CHAPTER NINE

Reimagining Work-Integrated Learning in Rural School Contexts: Harnessing AI for Equitable Professional Development

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Abstract: Work-Integrated Learning (WIL) is essential for the professional preparation of student teachers; however, persistent inequalities in rural areas hinder access to mentorship and professional development. This qualitative case study, grounded in Critical Pedagogy, examines how the integration of Artificial Intelligence (AI) into work-integrated learning (WIL) can promote equitable professional development within teacher education in South Africa's Eastern Cape Province. A purposive sample of 30 participants, including Heads of Department, teaching practice supervisors, and student teachers, engaged in semi-structured interviews and focus group discussions as data collection methods. The data were analysed thematically. The findings revealed that AI-supported WIL enhances access to mentorship and professional development by expanding networks and facilitating feedback in isolated settings. Additionally, the study highlighted those structural, ethical, and contextual factors, such as infrastructural inequities and data governance, significantly influence the implementation of AI-supported WIL. The study concluded that the use of AI tools necessitates critical, relational, human-centred supervision. Furthermore, it emphasised the importance of involving rural educators in the design of AI-supported systems to ensure relevance and maintain pedagogical integrity. The study recommended that teacher education institutions should critically focus on enhancing digital infrastructure in rural areas to establish robust ethical governance for AI and adopt hybrid mentorship models. These recommendations elucidate how AI can substantially improve equitable, human-centred work-integrated learning (WIL) in rural teacher education.

Keywords: Artificial intelligence, equitable, harnessing, professional development, reimagining.

1. Introduction

Work-Integrated Learning (WIL) is a fundamental pedagogical approach in teacher education, bridging the gap between classroom theory and practical experience in real school settings. In the Eastern Cape Province of South Africa, characterised by rural schools, limited resources,

and inconsistent digital infrastructure, WIL is essential for preparing student teachers to navigate the complex and context-specific realities of the classroom (Du Plessis & Dreyer, 2024). However, the rapid rise of Artificial Intelligence (AI) as an educational tool has introduced both new opportunities and challenges for WIL (Hadzic, 2024).

Exploring AI-enhanced WIL in rural teacher education is important for two key reasons. Firstly, AI-driven professional development can help alleviate geographic isolation by connecting rural educators with broader professional networks and providing just-in-time learning resources (Fidalgo & Thormann, 2024). Secondly, the integration of AI into teacher education raises critical discussions regarding equity and pedagogical integrity (Karataş & Yüce, 2024). Recent empirical research and reviews have focused on AI applications for teacher professional development and classroom support, reflecting a growing interest and emerging evidence for customised, AI-assisted learning (Hu, 2024; Nazaretsky et al., 2022). As AI continues to advance, it becomes essential to investigate how it can be effectively utilised within WIL to uphold human-centred values (Hadzic, 2024).

Recent research highlights the transformative potential of AI in education, particularly in personalising learning and enhancing mentorship (Hwang et al., 2020; Preiksaitis & Rose, 2023). However, these benefits are not universally realised and depend on factors such as digital infrastructure and ethical governance (Hadzic, 2024; Nguyen et al., 2023). Digital inequality, encompassing data privacy, algorithmic bias, and the erosion of mentorship, is especially salient in under-resourced rural areas (Joyce et al., 2021; Langeveldt & Pietersen, 2024a, 2024b). AI systems are often designed for urban contexts, limiting their effectiveness in rural settings without adaptation (Bircan & Özbilgin, 2025; Min, 2023). In South Africa's rural education, particularly in the Eastern Cape, challenges such as poor infrastructure and connectivity hinder access to AI-supported professional learning (Fobosi & Malima, 2025; Mokoena & Seeletse, 2025). Therefore, AI could exacerbate the marginalisation of rural educators (Nguyen et al., 2023; Hussein et al., 2025).

Digital exclusion among rural educators in South Africa raises ethical concerns about data privacy, algorithmic bias, and the depersonalisation of mentorship in AI-driven WIL models (Acharya et al., 2025; Essien et al., 2022). This study explores how AI can enhance hybrid WIL models by focusing on AI innovation, human-centred learning, and social justice. This qualitative case study at a rural university in the Eastern Cape examines the experiences of Heads of Department, teaching supervisors, and student teachers involved in AI-supported WIL. By prioritising participants' perspectives, it highlights AI's potential to expand access to mentorship and addresses ethical challenges in under-resourced settings, contributing to discussions on equitable practices in teacher education (Joyce et al., 2021).

