Bridging Innovation and Practice: Female Educators' Engagement with Artificial Intelligence in Zimbabwean Higher Education

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ABSTRACT

Artificial Intelligence (AI) is increasingly reshaping higher education, creating opportunities to enhance teaching, learning, assessment, research and administration while raising concerns about equity, ethics and institutional preparedness. This study explores female educators' experiences of AI use in Zimbabwean higher education. Using a qualitative-dominant exploratory mixed-methods design, data were collected through an online survey of 40 female educators and two focus group discussions involving 13 female lecturers from two universities. Findings show that participants primarily viewed AI as a practical and assistive technology supporting lesson preparation, assignment design, research, presentations, plagiarism checking and administrative tasks. Survey results indicated that 53.8% reported moderate AI understanding, 30.8% high understanding and 7.7% very high understanding, while 77.5% supported AI integration in higher education. Participants valued AI for saving time, improving efficiency, supporting differentiated learning and expanding access to information. However, concerns included overreliance, weakened critical thinking, fabricated citations, academic dishonesty, privacy, inadequate training, poor connectivity, limited infrastructure and financial constraints. The study does not claim gender differences in AI use but highlights how participating women experience AI within gendered professional and institutional conditions. The study concludes that responsible AI integration in Zimbabwean higher education requires AI literacy, ethical guidance, reliable infrastructure, affordable access and gender-responsive institutional support.

Keywords: Artificial intelligence, female educators, higher education, Zimbabwe, AI integration, digital inequality, academic integrity

INTRODUCTION

Artificial intelligence is rapidly reshaping higher education by changing how knowledge is created, delivered, assessed and managed. Its applications now extend across teaching and learning, student assessment, institutional administration and learning analytics, making it one of the most influential technologies in contemporary education. In higher education, AI is increasingly used to personalize learning, automate routine tasks, generate content, support feedback and improve decision-making. At the same time, its growing presence has raised concerns about academic integrity, data privacy, bias, overreliance and the possible weakening of human-centered pedagogy. AI is therefore not simply a technical innovation; it is a transformative force that is redefining educational practice, policy and professional roles.

The integration of AI in education has attracted increasing scholarly attention because of its potential to improve efficiency, access and learning outcomes. Research shows that AI can support adaptive learning, intelligent tutoring, automated grading and predictive analytics, while also assisting educators with administrative and instructional tasks (Ahmad et al., 2022; Chen et al., 2020; González-Calatayud et al., 2021; Hashmi & Bal, 2024; Zawacki-Richter et al., 2019). However, the literature also cautions that the educational value of AI depends on how it is used, by whom and within what institutional conditions. Without adequate training, infrastructure and ethical guidance, AI may deepen inequalities, encourage misuse and undermine the quality of teaching and learning (Bahroun et al., 2023; Giannakos et al., 2024; Gupta et al., 2025).

Although AI in education is widely discussed, less attention has been given to the experiences of female educators, particularly in African higher education contexts. The situation is exacerbated by the fact that while the gender divide in digital technology can be narrowed through education and with the aid of female teachers, it can also impact negatively by creating and maintaining gender differences (Luvanda, 2023). This is an important gap because female educators often carry significant teaching, research and administrative responsibilities, which may shape both their willingness to adopt AI and the ways they use it. Their experiences may also reflect gendered differences in access to digital tools, confidence in technology use and exposure to professional training. Understanding how female educators engage with AI is therefore crucial for developing more inclusive and context-sensitive strategies for AI integration.

This study was guided by the following research questions: (1) How do female educators in Zimbabwean higher education understand AI? (2) Which AI tools are they aware of and using in their professional practice? (3) What benefits do they associate with AI use (4) What challenges and ethical concerns shape their AI adoption? (5) What forms of institutional, technical and professional support do they require for responsible AI integration? By examining survey responses alongside focus group discussions, this study captures both broad patterns and deep shared meanings. The findings contribute to ongoing debates about the role of AI in education while also highlighting the gendered and contextual realities that shape adoption in Zimbabwean higher education.

The findings contribute to the literature by providing empirical evidence on how female educators in Zimbabwean higher education understand, adopt and negotiate AI within conditions of infrastructural constraints, limited institutional guidance and gendered professional demands. AI adoption emerges not merely as a matter of technological access, but as a pedagogical, ethical and equity issue requiring context-sensitive institutional responses.

Background

Across contemporary higher education, artificial intelligence (AI) is becoming an increasingly important driver of pedagogical innovation, institutional efficiency and academic support. As universities and colleges seek innovative ways to improve teaching, learning, research and administration, AI technologies are increasingly being adopted as tools for efficiency, personalisation and academic support. From intelligent tutoring systems and predictive analytics to generative platforms such as ChatGPT, AI is redefining how knowledge is delivered, accessed and managed within educational institutions.

However, alongside these opportunities come complex ethical, pedagogical and institutional challenges that require critical examination. Understanding how educators engage with AI is therefore essential, particularly in contexts where digital transformation is uneven and shaped by broader issues of access, training and inclusion. Against this backdrop, the present study explores the use and integration of AI among female educators in Zimbabwean higher education, situating their experiences within global debates on educational innovation, equity and responsible technology adoption.

AI in Higher Education: Expanding Roles and Opportunities

Artificial intelligence (AI) is increasingly embedded in higher education, where it is used to support teaching, learning, assessment, administration and learning analytics. Recent literature shows that AI can enhance personalised learning by adapting content to students' needs and preferences, improve feedback through intelligent tutoring systems and support both educators and students through generative tools such as ChatGPT (Ahmad et al., 2022; Bahroun et al., 2023; Chen et al., 2020; Hashmi & Bal, 2024; Mittal et al., 2024; Onesi-Ozigagun et al., 2024; Qian, 2025; Samala et al., 2024; Zawacki-Richter et al., 2019). These technologies are reshaping traditional educational practices by enabling adaptive content delivery, automating repetitive tasks and creating more interactive learning environments.

In addition, AI has been shown to improve efficiency in administrative and academic support functions, including admissions, scheduling, grading and early warning systems for student success (Ahmad et al., 2022; González-Calatayud et al., 2021; Rao & Suhasini, 2025; Rodriguez-Ortiz et al., 2025). Such applications

demonstrate that AI's role in higher education extends beyond pedagogy into institutional management, making it a transformative force across the academic ecosystem.

