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TETFLE also publishes review articles and book reviews. The journal currently appears once in a year, with an additional special edition from accepted biennial conference papers, as applicable. The journal is the official journal of the Distance Education and Teachers' Training in Africa (DETA) biennial conference, hosted by the Faculty of Education, University of Pretoria, South Africa.

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Reshaping Teacher Education at the South African Open University: Lessons from Global Post-Pandemic Digital Leadership

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Abstract

The COVID-19 pandemic accelerated digital learning globally, but South Africa's only dedicated open distance learning institution struggled to adapt global digital leadership practices due to socio-economic inequality, digital literacy gaps, and infrastructure deficits. The current study explored how global post-pandemic digital leadership innovations can transform teacher education at South Africa's only dedicated open distance learning institution, referred to as the South African Open University, identifying barriers and necessary reforms. Using qualitative content analysis of 42 documents (2019-2023) from 15 top-ranked open universities worldwide, analysed via reflexive thematic analysis, the study found that global institutions implemented five integrated strategies: blended learning pedagogies; capacity building; equity collaboration; system resilience; and integrative transformation. South Africa, however, faces five barriers: financial constraints; structural and technological constraints; human capital deficits; policy fragmentation; and socio-cultural resistance. Required reforms include inclusive infrastructure investment, educator capacity building, decolonial policy reform, flexible pedagogies with wellbeing support, and systemic equity interventions. A prioritised implementation framework is proposed. Importing global models without adaptation risks deepening inequalities; while sustainable transformation requires contextually grounded, equity-driven, decolonial leadership. Limitations include the exclusion of stakeholder voices and post-2023 innovations, and potential overrepresentation of Global North strategies.

Keywords: digital leadership; flexible learning; open university; post-pandemic transformation; South Africa teacher education

Introduction

The COVID-19 pandemic disrupted higher education globally. It accelerated digital and flexible learning modalities (Adewale, 2024; Bozkurt et al., 2020; Carney, 2021). While this shift presented challenges universally, its impact was markedly acute in contexts characterised by deep-seated socio-economic inequalities and infrastructural deficits, such as South Africa. For the purposes of the current study, the term 'South African open university' refers collectively to institutions operating open distance learning (ODL) models within the country. The primary case examined is the University of South Africa (Unisa), the nation's only dedicated ODL university and Africa's largest open distance learning institution, hereafter referred to using the pseudonym 'South African open university' to maintain institutional confidentiality where sensitive operational data is discussed. Within this nation, the imperative to transform teacher education, a cornerstone of national development and educational equity, became both urgent and complex (Department of Higher Education and Training [DHET], 2006). ODL institutions found themselves at the epicentre of this transformation, bearing the responsibility of training a significant proportion of the country's future educators under uniquely constrained conditions (Czerniewicz et al., 2020; Letseka & Pitsoe, 2014).

Before the pandemic, South Africa's higher education system, especially its ODL sector, already grappled with significant challenges. Historical legacies of apartheid entrenched profound disparities in access to resources, quality schooling, and digital readiness (JET Education Services, 2020). The digital divide was stark; while urban centres often had reasonable connectivity, vast rural areas and impoverished townships suffered from inadequate infrastructure. Statistics South Africa (2022) reported that only 40% of rural households had reliable internet access, compared to over 70% in major metropolitan areas. Furthermore, digital literacy levels among both potential students and existing faculty in teacher education programmes were often low, reflecting broader societal inequities (Department of Basic Education, 2025; Mpungose, 2024; TIMSS & PIRLS, 2015). Teacher education programmes themselves, crucial for addressing the country's persistent educational quality gaps and teacher shortages (particularly in critical subjects and rural areas), often operated with curricula and delivery modes that had not fully leveraged the potential of digital pedagogies, constrained by resource limitations, policy frameworks, and institutional apathy (Babalola & Genga, 2024; Carrim, 2019; DHET, 2006).

The onset of the pandemic in 2020 acted as a forced catalyst. Traditional face-to-face support structures, examinations, and practical teaching components became impossible

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overnight. The largest ODL institution in the country, serving over 350 000 students, many from disadvantaged backgrounds, faced the monumental task of pivoting entirely to remote teaching, learning, and assessment (University of South Africa [Unisa], 2021). This sudden shift exposed and exacerbated pre-existing vulnerabilities. Many students lacked adequate devices, affordable data, conducive home learning environments, or the necessary digital skills to engage effectively (Czerniewicz et al., 2020). While deeply knowledgeable in their disciplines, faculty members frequently lacked training and confidence in online pedagogy, digital content creation, and learning management systems beyond basic functionality (Mpungose, 2024). Institutional policies around assessment, practical work, and student support were often ill-equipped for the realities of a fully remote operation. The crisis underscored that replicating traditional lectures via video conferencing was insufficient and frequently exclusionary (Makumane et al., 2024).