The study was guided by these research questions:

- How does the integration of Artificial Intelligence (AI) into Work-Integrated Learning enhance access to mentorship and professional development for rural educators?
- How do structural, ethical, and contextual conditions shape the implementation and use of AI-supported Work-Integrated Learning in rural teacher education?

2. Literature Review

WIL and teacher professional development (TPD) have traditionally occupied a significant position at the intersection of formal education and workplace practice, as well as in authentic assessment (Ghamrawi et al., 2024). The emergence of Artificial Intelligence (AI) within the educational landscape has introduced innovative possibilities, such as adaptive tutoring, automated formative feedback, and analytics-driven recommendations, which hold the potential to enhance mentorship and professional learning beyond geographical limitations (Amo-Filva et al., 2023; Koukaras et al., 2026). Nevertheless, the rapid implementation of AI also raises critical concerns regarding equity, contextual relevance, and ethical governance, particularly in rural and resource-constrained environments.

2.1 AI-supported WIL and the enhancement of mentorship and professional development

In teacher education, AI-supported platforms have been demonstrated to enhance formative feedback related to lesson planning, teaching practices, and reflective journals. This capacity bolsters the developmental dimensions of WIL, particularly in contexts where human supervision is limited due to geographical distance and substantial workloads (Billett, 2025; Brandão et al., 2024). AI plays a pivotal role in professional development within WIL by facilitating personalised learning pathways and connecting student teachers to broader professional communities. Through recommendation systems, automated feedback tools, and analytics-supported reflection, AI can promote self-directed professional growth and sustained engagement in mentorship, especially in rural and under-resourced settings (Hwang et al., 2020; Preiksaitis & Rose, 2023). It is essential to view AI not as a substitute for mentorship but as an enabling tool that enhances access to mentorship and professional learning opportunities within WIL.

2.2 Challenges and ethical considerations in AI-supported WIL

The existing literature highlights four interconnected areas of concern that influence the governance of AI in WIL:

2.2.1 Infrastructural inequities and the digital divide

Recent studies highlight disparities in connectivity and device availability in rural South Africa, which limit access to AI platforms (Dyantyi & Mkabile-Masebe, 2025). Inconsistent bandwidth and a lack of devices may result in AI solutions overlooking the educators they aim to assist

(Badshah et al., 2023), raising concerns that AI could reinforce existing inequities without targeted infrastructure investment (Dyantyi & Mkabile-Masebe, 2025). Research emphasises infrastructural inequities as barriers to the efficient integration of AI in low-resource education (Dyantyi & Mkabile-Masebe, 2025; Langeveldt & Pietersen, 2024). Policy analyses indicate that most AI systems are designed for higher-resource environments, which are rarely found in rural schools within the Global South (Katende, 2025; Walker, 2024). Inconsistent infrastructure risks exacerbating educational inequalities by benefiting those with existing digital capital (Begum & Gul, 2025; Facer & Selwyn, 2021). This study, drawing on Critical Pedagogy, examines infrastructure as a power dynamic that affects participation and agency in professional learning. Exploring participants' experiences in rural WIL placements underscores how infrastructural inequities shape the effectiveness and accessibility of AI-enhanced mentorship in rural South African teacher education.

2.2.2 Data privacy, ownership and governance

AI ethics in education emphasise transparency, consent, and accountability due to extensive data collection by AI systems, which raises concerns regarding data control and its benefits (Mohseni et al., 2021; Zha et al., 2025). The risk of opaque "black-box" models impacting professional judgments is particularly pronounced in weak regulatory environments (Mohammed & Malhotra, 2025; Yan et al., 2025). Research highlights ethical issues surrounding data privacy and governance, especially in relation to sensitive data employed for predictive analytics. In higher education and teacher training, these concerns influence the evaluations of student teachers, which are shaped by algorithmic processes (Sajja et al., 2025; Gulson et al., 2022; Williamson et al., 2020). Inadequate regulatory frameworks frequently favour platform providers over educators, thereby necessitating the establishment of ethical AI governance (Hillman, 2023; Nwaimo et al., 2023). Despite the growing focus on AI ethics, a significant portion of the literature remains policy-oriented, lacking insights into practice-based contexts such as Work Integrated Learning (WIL). This study centres on the concerns of rural educators and student teachers regarding data privacy and surveillance in their engagement with AI-supported WIL.