Ethical, Pedagogical and Institutional Concerns

The literature also emphasises that AI is not a neutral educational tool. While it offers opportunities for improved engagement, workload reduction and more responsive learning environments, it also raises major ethical and pedagogical concerns. Scholars point to risks such as data privacy, algorithmic bias, academic dishonesty, overreliance on AI and the weakening of critical thinking when AI is used without clear pedagogical grounding or ethical oversight (Bahroun et al., 2023; Chiu, 2023; Giannakos et al., 2024; Gupta et al., 2025; Harry, 2023; Mittal et al., 2024; Yusuf et al., 2024).

These concerns underscore that successful AI integration requires more than access to technological tools. It demands robust institutional policies, ethical governance frameworks and AI literacy initiatives that equip educators and students to use these systems responsibly. Without such structures, AI adoption risks reinforcing inequities and undermining educational quality rather than enhancing it.

Uneven Adoption and User Ambivalence

Another recurring theme in the literature is the unevenness of adoption of AI among educators. Zawacki-Richter and others (2019) note that much of the research on AI in higher education has focused on technical systems rather than educator participation, while Chan and Hu (2023) show that students often see generative AI as useful but remain concerned about ethics, accuracy and skills development. This suggests that user attitudes toward AI are complex and often ambivalent. Educators and students may appreciate the practical value of AI while simultaneously worrying about its long-term consequences for learning quality and academic integrity. This duality highlights the importance of understanding how users negotiate both enthusiasm and caution in their engagement with AI technologies.

Infrastructure, Training and Capacity Gaps

Studies further indicate that access to training and infrastructure strongly shapes AI integration. In many contexts, educators learn about AI informally through colleagues, workshops, online resources and self-study rather than through structured institutional training (Chen et al., 2020; Zawacki-Richter et al., 2019). Where training is limited and infrastructure is weak, AI use tends to be uneven, experimental and dependent on personal initiative. This is especially prevalent in lower-resource settings, where internet access, device availability and electricity remain critical barriers to digital innovation. In such contexts, AI adoption may be constrained not by willingness, but by systemic limitations that reduce opportunities for sustained and equitable use.

Gender and AI in Higher Education

A further gap in literature concerns gender-based experiences of AI. Although many studies discuss AI use among educators generally, fewer focus on female educators as a distinct group. Yet gender may influence digital confidence, workload, access to support and attitudes toward technology. Female educators often manage heavy teaching and administrative responsibilities, which may make AI attractive as a time-saving tool, but they may also approach it cautiously because of ethical concerns, limited support or unequal access to training. In African higher education contexts, where digital inequality is often pronounced, a gender-sensitive analysis is particularly important. Understanding how female educators experience AI is essential for designing interventions that promote inclusion, confidence and equitable participation in technological transformation.

The Zimbabwean Context and Research Gap

Artificial intelligence (AI) is rapidly transforming higher education globally, creating opportunities to enhance teaching, learning, research productivity and institutional administration. However, these opportunities and risks are not experienced uniformly across contexts, as their impact is shaped by institutional readiness, digital

infrastructure, policy environments and socio-economic realities. In Zimbabwe, where AI integration in higher education is still emerging, empirical evidence remains limited.

The most directly relevant Zimbabwean study on women and AI is the work of Makudza et al. (2025), which investigated rural women's adoption of AI chatbot technology in agricultural communities in Buhera and Nyanga districts. Surveying 206 communal women farmers, the study demonstrated that AI-enabled chatbots improved access to agricultural and climate information, thereby enhancing climate resilience and decision-making. Importantly, the study found that 42% of respondents experienced lower levels of information access than men in their communities, highlighting the persistent gender-based digital divide. Simplicity of AI tools, perceived usefulness and infrastructure availability significantly influenced adoption, illustrating that women's engagement with AI is strongly determined by contextual and structural factors rather than willingness to embrace technology alone.

Within Zimbabwe, Muchowe et al. (2026) examined AI use among university students and found that AI utilisation positively influenced academic performance, although gender did not significantly moderate this relationship. While these findings suggest increasing acceptance of AI within Zimbabwean higher education, they also indicate that student experiences cannot be assumed to reflect those of academic staff. Unlike students, educators are expected not only to use AI for learning but also to integrate it responsibly into teaching, assessment, research supervision, scholarly writing and academic administration while navigating complex ethical and professional responsibilities. Consequently, there remains little understanding of how contextual factors such as institutional culture, workload, digital competence and organisational support shape AI adoption among university educators, particularly women.

Despite the growing body of international literature on AI in higher education, there is a notable absence of empirical research examining female educators' use and integration of AI within Zimbabwean universities. Existing Zimbabwean studies have focused primarily on students or rural communities, leaving the experiences of female academics largely unexplored. This omission is significant because female educators occupy pivotal roles in knowledge production, teaching, student mentoring and institutional leadership, yet they may experience AI adoption differently due to gendered workload patterns, unequal access to digital technologies, varying levels of AI confidence and institutional cultures that may not adequately support technological innovation. Consequently, higher education institutions and policymakers currently lack the evidence required to develop gender-responsive AI policies, professional development programmes and support systems that promote ethical and equitable AI integration.

Addressing this gap, the present study investigates female educators' understanding, use and integration of AI in Zimbabwean higher education by examining their awareness of AI technologies, patterns of professional use across teaching, research, assessment and administration, perceived benefits and challenges, ethical concerns and the institutional, technical and professional support required to facilitate responsible and inclusive AI adoption. By providing context-specific evidence, the study contributes to the emerging literature on AI in higher education while informing policy and practice for equitable digital transformation in Zimbabwean universities.

METHODS

Research Design

This study adopted a qualitative-dominant mixed-methods design, combining an online survey with focus group discussions to explore female educators' use and integration of artificial intelligence in higher education (Creswell & Plano Clark, 2018; Morse, 1991). A mixed-methods approach was suitable because it allowed the study to examine both the breadth of AI awareness, use and attitudes across a wider group of respondents and the depth of shared meanings, concerns and experiences emerging through group interaction (Creswell & Plano Clark, 2018). The survey provided descriptive data while the focus group discussions complemented these findings by allowing participants to elaborate on their experiences, explain their views and respond to one another's perspectives in real time (Fetters et al., 2013; Krueger & Casey, 2015).

