literacy, digital literacy and AI literacy. How students perceive AI is crucial to understanding how they use it. Perhaps the perceived rampant misuse of AI by students is due to the perception that AI can replace the human student in assessment. Without solid data, this line of argument is mere conjecture. Though with conclusions based on data, they would guide an AI integration strategy by social sciences and history educators. The risk is evident; should students not perceive AI as a tool and apply it to shortcut the academic process, Vygotsky (1978) is quite evident in terms of the consequences; students will not develop as the academic tasks have all been brought into the easier sector of the ZPD, which requires no effort.

AI optimists in AI research often neglect to consider the context of the student body. COVID-19 has demonstrated the glaring inequalities within South African society and HEIs (Hlatshwayo, 2022). Research that investigates the complexities of the South African teaching and learning context and its impact on AI integration will be a crucial initial stage. Within a lecture group, there could be varying degrees of academic, digital and AI literacy. Research that investigates the digital context of students would assist in the appropriate differentiation of learning. The digital literacy of academic staff must be mapped so that professional development can be conducted and differentiated according to the individual needs of lecturers. Specific training for HODs could also be considered so that they could guide attempts by social sciences and history education lecturers in their attempts to integrate AI in their modules.

While research has outlined the generational gap between academic staff and students, and also implied a homogenous staff body of baby boomers (Wessels & Van Wyk, 2022), this is hardly the case. Academic cohorts have a mix of baby boomers and Generation X, as well as a growing number of millennials joining academia. These comparatively younger staff could form the backbone of initiatives to reform teacher training programmes and assist in developing the AI (and digital) literacy of their more senior colleagues. "Preparing Pre-Service Teachers for Teaching in the Digital Age" constitutes one of the few studies to focus on teacher training in South African research (Arek-Bawa & Reddy, 2024).

However, it also makes use of surveys as research instruments. Nonetheless, it makes a valuable contribution to illuminating the student experience of AI and digital integration at South African universities. It also demonstrates that Technological Pedagogical Content Knowledge can be readily transferred from ICT integration studies to those that focus more on AI integration (Arek-Bawa & Reddy, 2024). Assessment analysis could be used with other data instruments to provide rich data and allow for triangulation.

Research pathways that aim at making an ecosystem that supports authentic and ethical AI integration in social sciences and history teacher training

Investigating current assessment design in order to construct assessments that are resistant to the unethical use of AI

Without a formal AI policy, assessment management currently occupies a grey area. Although Turnitin can release a plagiarism score to students, AI scores can only be viewed by the assessor. Students regularly seek guidance on the use of AI in assessment, with concerns about plagiarism. While the AI detector presents a score, there are no guidelines or training for lecturers on how to interpret the score. Even once AI usage has been identified, there is no formal policy on what measures should be taken. Essentially, junior academic staff are in a situation where they need to invent and improvise policy haphazardly from day to day. This constitutes a high-risk environment if students opt to litigate and challenge decisions made by lecturers on assessment. As there are no directives regarding AI integration, each lecturer is left to manage the tension between policing and integrating AI in their modules. This situation will likely continue until AI policies are put in place.

Despite a growing body of international research on the application of AI in teacher training (Wu, 2023), this is comparatively understudied within the South African context. General studies on AI in higher education have primarily used interviews and surveys (Naidu & Sevnarayan, 2023; Singh, 2023; Chauke et al, 2024; Sevnarayan & Potter, 2024), and there is scope for studies that incorporate assessment analysis as a form of data analysis to provide a clearer picture of students' AI use. This would allow the experiences of social sciences and history education staff and students to be documented fully and inform research on designing assessment that encourages ethical use of AI and makes it challenging to successfully misuse AI. This would, in effect, be investigating how to create guardrails in the assessment that mandates students engage with the assessment authentically in a way that allows their academic effort to fall within their ZPD. Perhaps social science and history

education assessment should be evaluated as a 4-year program, ensuring that assessments fall within the general ZPD of each year group (Vygotsky, 1978).

Exploring the current module design for AI vulnerabilities to recommend solutions to design flaws

While recent developments in AI detection can assist lecturers in screening assessments for academic dishonesty, one study indicated that Turnitin picks up a variety of AI tools, including instances that do not constitute academic misconduct (Chauke et al., 2024). Unreliable AI detection will necessitate interviewing students if their assessments are analysed as part of a research project. As it stands, Turnitin will flag AI paraphrasing of students' own work in the same way as text that has been copied directly from GenAI. A considerable section of South African research has focused on ChatGPT, while the availability of diverse AI tools is rapidly growing. Research on AI integration in teacher training should consider a broader variety of tools that students could be trained on for use in the classroom. An essential component of a social science and history didactics module design should be strong policing elements in terms of unethical use of AI. Given the limitations of a Turnitin report, research into best practices stemming from investigations of current practices during the current AI policy climate may assist lecturers in using a set of AI misuse criteria in such cases. Effective policing, however, is only one part of effective module design. Investigating how guardrails that promote engagement with students' ZPD in coordination with similar guardrails in assessment would assist in developing a successful ecosystem.