2.2.3 Algorithmic bias and cultural/contextual (mis)fit

AI models are frequently trained on datasets that predominantly reflect an urban, Global North context (Dhiman et al., 2025). In the absence of appropriate adaptation, these models can misinterpret local signals, thereby reinforcing existing power dynamics and perpetuating epistemic injustice (Zhu et al., 2025). Scholars have argued that such models normalise prevailing instructional practices while marginalising alternative approaches (Bulathwela et al., 2024; Zembylas, 2023). Within the realm of teacher education, biased algorithms may distort the interpretation of classroom practices and evaluate competencies inaccurately (Baker & Hawn, 2022; Bull, 2025). Empirical studies indicate that algorithmic systems tend to prioritise efficiency at the expense of critical contextual factors, such as class size and language diversity in rural

educational settings (Frempong et al., 2020; Gulson et al., 2022). As a result, AI tools risk reinforcing dominant pedagogical norms and rendering local practices invisible.

2.2.4 Human–AI balance and pedagogical integrity are crucial considerations

The ethical imperative of relational mentoring, professional judgement, and reflective practice is crucial for effective professional learning, which relies on dialogic reflection and the trust established between mentor and mentee—elements that artificial intelligence cannot replicate (Bagai & Mane, 2024). AI should serve to augment, rather than replace, these human dimensions (Raisch & Krakowski, 2021). Key challenges include the development of adaptable AI solutions tailored to local contexts, the establishment of robust data governance frameworks, and the creation of mentorship models that synergise human guidance with AI tools (Umar et al., 2021). While AI has the potential to enhance educational efficiency, uncritical implementation may undermine pedagogical integrity within relational frameworks such as WIL (Mulenga & Shilongo, 2025). Professional learning, which is fundamentally rooted in trust and empathy, cannot be supplanted by automated systems (Holmes & Littlejohn, 2024; Littlejohn & Pammer-Schindler, 2022). An over-reliance on AI may shift the educational focus towards measurement, thereby jeopardising reflective practice and professional agency (Bulut et al., 2024).

3. Theoretical Framework

This study employs Freire's Critical Pedagogy, which conceptualises education as a political act shaped by power relations and agency (Freire, 1970). It examines how AI-supported work-integrated learning (WIL) may either reinforce or challenge existing inequalities within rural teacher education (Mnguni, 2025). The framework underscores the importance of digital access, participation, voice, and humanisation in the experiences of participants engaging with AI mentorship (Rane et al., 2025). Rather than perceiving AI as a neutral entity, this study investigates who benefits from its implementation, who is marginalised, and whose knowledge informs technological development (Bulathwela et al., 2024; Omodan & Marongwe, 2024). This perspective critically addresses the tensions between automation and mentorship, ethical data utilisation, and the necessity for contextually relevant AI practices, thereby enhancing the study's alignment with social justice objectives in rural WIL.

4. Methodology

This study was conducted within an interpretivist research paradigm, which emphasises understanding social phenomena through participants' subjective meanings and lived experiences. An interpretivist perspective was particularly appropriate when the objective of the research was to explore how individuals construct meaning from complex social practices within specific contexts, rather than merely measuring variables or testing causal relationships (Poth & Searle, 2021). The interpretivist paradigm provided a robust foundation for examining how educators and student teachers perceive, experience, and navigate the integration of Artificial

Intelligence (AI) within Work-Integrated Learning (WIL) in rural settings, where contextual factors intricately influence professional learning.

Guided by this paradigm, the study employed a qualitative research approach to generate rich, descriptive, and context-sensitive data that capture the complexity of mentorship, professional development, and the ethical concerns associated with AI-supported WIL. Qualitative inquiry is particularly well-suited to research seeking a deep understanding while closely attending to participants' voices and social realities (Creswell & Poth, 2016; King et al., 2021). Consistent with the study's theoretical foundation in Critical Pedagogy, knowledge was treated as a socially constructed and co-produced phenomenon, emerging from dialogue between the researcher and participants. The dialogue was shaped by considerations of power, voice, and agency (Freire, 1970; Wang, 2026).

The study utilised a qualitative case study design to explore the integration of AI into WIL within a rural teacher education context. A qualitative case study design was particularly appropriate for investigating contemporary phenomena in their real-life settings, especially when the boundaries between the phenomenon and its context are not clearly delineated (Robson, 2024; Yin, 2018). This approach enabled the researcher to capture participants' contextualised experiences, perceptions, and interpretations of AI-supported mentorship and professional development during WIL placements. The investigation centres on the Faculty of Education at a rural university in the Eastern Cape Province of South Africa, with a specific focus on its WIL programme and the increasing utilisation of AI-supported tools during teaching practice placements.