Research Setting

The study was conducted primarily across five Zimbabwean higher education institutions, described as three state universities and two private universities. The analysis focuses on higher education because 39 of the 40 participants were university lecturers. One respondent was an information technology teacher from a private secondary school. Because this participant falls outside the higher education population, her response is treated as contextual background only and is not used to support claims about Zimbabwean higher education unless explicitly indicated.

Study Participants

The study involved 40 female educators: 39 lecturers from five universities and one information technology teacher from a private secondary school. Survey respondents represented a range of academic backgrounds, teaching experience levels, age groups and institutional contexts. Thirteen female lecturers from two universities also participated in the focus group discussions. The focus group participants held master's degrees and were actively involved in teaching, research, assessment and related academic responsibilities. Participants were selected because they were directly engaged in educational practice and were therefore well positioned to comment on AI use and integration in professional work (Cohen et al., 2018).

Sampling Approach

A snowball sampling approach was used to recruit survey participants, whereby initial female educators who met the study criteria referred other potential participants from their professional acquaintances, helping to expand access to eligible respondents for the online survey (Biernacki & Waldorf, 1981; Naderifar et al., 2017). The survey was therefore distributed to female educators who were willing to participate and completed the consent process. For the focus groups, availability sampling was used and participants were invited from the two universities based on their role as female lecturers and their willingness and availability to take part in the discussions (Etikan et al., 2016). This strategy was appropriate because it ensured that participants had direct experience of the phenomenon under study and could provide information-rich accounts (Creswell & Poth, 2018; Patton, 2015).

Data Collection Methods

Data were collected through an online survey and focus group discussions. The survey included demographic items, structured questions and open-ended questions on AI understanding, awareness, professional use, training, perceived benefits, barriers, institutional support and future intentions. The instrument was developed for this exploratory study with reference to literature on AI in education, digital inequality and responsible technology adoption. Its content was reviewed for relevance and clarity by an expert during a pilot study involving three respondents who were not included in the main study. The survey was not a validated psychometric scale but was used solely to generate descriptive, exploratory evidence. Closed-ended items were analysed using simple frequencies and percentages, while open-ended responses were used to contextualise the emerging qualitative themes.

Two focus group discussions were then conducted to deepen and contextualise the survey findings. The discussions involved 13 female lecturers from two universities, with 8 participants in FG1 and 5 in FG2. Each focus group lasted approximately one hour. FG1 was conducted online and FG2 face to face using English. The discussions were facilitated by research assistants and explored participants' definitions of AI, current tools and applications, experiences of training, perceptions of integration, ethical concerns, barriers and support needs. With participants' informed consent, both discussions were audio-recorded and transcribed verbatim. The transcripts were subsequently reviewed against the original audio recordings by the research team to verify accuracy, correct transcription errors and ensure that participants' accounts were accurately represented. No translation was required because all discussions were conducted in English.

Data Analysis

The survey data were analysed descriptively, with attention to recurring patterns in responses related to AI understanding, usage, training, perceived benefits, challenges and future intentions. Because the survey contained a mix of closed and open-ended items, the analysis combined simple descriptive summarisation with thematic interpretation of written responses. This approach is consistent with mixed-methods analysis in which quantitative and qualitative components are examined in parallel and then integrated for interpretation (Creswell & Plano Clark, 2018; Fetters et al., 2013).

The focus group data were analysed thematically using an inductive approach. The transcripts were read repeatedly to develop familiarity with the data and to identify recurring meanings, similarities, differences and patterns across the two discussions. Initial codes were generated inductively from participants' accounts and subsequently grouped into broader themes, including pragmatic understandings of AI, AI as a productivity tool, ethical concerns, infrastructure-related barriers, training needs and institutional support.

Coding was conducted by the lead researcher, with the research assistants supporting transcript familiarisation and verification of the coded material. Coding decisions were documented through an audit trail comprising the initial codebook, records of theme development and refinement, analytic memos and reflexive notes on emerging interpretations. Differences in coding or interpretation were discussed among the research team and resolved through consensus, with reference to the original transcripts and relevant audio recordings where necessary. Themes were iteratively refined by comparing coded material across both focus groups and triangulating the qualitative findings with the survey results. The adequacy of the qualitative evidence was assessed based on the recurrence, richness and relevance of themes rather than statistical representativeness.

Trustworthiness

Several strategies were employed to strengthen the trustworthiness of the findings. Triangulation was achieved by comparing survey responses with focus group evidence, enabling broad descriptive patterns to be considered alongside more detailed and contextualised qualitative accounts. Participant clarification occurred during the focus group discussions, where participants were encouraged to elaborate on, clarify, correct, or refine their views in response to follow-up prompts and group interaction. This is reported as participant clarification rather than conventional member checking because participants did not review transcripts, summaries, or final interpretations after the analysis.

Credibility was further supported through the use of illustrative direct quotations, systematic documentation of coding decisions, including the development and refinement of codes, the grouping of codes into themes and the maintenance of an audit trail of analytic decisions. Reflexivity was maintained throughout the research process by critically considering how the researchers' professional backgrounds, prior knowledge of AI in higher education, expectations and assumptions might have influenced data collection, coding and interpretation. The research team therefore engaged in ongoing discussion of emerging interpretations and deliberately returned to participants' accounts and the original transcripts to ensure that interpretations remained grounded in the data.

Ethical Considerations

Ethical principles were upheld throughout the study. Ethical approval was obtained from Lupane State University before data collection commenced. Participants were informed about the purpose of the research and provided consent before completing the survey or participating in focus group discussions. Participation was voluntary and respondents were free to withdraw at any stage. Confidentiality was protected by using non-identifying descriptions during analysis and reporting. Focus group discussions were conducted in a respectful environment and care was taken to represent participants' views accurately and responsibly (Orb et al., 2001; British Educational Research Association, 2018).