Globally, however, the pandemic spurred remarkable innovation within the ODL sector and teacher education. Leading open universities worldwide, such as the Open University UK, Athabasca University (Canada), Indira Gandhi National Open University (IGNOU, India), and the Open University of China (OUC), demonstrated agile and transformative responses (Makoe, 2023; Zawacki-Richter & Jung, 2022). These institutions leveraged digital leadership including strategic, forward-thinking guidance that harnesses technology to enhance learning, foster innovation, and promote equity within an educational context (Sheninger, 2014) to re-engineer programmes rapidly. This involved not only emergency remote teaching, but also fundamental rethinking of curriculum design, delivery models, assessment strategies, and student support systems for sustainable digital and flexible learning (Bozkurt et al., 2020). Examples included the accelerated adoption of micro-credentials, AI-driven tutoring and feedback systems, mobile-first learning platforms, virtual simulations for practical skills, and competency-based assessment frameworks (Slaughter-Cooper, 2024).

Therefore, the critical challenge for South African open university became adaptive translation. How could insights and models from global 'best practices' in post-pandemic digital leadership and teacher education innovation be effectively adapted and implemented within the complex, resource-constrained, inequitable South African context? The risk of adopting technologically sophisticated, but contextually inappropriate solutions was high, potentially deepening existing divides rather than bridging them (Czerniewicz, 2018; Makumane et al., 2024). Merely importing models developed in contexts with near-universal broadband access, high device penetration, and robust institutional support structures was unlikely to succeed.

This challenge of adaptive translation necessitates a deep understanding of the interplay between digital leadership, institutional capacity, policy frameworks, and the socio-technical realities of South Africa. Digital leadership, as conceptualised by Sheninger (2014) and expanded upon by scholars examining crisis leadership in education (Althubyani, 2024; Okunlola et al., 2024; Slaughter-Cooper, 2024; Zhu et al., 2024). extends far beyond technical proficiency. It encompasses the vision to set a strategic direction for digital transformation, the ability to foster a culture of innovation and collaboration among faculty and staff, the commitment to invest in necessary infrastructure and professional development, the skill to navigate complex policy environments, and crucially, an unwavering focus on equity and inclusion to ensure no learner is left behind. In South Africa, leadership must explicitly address barriers related to cost, connectivity, literacy, language, and cultural relevance (Tulinayo et al., 2018).

Furthermore, the theoretical lens of transformative learning (Fleming, 2018; Mezirow, 2000) is highly relevant. The pandemic necessitated not merely incremental change, but a potential transformation in how teacher education is conceived and delivered. Transformative learning involves critical reflection on assumptions, open dialogue, and developing new perspectives and capacities. Effective digital leadership in this context, must foster environments where faculty critically examine traditional pedagogies, engage with new digital possibilities, and collaboratively develop contextually appropriate, transformative approaches to preparing teachers for 21st-century classrooms (Mpungose & Khoza, 2022).

Existing literature documents' three phenomena: (a) global open universities successfully implemented digital leadership strategies during COVID-19 (Bozkurt et al., 2020; Zawacki-Richter & Jung, 2022); (b) South African higher education faces structural inequities, digital divides, and resource constraints (Czerniewicz et al., 2020; Letseka & Pitsoe, 2014); and (c) teacher education programmes require transformation to meet 21st-century demands (Carrim, 2019; DHET, 2006).

No study has systematically synthesised global digital leadership practices from top-ranked open universities and analysed their contextual applicability to South African teacher education. Existing research examines technology adoption (Mpungose, 2024) or student challenges (Czerniewicz et al., 2020) in isolation, neglecting systemic leadership, policy, and capacity-building strategies for enduring change.

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South African open university face unique constraints—financial scarcity, infrastructure deficits, human capital gaps, policy fragmentation, and socio-cultural barriers—that render direct importation of global models ineffective (Czerniewicz, 2018; Makumane et al., 2024). A focused analysis of how digital leadership principles can be contextually adapted is urgently needed to guide institutional transformation.

This study provides, (a) systematic identification of five integrated digital leadership strategies from global exemplars, (b) an empirical analysis of five contextual barriers impeding adoption in South Africa, (c) a prioritised implementation framework for reform, and (d) the concept of 'digital-decolonial leadership' as an actionable framework for resource-constrained, post-colonial settings.

Therefore, the current study positions itself at this critical intersection. It seeks to move beyond documenting the challenges faced by South African institutions during the pandemic emergency response. Instead, it aims to proactively explore the lessons that can be drawn from global exemplars of post-pandemic digital leadership in open university teacher education. The goal is to identify actionable strategies, grounded in transformative leadership theory and cognisant of South Africa's unique constraints and opportunities, that can reshape teacher education to be more resilient, equitable, accessible, and technologically responsive. This transformation is not merely desirable, but essential for fulfilling the mandate of open universities to provide quality teacher education at scale and contribute meaningfully to South Africa's educational development goals, as outlined in the National Development Plan 2030 (Republic of South Africa, 2012) and the Department of Higher Education and Training's strategic frameworks.