The study focused on the academic staff and student teachers engaged in WIL within the Faculty of Education at a rural university in South Africa's Eastern Cape Province. The population included academic leaders responsible for coordinating WIL, teaching practice supervisors who mentor and evaluate student teachers during their school placements, and student teachers involved in WIL in rural school settings. This group was deemed suitable for the study because its members were directly engaged in the design, implementation, and experiential aspects of WIL, particularly the emerging use of AI-supported tools for mentorship and professional development. A total of 30 participants were purposefully selected from the population to participate in the study (Creswell & Poth, 2016; Yin, 2018). This group comprised six Heads of Department, six teaching practice supervisors, and eighteen student teachers, organised into six focus groups of three participants each.

Data were generated through semi-structured individual interviews and focus group discussions, selected for their effectiveness in eliciting in-depth, experience-based accounts of professional practice in complex contexts. Semi-structured interviews were conducted with Heads of Department and teaching practice supervisors to gather strategic, supervisory, and policy-related perspectives on WIL and the use of AI. This method was chosen for its ability to guide

discussions around predetermined topics while allowing the researcher the flexibility to probe participants' responses and explore emerging issues pertinent to mentorship, equity, and ethical considerations (Creswell & Poth, 2016; Yin, 2018). Interviews were held either face-to-face or online, depending on participants' availability and connectivity, with each session lasting approximately 45 to 60 minutes. Focus group discussions were conducted with student teachers to foster collective reflection on their shared experiences of AI-supported WIL during rural school placements. The focus groups were designed to promote interaction among participants, enabling them to elaborate on one another's experiences and highlight common challenges and areas of agreement (Cohen et al., 2018). A total of six focus groups were conducted, each comprising three participants, ensuring that everyone had ample opportunity to contribute to the discussions.

Data were analysed thematically using Braun and Clarke's six-phase approach, which aids in identifying patterns in the dataset (Braun & Clarke, 2021). Audio-recorded interviews and focus group discussions were transcribed and reviewed. Preliminary insights into mentorship, access, ethics, and challenges in AI-supported WIL were recorded. In the second phase, transcripts were inductively coded, labelling segments relevant to the research questions while remaining sensitive to participants' language (Creswell & Poth, 2017). Related codes were clustered into candidate themes in the third and fourth phases, with comparisons made among data from Heads of Department, supervisors, and student teachers to identify similarities and differences in their experiences of AI-supported WIL. The fifth phase defined and named themes to capture their analytical essence, yielding two overarching themes and subthemes aligned with the research questions. Finally, themes were interpreted through a critical pedagogical lens, emphasising power, equity, human agency, and context in AI-supported professional learning (Braun & Clarke, 2021; Freire, 1970).

4.1 Ethical considerations

Ethical approval for the study was obtained from the university's Research Ethics Committee, in accordance with relevant guidelines. Participants were provided with comprehensive information regarding the voluntary nature of the study and their right to withdraw. Written informed consent was secured prior to the commencement of interviews and focus groups. Confidentiality was upheld by assigning codes to participants, and no identifying information was included in the manuscript (Creswell & Poth, 2016; Yin, 2018). The themes were analysed through a critical pedagogical lens, addressing issues of power, equity, and context in AI-supported professional learning (Braun & Clarke, 2021; Freire, 1970). The study included 30 participants: six Heads of Department (HODs), six teaching practice Supervisors (SUPs), and eighteen student teachers, organised into six focus groups. Data were securely stored in password-protected files, and recordings and transcripts were managed in accordance with ethical principles (Creswell & Poth, 2017).

5. Findings and Discussion

Table 1 below demonstrates that the study comprised a total of 30 participants, divided into three distinct groups: six Heads of Departments (HODs), consisting of four males and two females; six Teaching Practice Supervisors (SUPs), comprising five females and one male; and eighteen student teachers organised into six focus groups, with three members in each group, ensuring an equal representation of genders (three males and three females). Data management adhered to ethical guidelines, thereby ensuring the security of audio recordings and transcripts.

Table 1: The biographic data

Participants	**Gender**	**Participant Pseudonyms**
Heads of Department (HODs),	4 Males 2 Female	HOD1, HOD2, HOD3, HOD4, HOD5, HOD6
Teaching practice Supervisors (SUP	5 Females 1 Male	SUP1, SUP2, SUP3, SUP4, SUP5, SUP6
Focus Groups (FGs).	3 Females 3 Males	FG1, FG2, FG3, FG4, FG5, FG6

5.1 Theme 1: AI-supported WIL as a pathway to enhanced mentorship and professional development

This theme explores the application of Artificial Intelligence (AI) in Work-Integrated Learning (WIL) to enhance access to mentorship and professional development in rural teacher education settings. Drawing on participants' experiences, the theme illustrates how AI-supported tools improve mentorship, support reflective practice, and address geographical and resource-related challenges. The sub-themes in this category demonstrate that, when integrated with human-centred mentorship practices, AI promotes more inclusive and sustained professional learning opportunities.