FINDINGS

This chapter presents the findings on female educators' use and integration of artificial intelligence in Zimbabwean higher education. In response to the research questions, the findings are organised thematically rather than by data source. Survey results and focus group evidence are therefore integrated under each theme to show both the breadth of participants' responses and the depth of their lived experiences. The chapter begins with the demographic characteristics of respondents before examining participants' understanding of AI, awareness and use of AI tools, perceived benefits, challenges and ethical concerns and the forms of institutional, technical and professional support required for responsible AI integration.

Demographic Characteristics of the Respondents

Forty female educators participated in this study, including 39 lecturers from five universities and 1 IT teacher from a private secondary school. From this sample, 13 female educators from two universities also took part in focus group discussions. Participants ranged in age from their mid-20s to mid-50s. Most held master's degrees and their teaching experience varied from less than two years to over ten years. This diversity allowed the study to capture perspectives from both early-career and experienced educators, although the tertiary education sector was more strongly represented.

Awareness, Use and Support Needs

Table 1 provides a descriptive overview of the main survey findings relating to participants' AI awareness, understanding, current use, training exposure, attitudes, perceived benefits, challenges and support needs. The table is intended to provide a broad quantitative and interpretive snapshot of the survey data before the findings are discussed in greater qualitative depth. It also helps to show how the survey responses informed the thematic analysis by identifying the key areas that were later explored and expanded through the focus group discussions.

Table 1: Summary of Survey Findings on AI Awareness, Use and Support Needs

Survey area	**Key finding**	**Supporting evidence**	**Interpretation**
Understanding of AI	Respondents understood AI mainly as a practical and assistive technology.	Definitions described AI as digital or machine-based technology that performs tasks, provides information and supports human work.	AI was understood functionally, as a tool for improving work processes rather than as a purely technical concept.
Awareness and sources of learning	AI awareness varied, with most respondents reporting moderate to high understanding.	Among 39 respondents, 53.8% reported moderate understanding, 30.8% high understanding and 7.7% very high understanding. Learning occurred through colleagues and networks (62%), self-study and online sources (57.5%), formal training (40%), institutional initiatives (22.5%) and media resources (20%).	AI literacy is developing through mixed formal and informal pathways, but unevenly across respondents.
Training and capacity building	Training was a major need despite some prior exposure.	21 respondents had received AI training, while 19 had not received sufficient training and requested more workshops and support.	Awareness alone is insufficient; practical training is necessary for confident and effective AI integration.

Attitudes toward AI integration	Most respondents supported AI integration, but with caution.	40% agreed and 37.5% strongly agreed with AI adoption, while 15% were neutral, 2% disagreed and 1% strongly disagreed.	Respondents were generally positive about AI, but concerns about teacher-student engagement, independent thinking and possible role displacement indicate cautious optimism.
Current professional uses	AI was already being used in teaching, research and administration.	Uses included research support, assignment preparation, lesson planning, presentations, note-taking, plagiarism checking and student engagement.	AI is part of professional practice, but mainly in task-specific ways rather than through fully integrated pedagogical systems.
Perceived benefits	Respondents associated AI with improved efficiency, access and learning support.	Benefits included improved learning outcomes, personalised learning, workload reduction, improved access to information and more efficient teaching and research processes.	AI was viewed as a valuable educational resource when used responsibly and with appropriate safeguards.
Challenges and barriers	Adoption was constrained by training, infrastructure and ethical concerns.	Barriers included insufficient training, poor internet, limited devices, financial constraints, reliability concerns, privacy issues, ethical concerns, job security worries and reduced critical thinking.	AI adoption depends not only on willingness, but also on institutional, material and ethical conditions.
Support needed	Respondents wanted structured institutional support for responsible AI use.	Requested support included workshops, technical support, better internet and infrastructure, affordable AI tools, peer networks and clear ethical guidelines.	Effective adoption requires not just access to tools, but also sustained training, infrastructure and ethical guidance.

Table 1 shows that female educators' engagement with AI is characterised by cautious but active adoption. Most respondents demonstrated at least moderate awareness of AI and were already using it for practical academic tasks such as research support, lesson planning, assignment preparation, presentations, plagiarism checking and administration. However, the findings also reveal that AI use remains uneven and largely dependent on informal learning, limited training and individual initiative. While participants recognised AI's value in improving efficiency, access to information and teaching support, they also raised concerns about overreliance, weakened critical thinking, academic dishonesty, privacy and inadequate infrastructure. Largely, the table suggests that responsible AI integration in Zimbabwean higher education requires more than positive attitudes but depends on structured training, reliable infrastructure, affordable tools, technical support and clear ethical guidelines. This are further explored in the subsequent themes.

The understanding of AI by female educators in Zimbabwean higher education

Participants generally understood AI in practical and functional terms. Survey responses described AI as digital or machine-based technology that performs tasks, provides information, imitates aspects of human intelligence and supports human work. Rather than offering highly technical definitions, respondents linked AI to efficiency, problem-solving, information access, research support, lesson planning and academic productivity. This suggests that female educators' understanding of AI was grounded mainly in its usefulness for everyday professional practice.

The focus group discussions reinforced this functional understanding. Participants described AI as a practical and assistive technology that could reduce the time required for academic tasks and support educators in preparing teaching materials, designing assessments and organising research-related work. One participant explained that AI tools "save time for human beings in doing their work" and can assist educators when they "develop a plan, do assessments or develop notes." At the same time, participants' definitions were not uncritical. Some associated AI with risks such as job insecurity, dependency and reduced individual effort, indicating that their understanding of AI combined appreciation of its usefulness with awareness of its possible consequences.

AI awareness and sources of learning

Survey and focus group findings showed moderate to high levels of AI awareness among participants, although knowledge and use varied across individuals. In the survey, respondents reported awareness of generative AI systems such as ChatGPT, Gemini, Copilot and DeepSeek; writing-assistance tools such as Grammarly and QuillBot; and academic-integrity platforms such as Turnitin, which participants associated with plagiarism checking and AI-related detection functions rather than with generative AI. Participants learned about AI through colleagues and professional networks, self-study and online sources, formal workshops, institutional initiatives and media resources. This indicates that AI literacy is developing through both formal and informal channels, but not in a uniform or fully institutionalised manner.