Investigating how to promote the AI literacy of social sciences and history education students

Student literacy in AI is advocated from a position of augmentation and enhancement (Eager & Brunton, 2023), supported by Vygotsky's tool theory (Vygotsky, 1978). AI training for classroom use should take a similar approach. For example, GenAI could be used to brainstorm lesson plans rather than directly copying them verbatim (Van den Berg & Du Plessis, 2023). GenAI could also assist in writing reports, designing tests and rubrics and automating grading and feedback (Trust et al., 2023). They could provide guidance on teaching strategies and allow teacher-student and teacher-parent communication in multiple languages. Teacher training modules could be designed as a vehicle to train students to enhance their own pedagogy rather than relying on AI as a way to shortcut various pedagogical processes. Essentially, students could be trained on exactly how to employ AI

as a tool, according to Vygotsky (1978). Assessment, planning and teaching approaches are typical units in didactic social science and history modules. They would, therefore, be focal points in curriculum reform. The recommended research on the various forms of literacy referred to above would be essential if a more differentiated and personalised approach to promoting AI literacy is to be adopted in social science and history education modules.

The use of student context to design AI tutors for social sciences and history education modules

Research on AI tutors must draw from the research recommended to investigate the social sciences and history education students' context and varied literacies. A well-designed AI tutor has many potential benefits, however, it is not without risks (De Villiers-Botha, 2024). It can tutor in any of South Africa's eleven official languages, except for sign language. Therefore, by default, it could be a potent tool of decolonisation. Promoting multilingual accessibility is an important aspect of remedying the colonial and apartheid barriers that can be presented by English and Afrikaans modes of instruction (Emsely & Modiba, 2024). AI may provide an alternative to the costs of multilingual education. It can be programmed to guide and assist in assessments in line with Vygotsky's tool theory and ZPD (Vygotsky, 1978). This kind of programming could help mitigate risks from misuse and misperception. AI tutor access would be seven days a week, 24 hours a day. This is in stark contrast to the availability of live tutors and academic staff. It can also be trained on the module, as well as the social sciences and history curriculum policy statements. AI tutors generally include a name and profile picture that could be based on an inclusive historical figure from South Africa's rich, though painful, history. Realising these potentials would require design research well beyond the theorising of the current paper. The models would also need extensive field testing and continued adaptation. Such a project would suit cross-university collaboration. However, the design of AI tutors should be centred around a support role, not the replacement of human lecturers (Mhlanga, 2023).

Conclusion

It is evident from this review that South African research in social sciences and history teacher training is at a nascent stage. Given the twofold nature of AI, its potential enhancement or risk of overreliance, authentic integration of AI should be implemented with direct social sciences and history education student training in modules, guided by an AI policy. Left to their own devices, elements of the student body may make incongruent

choices. As AI integration is not currently mandatory in South African social sciences and history teacher training modules, these choices will also be reflected in their classroom practice. Instead of graduating a body of NQT social sciences and history teachers fully equipped to integrate AI and the 4IR in the classroom, there is a risk of reproducing the digital inequalities that stem from the varied contexts of the students. In turn, these graduates could reproduce those same inequalities in their classrooms. This risk should alarm theorists and proponents of decolonisation in South African HEIs. Research-led initiatives that prioritise AI integration in social sciences and history teacher training should also form part of a growing body of research that should guide the formation of AI policies at South African universities. These policies are urgently required to manage the use of AI in assessment in higher education and to assist in revising and reforming social sciences and history education modules. Authentic integration of AI in social sciences and history teacher training is dependent on support from a formal AI policy, staff professional development and further empirical research.

Limitations

This paper aimed to conduct a conceptual review of AI integration in South African higher education within social sciences and history education. Pivotal studies from 2022 to 2025 were drawn from papers that considered AI integration broadly in the South African higher education sector to develop arguments for future research paths in social sciences and history teacher training programmes. Only studies in English were included. This aspect of the inclusion criteria may have resulted in non-English studies being overlooked. The pivotal search strategy may have missed some studies that could have further enriched the findings of the conceptual review. While this paper makes recommendations for AI policy, policy was not the primary focus of this paper, and its recommendations are based on the relationship between policy and AI integration in social sciences and history education modules. The central argument of the paper focused on the integration of AI in social sciences and history education. Given its focus on social sciences and history, the findings are not necessarily generalisable to other didactics modules or other disciplines. Recommendations for future research on AI integration in modules other than social sciences and history education are beyond the scope of this paper.

Recommendations

AI will not be successfully integrated or applied in social sciences and history teacher training programmes unless a more conducive environment is fashioned. The key to transforming the academic environment is research that examines the context of AI integration in order to develop suitable interventions in teaching and learning. This context encompasses students, lecturers, administrators and the wider policy environment. social sciences and history student AI literacy cannot be improved without a nuanced awareness of students' digital cultural capital literacy and the degree to which scaffolding is required. The same is true of insisting that lecturers embrace AI without engaging the need for varying levels of professional development. The recommended research would be in a solid position to guide the development and revision of formal AI policies that could provide a suitable framework for AI integration. This paper recommends implementing mandatory professional development training for lecturers to develop their AI literacy. This could build on pre-existing programmes that develop digital literacy and proficiency in student management systems. social sciences and history education modules and degree programmes must be revised and reformed with respect to AI integration, especially regarding assessment practices. However, it is not sufficient to integrate AI with assessment and pedagogy. This paper contends that social sciences and history pre-service teacher training modules should be future-proofed and redesigned to prepare student teachers to apply AI and digital integration in the classroom. AI literacy development for education students should be translatable to school classrooms and not limited to application in higher education. Finally, this paper posits that there is an urgent need for umbrella research projects within South African Education Faculties and through joint university research partnerships. This paper recommends that future research on AI integration in social sciences and history education should consider decolonial theory as a potential theoretical framework, given the possible benefits and risks AI presents to the decolonisation of education in HEIs.

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