5.1.1 Sub-theme 1.1: Digital access and infrastructural enablement

The study highlights the crucial impact of digital access and infrastructure on rural educators and student teachers engaged in AI-supported Work-Integrated Learning (WIL). Analysis of participant transcripts shows that inadequate connectivity, unreliable electricity, and limited access to digital devices consistently hinder the effective use of AI-driven mentorship and feedback systems. While Heads of Department noted overarching infrastructural challenges, supervisors observed disruptions in mentoring, including delayed feedback and reduced interaction. Student teachers expressed feelings of exclusion and marginalisation due to these limitations, indicating that digital infrastructure is both a technical necessity and a structural determinant of participation in WIL. The findings suggest that existing infrastructural inequities exacerbate rural-urban divides rather than providing equal benefits through technology. Consequently, institutional leadership emphasised the need for robust infrastructure as essential for successful AI integration.

Participant HOD1: "*AI tools function effectively only when connectivity is stable, yet many of our rural schools face frequent network disruptions*".
Participant HOD4: "*Without reliable internet access, using AI consistently during teaching practice becomes challenging".*
Highlighting how infrastructural limitations undermine implementation efforts, supervisors described the tangible ways infrastructural challenges affected mentorship practices.
Participant SUP3: "Sometimes lesson videos and reflections cannot be uploaded on time, which delays feedback and support".
Participant SUP6: "We often rely on alternative methods because the digital platforms fail when connectivity is poor".
Findings on how infrastructural inconsistencies disrupt the continuity of AI-supported mentorship.
Participant FG2: "Our schools do not have Wi-Fi, so accessing AI feedback often requires travelling to town".
Participant FG5: "Data costs and electricity outages make it challenging to engage regularly with the AI tools provided".

The findings underscore that digital access and infrastructural capacity are vital for the effectiveness of AI-supported WIL in rural areas. Participants encountered challenges such as unstable connectivity, limited devices, high data costs, and unreliable electricity, which hindered their engagement with AI feedback and mentorship tools. This observation aligns with existing literature, suggesting that the advantages of AI in education are unevenly distributed and contingent upon infrastructural readiness (Li, 2023; Dyantyi & Mkabile-Masebe, 2025). Furthermore, research in rural teacher education cautions that digital innovations frequently neglect rural realities, thereby reinforcing exclusion rather than promoting equitable professional learning (Langeveldt & Pietersen, 2024; Mncube et al., 2024).

From a Critical Pedagogy perspective, these findings illustrate how material conditions serve as mechanisms of power that influence participation in professional learning. Freire (1970) asserts that educational inequality emerges when learners lack the requisite material conditions for engagement. This study reveals that inadequate digital infrastructure marginalises rural educators and student teachers, constraining their access to AI tools and diminishing opportunities for reflective dialogue. Consequently, enhancing digital infrastructure is a social justice imperative; it is essential for fostering equitable educational practices in AI-supported WIL.

5.1.2 Sub-theme 1.2: AI-Enabled Feedback and Reflective Professional Learning

This sub-theme highlights how AI-enabled feedback mechanisms within Work-Integrated Learning (WIL) enhance reflective professional learning, particularly by improving the reach, timeliness, and consistency of mentorship in rural teacher education contexts. Participants at institutional, supervisory, and student levels reported that AI-supported feedback complements traditional supervision, especially when physical visits are limited. When integrated into human-centred mentorship practices, AI tools were viewed as instrumental in fostering self-reflection, professional growth, and sustained engagement with teaching practices.

From a supervisory perspective, AI is seen as a tool that improves the quality and continuity of feedback.