In terms of actual use, many respondents were already using AI-based and AI-adjacent tools in teaching, research, assessment and administration. Common applications included research assistance, assignment preparation, lesson planning, presentation development, note-taking, plagiarism checking and student engagement. The focus group discussions extended these findings by identifying tools such as ChatGPT, Meta's AI-enabled applications, Poe, DeepSeek, Turnitin and AI functionalities embedded in Microsoft Teams and Google Meet. Across both groups, lecturers reported incorporating AI into daily professional activities, with all participants in one focus group indicating daily use. This suggests that AI has already become part of female educators' academic practice, although often in task-specific rather than fully integrated pedagogical ways.

Benefits associated with AI use in teaching, learning, research, assessment and administration

Participants associated AI with several benefits across teaching, learning, research, assessment and administration. Survey respondents highlighted improved student learning outcomes, support for personalised and differentiated learning, reduced workload, easier access to information and more efficient teaching and research processes. AI was valued for helping educators prepare lessons, generate teaching ideas, support assignment design, develop presentations, check plagiarism and manage routine administrative tasks more efficiently.

Focus group participants similarly emphasised AI's capacity to save time, improve productivity and support academic work. They viewed AI as particularly useful for research, planning, communication, assessment preparation and administrative organisation. Some participants also highlighted its inclusive potential, especially through assistive technologies such as speech-to-text and text-to-speech applications, which can support learners with hearing or visual impairments. In this respect, AI was valued not only as a productivity tool but also as a possible means of expanding access and reasonable accommodation for diverse learners.

Challenges and ethical concerns shape AI adoption

Although participants were generally positive about AI, both the survey and focus group data showed that adoption is shaped by significant challenges and ethical concerns. Survey respondents identified insufficient training, poor internet access, limited infrastructure, inadequate devices, financial constraints, reliability concerns, privacy issues and unclear ethical guidance as major barriers. These findings show that AI adoption is not determined by willingness alone but also by the material and institutional conditions within which educators and students work.

Ethical concerns were especially prominent in the focus group discussions. Participants worried about plagiarism, false citations, academic dishonesty, overdependence on AI and the weakening of critical thinking. One lecturer

observed that some students rush to use AI tools instead of analysing questions independently, raising concern that education may produce learners who are unable to think critically. Another participant noted that AI-generated work may include false citations, requiring educators to verify references manually. These concerns led participants to emphasise the importance of human oversight, academic integrity and clear institutional rules governing responsible AI use.

Professional competence and critical thinking risks

A prominent concern among participants was that excessive dependence on AI could undermine the acquisition of essential professional competencies, particularly critical thinking, problem-solving and applied practice skills. One participant from Focus Group 2 expressed concern that the growing reliance on AI in higher education could undermine the development of critical thinking and professional competence among future social workers. From a social work perspective, the participant argued that practitioners are expected to analyse complex social problems, apply professional judgement and work directly with individuals, groups and communities. However, the participant observed that many students increasingly depend on AI tools to complete assignments, with some submissions appearing to be "90% plus" AI-generated. This percentage is reported as the participant's perception or as an indicator derived from AI-detection tools, not as independently verified proof of the actual proportion of AI-generated content. While students may perform well in written assignments, the participant noted that they often struggle when presented with real-life scenarios that require the application of knowledge and problem-solving skills.

Reflecting on the long-term implications, the participant questioned whether graduates would be adequately prepared to work in diverse and often challenging community contexts:

"I'm just thinking that maybe in five to ten years' time, the students we are training will be unable to go into the world and work with individuals, groups and communities. When you give them assignments, they are using those AI tools... but when you give them a real-life situation where they have to apply their knowledge, they are performing dismally."

The participant further suggested that excessive dependence on AI may be particularly problematic in developing-country contexts, where professionals frequently encounter complex social challenges that require contextual understanding, critical reflection and practical problem-solving. In their view, while adapting to technological trends is important, students must still develop the capacity to "solve problems using your own brains" and work effectively with communities. Consequently, the participant perceived AI as a potential "ticking time bomb" that could compromise the competence and preparedness of future social workers if its use is not balanced with opportunities for independent learning and critical engagement.

However, participants argued that to address what they termed "brain redundancy," the use of AI should not undermine the development of critical thinking and problem-solving skills that education is intended to cultivate. They emphasised the importance of maintaining the capacity to develop context-specific responses to complex social challenges. In their view, a balance must be struck between leveraging AI and fostering the ability to generate **"**homegrown solutions" that are responsive to the realities and needs of specific individuals and communities. Participants argued that such competencies cannot be fully replicated by AI and therefore continue to require human judgement, contextual understanding and professional intervention.

One participant from Focus Group 2 explained:

"The real challenge is that some issues can only be addressed through psychometrics that mainly focus on abilities, personalities, attitudes, behaviors, mental health and social functioning. Of which understanding these requires professional judgment and a feel for the context, which is something you can automate. On top of that, you need to develop homegrown solutions that are tailored to your specific situation. Unfortunately, AI may not be built for that. So we are left with a tough problem: how to deliver nuanced, localised interventions without relying on a quick technological fix."

Infrastructure and digital inequality

Participants identified infrastructural and technological barriers as significant challenges to the effective integration of AI and digital learning technologies in higher education. They noted that unreliable electricity supplies, poor internet connectivity and limited access to appropriate digital devices often disrupt teaching and learning processes. These challenges were perceived to be particularly pronounced in rural and remote areas, where students frequently struggle to maintain stable internet connections and access online learning platforms.

One participant described how both lecturers and students are affected by these infrastructural constraints:

"Sometimes when you have these online lectures and platforms that we use, it's not everyone who has access. Even sometimes you as a lecturer can face problems. You are probably on Wi-Fi, then the electricity is switched off and at the end of the day that disrupts the lectures from continuing."

Participants further emphasized the geographical inequalities that shape students' experiences of digital learning. They observed that students from rural and peripheral areas often face persistent connectivity challenges, limiting their ability to participate fully in online learning activities and access to AI. As one participant explained:

"In my class there are students from rural areas such as Uzumba, Chimanimani and Beitbridge. We always have issues to do with connectivity and we always joke about them having to climb a mountain or the highest point to be connected."

In addition to connectivity challenges, participants highlighted disparities in access to suitable digital devices. They noted that some students rely on outdated or less capable gadgets that may not adequately support online learning platforms and AI-enabled educational tools, further exacerbating existing inequalities. Reflecting on these challenges, one participant stated:

"Some students also complain that their gadgets might not have the capacity needed. They have problems having the actual gadgets that are more effective in getting the relevant network on their system."

Overall, participants suggested that AI and digital technologies hold considerable promise for enhancing teaching and learning. However, their benefits may remain unevenly distributed unless broader infrastructural challenges related to electricity, internet connectivity and access to digital devices are addressed.

Forms of institutional, technical and professional support required for responsible AI integration

Participants identified several forms of support required for responsible AI integration. Survey respondents most frequently requested practical workshops, technical support, better internet connectivity, improved infrastructure, affordable AI tools, peer-learning networks and clear ethical guidelines. These requests indicate that educators do not simply need access to AI tools; they require structured support that enables them to use such tools confidently, critically and responsibly.

The focus group discussions reinforced this need for enabling institutional ecosystem. Participants called for sustained professional development through workshops, webinars, hands-on training sessions, help desks and peer-support structures. They also emphasised the need for institutional policies and ethical frameworks to guide responsible AI use in teaching, learning, assessment, research and administration. Such frameworks were viewed as necessary for addressing academic integrity, plagiarism, data privacy, accountability and the appropriate limits of AI use.

Essentially, the findings suggest that responsible AI integration depends on more than individual willingness. It requires institutional leadership, reliable infrastructure, affordable digital resources, continuous professional development and gender-sensitive capacity building. For female educators in Zimbabwean higher education, meaningful AI adoption must therefore be supported as a pedagogical, ethical and equity issue rather than treated merely as a technological innovation.

Table 2 presents a joint display integrating the survey patterns with the focus group themes. Its purpose is to demonstrate how the two datasets converged, complemented one another or introduced additional insights across the main areas of analysis. By placing the survey findings alongside the focus group evidence, the table makes the mixed-methods integration more visible and shows how the broader descriptive trends were deepened by participants' qualitative accounts.

Table 2: Joint Display of Survey Patterns and Focus Group Themes

Integrated theme	**Survey pattern**	**Focus group theme**	**Type of integration**	**Integrated interpretation**
Practical understanding of AI	Respondents defined AI mainly as digital or machine-based technology that performs tasks, provides information and supports human work.	Participants similarly described AI as a practical and assistive tool that imitates aspects of human intelligence and supports research, planning, communication and productivity.	Convergence	Both datasets show that female educators understand AI functionally, as a work-support tool rather than as an abstract technical system.
Awareness and adoption	Most survey respondents reported moderate to high AI understanding and awareness of tools such as ChatGPT, Gemini, Copilot, DeepSeek, Turnitin, Grammarly and QuillBot.	Focus group participants also named tools such as ChatGPT, Meta, Poe, DeepSeek, Turnitin and AI functions embedded in Microsoft Teams and Google Meet.	Convergence	The two datasets confirm that AI awareness is already present, although uneven and that educators are familiar with both generative and academic-support tools.
Pathways to AI learning	Survey respondents learned about AI through colleagues and networks, self-study, online sources, formal training, institutional initiatives and media resources.	Focus group participants emphasised workshops, colleagues, ICT departments, professional networks, students and self-directed learning.	Complementarity	The focus groups explain how informal and peer-based learning operates in practice, adding depth to the survey pattern of mixed formal and informal learning pathways.
Training and capacity building	Twenty-one respondents had received AI training, but nineteen had not received sufficient training and requested more workshops and support.	Focus group participants strongly requested workshops, webinars, peer networks, help desks, technical support and ethical guidance.	Convergence and complementarity	Both datasets identify training as a central requirement, while the focus groups clarify the specific forms of support educators consider most useful.

Attitudes toward AI integration	Survey responses showed strong support for AI integration, with 40% agreeing and 37.5% strongly agreeing, although some respondents remained neutral or opposed.	Focus group participants accepted AI as useful and unavoidable, but repeatedly stressed the need for safeguards, human oversight and responsible use.	Convergence	The combined evidence indicates cautious optimism: educators support AI, but their support depends on ethical, pedagogical and institutional conditions.
Current professional use	Survey respondents reported using AI for research support, assignment preparation, lesson planning, presentations, note-taking, plagiarism checking and student engagement.	Focus group participants described using AI in teaching, research, administration, plagiarism detection, presentation preparation and communication.	Convergence	AI is already embedded in professional practice, but mainly for task-specific support rather than fully integrated curriculum or institutional transformation.
Benefits of AI	Survey findings highlighted improved learning outcomes, personalised learning, workload reduction, information access and efficiency in teaching and research.	Focus group participants discussed efficiency, differentiated learning, accessibility for students with disabilities and reasonable accommodation through assistive technologies.	Complementarity	The focus groups extend the survey findings by showing that AI is valued not only for efficiency, but also for inclusion and accessibility.
Ethical concerns and academic integrity	Survey respondents raised concerns about privacy, ethical use, reliability, reduced critical thinking, job security and possible weakening of teacher-student engagement.	Focus group participants gave detailed examples of plagiarism, false citations, overdependence, reduced critical thinking and the need for human oversight.	Complementarity	The survey identifies broad areas of concern, while the focus groups provide richer examples showing how these risks appear in everyday teaching and assessment.
Infrastructure and digital inequality	Survey respondents identified lack of infrastructure, poor internet access, limited devices and financial constraints as major barriers.	Focus group participants discussed poor connectivity, power cuts, high data costs and lack of devices affecting both lecturers and students.	Convergence	Both datasets show that AI adoption is constrained by material and institutional conditions, not simply by educators'

				willingness to use technology.
Discipline-specific professional competence	The survey noted concerns about reduced critical thinking and possible overreliance but did not strongly differentiate these concerns by discipline.	Focus Group 2 provided discipline-specific concerns from social work education, warning that overdependence on AI may weaken professional judgement, contextual reasoning and practical problem-solving.	Divergence and complementarity	The focus group data introduce a more discipline-specific concern that was less visible in the survey, showing that AI risks may vary by field of professional practice.
Support needed for ethical adoption	Survey respondents requested workshops, technical support, better internet and infrastructure, affordable tools, peer networks and clear ethical guidelines.	Focus group participants made similar requests and added emphasis on institutional leadership, encouragement, ICT support and continuing professional development.	Convergence and complementarity	The integrated findings show that effective AI adoption requires a coordinated institutional response combining training, infrastructure, ethical guidance and ongoing support.