One participant remarked, Participant SUP2: "*AI assists us in tracking student teachers' progress over time and helps identify areas needing attention prior to formal visits*".
Another supervisor observed,
Participant SUP6: "*The automated feedback serves as a foundation for our discussions and makes our mentoring sessions more focused*".
These insights suggest that AI-enabled feedback fosters reflective dialogue rather than replacing human judgment.
One participant noted,
Participant HOD3: "*AI feedback tools enable us to provide guidance to student teachers even when our supervision capacity is stretched*".
Another institutional leader emphasised that
Participant HOD5: "*The availability of continuous feedback encourages student teachers to reflect on their practice more consistently, rather than waiting for end-of-term evaluations*".
One participant noted,
Participant FG1: "*The feedback we receive through the system encourages us to think critically about our lessons prior to meeting with our supervisors*".
Participant FG4: "*AI-generated comments prompt us to reflect on our teaching and to formulate better questions during mentorship sessions".*

Participants acknowledged that while AI feedbackis insufficient on its own, it significantly enhances engagement with supervisors and improves the timeliness of mentorship, particularly in rural areas. It facilitates reflective practice between meetings, thereby preparing participants for discussions (Hwang et al., 2020; Brandão et al., 2024; Garzón et al., 2025). Effective AI feedback is integrated into human-centred mentoring frameworks, necessitating human interpretation to preserve its pedagogical value (Billett, 2025; Preiksaitis & Rose, 2023). Although it is regarded as a catalyst for reflection, it should not supplant relational supervision. In alignment with Freire's emphasis on dialogue in transformative learning (1970), AI feedback promotes reflective practice and professional agency. Nonetheless, there is resistance to AI that evaluates without fostering dialogue. Thus, AI feedback enhances reflective learning in WIL when it supports dialogic mentorship practices that respect educators' agency and contextual understanding.

5.2 Theme 2: Conditions shaping the implementation and use of AI-supported work-integrated learning

This theme investigates the structural, ethical, and contextual conditions that influence the implementation and utilisation of Artificial Intelligence (AI) in Work-Integrated Learning (WIL) within rural teacher education settings. Drawing on participants' insights, this theme highlights the impact of factors such as infrastructure, data governance, human–AI relationships, and contextual relevance on the effectiveness and equity of AI-supported WIL. Collectively, the sub-themes demonstrate that the successful integration of AI is contingent not only upon

technological availability but also upon alignment with pedagogical, ethical, and contextual considerations.

5.2.1 Sub-theme 2.1: Data ethics, privacy, and algorithmic bias

This sub-theme investigates the ethical considerations surrounding data privacy, ownership, and algorithmic bias within the context of AI-supported WIL. Analysis of participant transcripts indicates a prevailing uncertainty regarding data collection and reuse, with Heads of Department articulating concerns related to algorithmic transparency and accountability. Supervisors highlighted the potential risks associated with surveillance, while student teachers expressed anxiety regarding the utilisation of AI feedback tools. These findings suggest that ethical ambiguity may compromise the fundamental pedagogical safety required for reflection and professional development, as AI systems have the potential to perpetuate existing power imbalances. Additionally, institutional apprehensions related to data ownership and governance were also identified.

Participant HOD6: "*We cannot always ascertain where the data goes after lesson videos and feedback are uploaded, which raises accountability issues at an institutional level*".

Participant HOD2: "*AI systems make decisions based on data that we do not fully control, creating challenges when those decisions influence the professional development of student teachers*".

These perspectives highlight apprehension about the systemic consequences of opaque algorithmic processes in teacher education. Supervisors echoed these concerns from the perspectives of mentorship and assessment.

SUP5: "*AI feedback can feel more like surveillance than support when there is a lack of transparency about how judgments are made*"

Participant SUP1: "*Without understanding how the algorithm operates, it becomes challenging to trust that the feedback is fair or contextually appropriate for our students".*

These insights suggest that uncertainty about the logic of algorithms undermines confidence in AI-supported evaluative processes.

Some participants articulated the ethical implications of these practices from an experiential perspective.

One participant noted,

Participant FG3: "*Sometimes we hesitate to be honest in our reflections because we're unsure who might access that information later*".

Participant FG5: "*AI feedback makes you cautious, as it feels like your performance is constantly being evaluated by a system you don't fully understand*".

The study examines the effects of ethical ambiguity on engagement in AI-supported Work-Integrated Learning (WIL). Concerns regarding data privacy, ownership, and algorithmic bias significantly influence participants' trust and engagement, reflecting ongoing discussions about the accountability of educational AI systems (Floridi & Cowls, 2022; Nguyen et al., 2023). In rural areas, the absence of regulatory frameworks exacerbates mistrust and limits engagement with AI feedback. Research indicates that algorithmic systems frequently reflect dominant norms from wealthier educational contexts, resulting in biased evaluations that overlook local

pedagogical realities (Joyce et al., 2021; Zhu et al., 2025). This bias may perpetuate inequalities by privileging standardised assessments over context-specific teaching practices (Sambasivan et al., 2021). From a Critical Pedagogy perspective, these ethical tensions underscore power imbalances in AI-supported education. Freire (1970) cautions that education can become dehumanising if learners are unable to challenge the systems that influence them. Concerns regarding surveillance may inhibit essential reflection and dialogue necessary for transformative learning. Freire emphasises the necessity for ethical governance in AI-supported WIL to foster trust and equitable professional development.

5.2.2 Sub-theme 2.2: Balancing human mentorship and AI automation

Participants across all groups consistently acknowledged that while AI can enhance efficiency and provide structured feedback, it cannot substitute for the dialogic, empathetic, and context-sensitive elements of human mentorship. The findings indicate that the value of AI-supported WIL is determined by how automation is integrated alongside, rather than replacing, human engagement.

From a supervisory perspective, participants emphasised that professional learning depends heavily on relational interaction.

Some participants uttered,

SUP6: "*AI can highlight what went wrong in a lesson, but it cannot comprehend the emotional challenges a student teacher encounters in a rural classroom".*

SUP2: "*Automated feedback is helpful, but without discussion, it remains superficial and does not facilitate the professional growth of student teachers*".

These perspectives raise concerns that relying solely on automation falls short of supporting reflective and developmental mentorship. Student teachers echoed these sentiments, emphasising the crucial role of human interaction in interpreting AI-generated feedback.

One participant noted,

FG1: "*AI comments indicate what needs improvement, but they do not clarify why in a manner that connects to your teaching context".*

Another participant remarked,

FG4: "*Real learning occurs when a supervisor engages in dialogue about the feedback and helps you reflect on your practice*"

These insights demonstrate that AI-enabled feedback is most effective when mediated through human dialogue. Institutional leaders have expressed caution about over-reliance on automation.

One participant reported that:

HOD3: "*Mentorship is fundamentally a human process, and if AI begins to supplant that relationship, we risk undermining the essence of teacher development*".

HOD1: "*AI should assist supervisors by organising information, but it must never replace professional judgement and personal guidance*".

The findings indicate a growing awareness among educational institutions regarding the risks associated with excessive automation in pedagogy. Participants assert that AI should function as a supportive tool rather than an authoritative mentor, emphasising the necessity of balancing AI and human mentorship in Work Integrated Learning (WIL). While AI enhances efficiency and provides valuable feedback, it cannot supplant the relational qualities essential for effective mentorship. Educators underscore the significance of dialogue, empathy, and contextual understanding. Research indicates that AI can enhance formative feedback, particularly when supervisory capacity is constrained; however, there is a risk of reducing professional learning to mere metrics, thereby jeopardising reflective depth and identity development (Bratton et al., 2021; Preiksaitis & Rose, 2023). Freire (1970) posits that education becomes dehumanising in the absence of dialogue, which aligns with participants' resistance to automated mentorship. This study found that AI feedback fostered reflection only when it was integrated with human dialogue, highlighting the importance of human mentorship in situations where emotional support is critical. AI should augment rather than replace human mentorship, ensuring that WIL remains a human-centred space for equitable and transformative learning (Hwang et al., 2020; Brandão et al., 2024; Billett, 2025).

5.2.3 Theme 2.3: Contextual Adaptation and local relevance

This sub-theme examines how the effectiveness of AI-supported WIL is influenced by the extent to which AI tools are customised to the material, cultural, and pedagogical realities of rural school contexts. Across all groups, participants emphasised that when AI systems are designed with assumptions rooted in well-resourced or urban environments, their relevance and pedagogical value in rural settings are significantly constrained. The findings indicate that this contextual misalignment impacts both the usability of AI tools and educators' willingness to engage meaningfully with AI-supported mentorship.

From an institutional perspective, Heads of Department have expressed concerns regarding the limitations of many AI platforms in recognising the challenges faced by rural schools.

One participant reported that: HOD5: "*Most AI systems presume that schools are adequately resourced, which is not the case in rural contexts*".

HOD2"*The recommendations produced by these systems often overlook issues such as overcrowded classrooms and a lack of teaching materials*".

These insights highlight that contextual adaptation is a critical consideration for institutions seeking to implement AI-supported Work-Integrated Learning (WIL) equitably.

Supervisors reinforced these concerns through their interactions with student teachers during placements.

One participant stated,

SUP3: "*AI feedback can be frustrating when it proposes strategies that simply cannot be implemented in rural classrooms*".
SUP6: "*The system does not always consider the improvisation necessary in schools where resources are limited*".
These accounts suggest that discrepancies between algorithmic recommendations and classroom realities may diminish professional confidence rather than foster reflective growth.
One participant noted,
FG4: "*AI suggests tools that are not accessible in our schools, which renders the feedback irrelevant"* (FG4).
Another student teacher remarked,
FG6: "*At times, it seems like the system doesn't grasp the needs of our learners or our community"* (FG6).