Overall, Table 2 shows that the survey and focus group findings largely reinforce one another while also offering different levels of detail. The survey data provide a broad overview of participants' awareness, attitudes, uses, concerns and support needs, whereas the focus group discussions deepen these patterns by showing how female educators interpret AI within their everyday professional practice. The joint display demonstrates convergence around practical understandings of AI, cautious support for integration, concerns about academic integrity and critical thinking, infrastructural barriers and the need for sustained institutional support. It also highlights complementary insights, particularly around discipline-specific concerns, accessibility benefits and the gendered conditions shaping educators' engagement with AI. These integrated findings provide the basis for the discussion that follows, where the results are interpreted in relation to existing literature, responsible AI adoption, institutional readiness and the gender-sensitive implications of AI integration in Zimbabwean higher education.

DISCUSSION

The findings of this study show that female educators in Zimbabwean higher education are generally receptive to artificial intelligence, but their acceptance is cautious and conditional. Across the survey and focus group discussions, AI was understood mainly in practical terms as a technology that imitates human intelligence, supports information access and helps educators complete work more efficiently. This aligns with the wider literature, which presents AI as a transformative educational technology capable of improving teaching, learning, assessment and administration (Chen et al., 2020; Ahmad et al., 2022; Hashmi & Bal, 2024; Zawacki-Richter et al., 2019). At the same time, the study confirms that educators do not view AI as neutral or unproblematic. Rather, they see it as useful only when it is used ethically, supported institutionally and aligned with pedagogical goals.

A major finding was that many female educators are already using AI tools in their professional work, especially for research, lesson planning, presentation preparation, plagiarism detection and administrative efficiency. This reflects the literature showing that AI is increasingly embedded in routine academic and institutional functions (Ahmad et al., 2022; González-Calatayud et al., 2021; Rao & Suhasini, 2025; Rodriguez-Ortiz et al., 2025). The participants' experiences also support findings that generative AI has become especially visible in higher education because it is accessible, flexible and easy to apply in everyday tasks (Bahroun et al., 2023; Mittal et

al., 2024; Samala et al., 2024). However, as the discussions revealed, this use is often task-specific rather than fully integrated across the curriculum or institutional practice.

The study also found that AI is valued because it can reduce workload, support differentiated instruction and improve access to information. These perceived benefits are consistent with the literature, which highlights AI's potential to create more personalized, efficient and engaging learning environments (Chen et al., 2020; Hashmi & Bal, 2024; Gupta et al., 2025; Rao & Suhasini, 2025). Participants especially appreciated the time-saving dimension of AI, which is significant in higher education settings where lecturers juggle teaching, research, assessment and administration. The discussion also showed that some educators saw AI as useful for learners with disabilities, which aligns with broader claims in the literature that AI can promote inclusion when used appropriately.

At the same time, the findings revealed deep concern about the risks of AI overuse. Participants repeatedly warned that students may become dependent on AI and lose the ability to think critically or solve problems independently. This concern echoes the literature, which notes that overreliance on AI can weaken intellectual engagement and reduce the development of core academic skills (Bahroun et al., 2023; Giannakos et al., 2024; Harry, 2023; Yusuf et al., 2024). In a discipline such as social work, this concern is especially serious because professional competence depends on judgment, analysis and context-sensitive problem solving. The study therefore confirms that the value of AI is not only in what it can do, but also in what it may displace if used uncritically.

Academic integrity emerged as another important issue. Participants were particularly concerned about plagiarism, false citations and AI-generated assignments that do not reflect genuine student learning. This is consistent with prior research showing that generative AI creates serious challenges for assessment originality and citation reliability (Chan & Hu, 2023; Chiu, 2023; Giannakos et al., 2024; Gupta et al., 2025). The participants' emphasis on tools such as Turnitin reflects a broader institutional need to detect misuse while also redesigning assessments in ways that promote authentic learning. The literature suggests that this requires not only policing but also ethical AI literacy, assessment reform and clear policy guidance (Bahroun et al., 2023; Chiu, 2023; Zawacki-Richter et al., 2019).

The study also found that barriers to AI integration are strongly structural. Poor internet access, unreliable electricity, limited devices and financial constraints were repeatedly identified as major obstacles. These findings are important because they show that AI adoption is shaped by material inequality as much as by user attitude. The literature similarly emphasizes that AI integration is constrained by infrastructure and institutional readiness, especially in lower-resource contexts (Ahmad et al., 2022; Chen et al., 2020; Rao & Suhasini, 2025). In such settings, even supportive educators may be unable to use AI consistently unless institutions invest in connectivity, devices and technical support.

Training emerged as one of the most critical needs. The participants consistently asked for workshops, webinars, help desks, peer support and ongoing professional development. This aligns with the literature, which shows that educators often learn about AI informally and unevenly and that structured training is essential for responsible use (Chen et al., 2020; Zawacki-Richter et al., 2019; Gupta et al., 2025). The findings suggest that AI literacy should not be treated as a one-time exposure but as a continuing development need. This is particularly important for female educators who may already be carrying substantial workloads and may need both technical and confidence-building support.

Another important contribution of the study is its focus on women educators' experiences. However, because the study did not include male educators, it does not establish that women adopt AI more cautiously, more ethically or more deliberately than men. Rather, the findings show that the participating female educators combined practical interest in AI with strong concern for academic integrity, professional competence, workload, institutional support and equitable access. The gender-sensitive contribution of the study therefore lies in documenting how these women experienced AI within professional and institutional conditions that may be gendered, rather than in making unsupported comparative claims about gender differences.

Contrary to assumptions about women's technological dispositions, recent evidence indicates that women educators' engagement with artificial intelligence is predominantly conditioned by structural and institutional factors rather than inherent differences in ability or attitude. According to Li and others (2026), women academics often undertake additional forms of emotional support, student guidance, service and digital responsiveness that constitute largely invisible labour alongside their formal teaching and technology-related responsibilities. Digitalisation may further intensify expectations of constant availability and blur work–life boundaries, although AI can also reduce administrative workloads and improve time management when appropriately integrated into academic work (Inanç & Dündar, 2026; Meharunisa et al., 2024).