Throughout focus groups, students highlighted the necessity for AI tools that adapt to their local teaching contexts rather than impose generic expectations. The findings reveal that the effectiveness of AI-supported Work-Integrated Learning (WIL) in rural areas is influenced by the contextual assumptions embedded in AI systems. Participants noted that these tools often reflect urban pedagogical norms, resulting in misaligned feedback for rural schools. This observation aligns with the literature, which indicates that many educational AI systems fail to account for conditions in under-resourced contexts, thereby limiting their effectiveness (Li, 2023; Joyce et al., 2021; Zhu et al., 2025). Additionally, studies suggest that AI tools that disregard constraints, such as overcrowded classrooms, can marginalise local practices (Sambasivan et al., 2021; Wu, 2024).

From a Critical Pedagogy perspective, these findings demonstrate that decontextualised educational technologies can perpetuate cultural domination. Freire (1970) cautions that the imposition of knowledge systems without contextual relevance leads to oppression, termed cultural invasion. Participants indicated that algorithmic recommendations disconnected from rural realities undermine local knowledge and teaching methods, thereby threatening Freire's principle of humanisation. For AI to effectively contribute to equitable WIL, its design must incorporate context-responsive strategies that engage rural educators and student teachers as co-constructors of knowledge. Without this adaptation, AI risks reinforcing educational inequalities rather than promoting professional learning in rural teacher education.

6. Conclusion

This study examined the potential of AI to enhance Work-Integrated Learning (WIL) in order to support equitable mentorship and professional development within the context of rural teacher education, while also addressing associated challenges and ethical considerations. The findings indicated that AI-supported WIL improved access to mentorship and professional development by expanding networks and enhancing feedback, particularly in isolated rural areas. However, these advantages were contingent upon effective human-centred mentorship, reinforcing the notion that AI should act as a supportive resource rather than a substitute for relational supervision. The study further highlighted constraints in the implementation of AI-

supported WIL, including infrastructural inequities, data privacy concerns, and the limited local responsiveness of AI systems. In the absence of reliable digital infrastructure and ethical governance, AI posed a risk of exacerbating existing inequalities in rural education. Through the lens of Critical Pedagogy, the research underscored that AI in WIL is not neutral but is influenced by prevailing power dynamics. For AI to effectively promote equitable professional development, its integration must be guided by principles of humanisation and contextual relevance. This necessitates investment in rural infrastructure, transparent data governance, and hybrid mentorship models that prioritise human relationships. Ultimately, the research contributed to ongoing discussions surrounding AI in teacher education by emphasising the critical need for social justice in innovation.

7. Recommendations

Based on the findings of this study, it is recommended that higher education institutions, policymakers, and educational stakeholders adopt a coordinated, human-centred approach to integrating AI into WIL in rural settings. A primary focus should be on strengthening digital infrastructure in rural schools and universities, ensuring reliable internet connectivity and access to suitable digital devices. Equitable participation in AI-supported WIL fundamentally depends on these essential conditions. Additionally, institutions should develop and implement clear, context-sensitive ethical frameworks that address data privacy, ownership, and the responsible use of AI. This will help build trust and safeguard the professional autonomy of educators and student teachers. Furthermore, AI tools should be integrated into hybrid mentorship models that preserve relational, dialogic supervision, utilising technology to enhance feedback and coordination rather than replace human interaction. It is crucial to actively involve rural educators, supervisors, and student teachers in the design and adaptation of AI-supported platforms to ensure they are contextually relevant and aligned with local pedagogical realities. Finally, sustained capacity-building initiatives should be implemented to enhance digital and AI literacy among all participants, fostering critical, ethical, and reflective engagement with emerging technologies in WIL.

8. Declarations

The authors utilised Microsoft Copilot, a GPT-based language assistance tool, exclusively to enhance the quality of language. This encompassed tasks such as grammatical correction, sentence-level refinement, and enhancements in clarity and readability of the English text. Notably, the AI tool was not employed for any aspect of content generation, data analysis, theoretical development, result interpretation, or decision-making. The authors assert full responsibility for the academic integrity of all content presented in this manuscript, including study design, methodology, data collection, analyses, and resultant conclusions. All revisions facilitated by the AI were meticulously reviewed and overseen by the authors to ensure the highest standards of scholarly rigour.

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