However, when AI tools are appropriately integrated, they can also reduce administrative burdens and improve time management, though these benefits remain contingent on broader institutional conditions that may perpetuate rather than dismantle gendered inequalities (Inanç & Dündar, 2026; Meharunisa et al., 2024). Similarly, disparities in AI confidence and anxiety are consistently linked to unequal access to training, prior exposure and supportive learning environments, with multiple studies finding limited or no significant gender differences in actual AI knowledge, perceived benefits, or adoption rates (Russo et al., 2025; Cachero et al., 2025; Slijepčević et al., 2026; González-Pérez et al., 2025). This evidence collectively underscores that professional development initiatives must address systemic barriers to training and mentorship rather than frame women as inherently less capable or more risk-averse technology users.

Gendered institutional conditions also extend to leadership, decision-making and caregiving. Women remain underrepresented in AI-related research and academic leadership and may encounter limited administrative support, exclusion from policy development and broader institutional biases that constrain their influence over the digital transformation of higher education (Young et al., 2023; Karim, 2025; Kalim et al., 2025). At the same time, women academics frequently navigate a double burden of professional and domestic responsibilities, with caregiving and household demands potentially restricting their participation in synchronous activities, professional development and technology-mediated work (Ibrahim & Elfani, 2025; Matobobo & Matobobo, 2025; Aruleba et al., 2023).

While digital technologies and AI offer potential flexibility for women leaders and educators, realising these benefits equitably requires institutional measures that protect work–life boundaries and implement gender-responsive policies, including flexible scheduling, childcare support and targeted leadership pathways (Inanç & Dündar, 2026; Karim, 2026). Accordingly, the evidence points to gendered institutional conditions and opportunities as the central lens for understanding women educators' AI engagement, rather than relying on assumptions that women are naturally more cautious, less confident, or more ethically driven in their technology use.

Broadly, the findings suggest that AI is already reshaping female educators' professional practice in Zimbabwe, but its adoption remains partial, uneven and constrained by infrastructure, training and ethical uncertainty. The study supports the literature's argument that responsible integration requires a balance between innovation and caution, with strong institutional frameworks, capacity building and pedagogical alignment (Bahroun et al., 2023; Giannakos et al., 2024; Gupta et al., 2025; Zawacki-Richter et al., 2019). The female educators in this study are neither uncritical adopters nor technological skeptics. Rather, they are pragmatic users seeking a sustainable and ethical way to engage with AI.

CONCLUSION

This study set out to explore female educators' use and integration of artificial intelligence in higher education in Zimbabwe. The findings show that female educators generally understand AI as a practical and assistive technology and are already using it in teaching, research, assessment and administration. They recognize its potential to save time, improve access, support personalized learning and enhance efficiency. However, they also express serious concerns about overreliance, plagiarism, weak critical thinking, infrastructure gaps and inadequate training.

The study concludes that female educators are cautiously supportive of AI, provided that its use is ethical, well supported and institutionally guided. Their views suggest that AI should not be introduced as a replacement for

human teaching and judgment, but as a tool that complements professional practice. For AI to be integrated meaningfully in Zimbabwean higher education, institutions must invest in infrastructure, training, policy development and ongoing support. Without these conditions, AI adoption is likely to remain uneven and potentially harmful to academic quality.

LIMITATIONS

This study has several limitations. First, the sample was small and non-probability based. Survey respondents were recruited through snowball sampling, while focus group participants were recruited through availability sampling. These approaches were suitable for exploratory research but may have introduced selection bias, particularly if participants belonged to similar professional networks or were already interested in AI. Second, the study relied on self-reported AI awareness and use, which may not fully reflect actual practice. Third, the focus group data were drawn from only two universities, limiting the diversity of institutional perspectives.

Fourth, one survey respondent was a secondary-school IT teacher rather than a higher education lecturer. This response has therefore been treated as contextual rather than central to the higher education analysis. Fifth, because no male educators were included, the study cannot determine whether the reported experiences are specifically gendered or whether they differ from those of male educators. Finally, the findings should not be generalised to all female educators or all universities in Zimbabwe. They should instead be interpreted as exploratory evidence from a small group of participating women working within institutional and infrastructural contexts.

RECOMMENDATIONS AND IMPLICATIONS FOR POLICY, PRACTICE AND RESEARCH

The findings underscore the need for a coordinated and context-sensitive approach to AI integration in higher education. At the policy level, institutions should develop clear AI governance frameworks and ethical guidelines that address academic integrity, plagiarism, citation practices, data privacy, accountability and the appropriate use of generative AI in teaching, learning and assessment. Such frameworks are essential for promoting responsible AI use while safeguarding educational quality and professional standards.

At the practice level, participants emphasized the need for sustained professional development to strengthen AI literacy and competence among educators. Institutions should invest in regular workshops, webinars, peer-learning communities and accessible technical support systems, including help desks and digital resource centres. These initiatives would enable educators to engage with AI confidently, critically and ethically, while fostering a culture of continuous learning and innovation.

The findings also highlight the importance of addressing persistent infrastructural barriers. Reliable internet connectivity, stable electricity supplies, access to appropriate digital devices and affordable AI tools are prerequisites for equitable AI adoption. Without such investments, existing digital inequalities are likely to be reinforced, limiting the potential benefits of AI for both educators and students.

Furthermore, curriculum and assessment practices should be re-evaluated to ensure that AI enhances rather than diminishes learning. Assessment designs should promote critical thinking, originality, problem-solving and the practical application of knowledge, particularly in professional disciplines such as social work, where contextual judgement and human-centred decision-making remain indispensable.

The findings further suggest that AI adoption should be understood as a pedagogical, ethical and equity issue rather than merely a technological one. Future research should therefore examine the long-term implications of AI for teaching, learning and professional competence, while paying particular attention to the gendered experiences of educators and the realities of AI implementation in resource-constrained African higher education contexts. Such research would provide valuable evidence for developing inclusive and contextually relevant AI policies and practices.

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