The following research questions guided this study:

- How have global open universities implemented digital leadership to transform teacher education post-pandemic?
- What contextual barriers impede the adoption of digital leadership models in South African open university?
- What reforms are required to optimise digital transformation in teacher education at the South African open university in the post-COVID era?

Literature review

This review synthesises three bodies of literature essential to understanding digital leadership for teacher education transformation in South African open university: (1) the South African teacher education landscape; (2) digital leadership in crisis and post-

pandemic contexts; and (3) the translation problem of adapting global models to local realities.

The South African teacher education landscape

Teacher education in South Africa operates within a complex legacy of apartheid-era inequities, where historically disadvantaged institutions and rural areas suffer persistent resource deficits (Carrim, 2019; Schäfer & Wilmot, 2012). The national policy framework for teacher education and development in South Africa (DHET, 2006) acknowledged the need for distance-based models to reach underserved regions, yet implementation has been hampered by inadequate infrastructure, digital literacy gaps, and uneven quality assurance (JET Education Services, 2020). ODL institutions, particularly Unisa, train a substantial proportion of the country's teachers, however, they face challenges including high student-to-lecturer ratios, limited practical teaching placement support, and curricula not fully aligned with digital pedagogies (Letseka & Pitsoe, 2014). Post-pandemic, the imperative to transform teacher education through sustainable digital leadership has become urgent, yet contextually appropriate models remain underdeveloped.

Digital leadership in crisis and post-pandemic contexts

Digital leadership, as conceptualised by Sheninger (2014), extends beyond technical proficiency to encompass strategic vision, cultural change management, infrastructure investment, and an unwavering focus on equity. In higher education, crisis-driven digital leadership has been theorised as requiring agility, distributed decision-making, and resilience (Makoe, 2023; Slaughter-Cooper, 2024). Studies of pandemic responses globally demonstrate that successful digital leadership involves rapid reconfiguration of pedagogies (Bozkurt et al., 2020); systematic capacity building for faculty (Bebbington, 2021); equity-centred collaboration with external partners (Morze et al., 2021); and development of future-oriented system resilience (Jing et al., 2025; Rambe & Dzansi, 2016; Zawacki-Richter & Jung, 2022). However, much of this literature originates from Global North contexts with near-universal broadband and device access. Critical scholars (Czerniewicz, 2018; Turner, 2023) caution that importing these models uncritically risks deepening inequalities in resource-constrained settings. This study adopts a transformative learning theory (Fleming, 2018: Mezirow, 2000) as an analytical lens, emphasising critical reflection, dialogue, and perspective transformation necessary for fundamental pedagogical change.

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The translation problem: Contextual adaptation of global models

The gap between global digital leadership best practices and local realities in South African open university constitutes a translation problem. Research from other African ODL institutions (Kanwar et al., 2018; Tulinayo et al., 2018) identifies structural barriers-intermittent electricity, high data costs, and low device penetration-that render many technologically sophisticated solutions inappropriate (Deacon et al., 2023; Stephenson & Torn, 2023). Furthermore, decolonial scholars argue that effective digital leadership must centre African epistemologies, languages, and culturally relevant pedagogies rather than merely adopting Western platforms (Makumane et al., 2024; Msila, 2022). Recent South African studies (Enakrire et al., 2025; Mpungose, 2024) highlight human capital deficits and socio-cultural resistance as additional barriers (González & Castro-Higueras, 2021). However, focused research examining how specific digital leadership principles can be strategically adapted to drive sustainable transformation of teacher education within South African open university remains scarce. The current study addresses that gap.

Methodology

Research design

The current study employed a qualitative content analysis (QCA) approach to examine global digital leadership practices in open universities. QCA is particularly effective for investigating complex, contextually embedded phenomena by systematically interpreting documentary evidence (Schreier, 2012). The design facilitated an in-depth exploration of leadership frameworks, institutional policies, and pedagogical innovations across diverse settings. Focus was placed exclusively on post-pandemic materials (2019-2023) to capture emergent digital strategies in teacher education while accounting for significant socio-technical variations between institutions (Krippendorff, 2018). The methodology aligned with the study's transformative paradigm, prioritising contextual understanding over generalisability in line with qualitative research principles (Merriam & Tisdell, 2016).

Sampling framework

A purposive sampling framework was employed to identify relevant institutions and documents. First, 15 open universities were selected from the Times Higher Education EdTech Index 2023 top-ranked institutions, supplemented by UNESCO's 2022 list of organisations demonstrating excellence in crisis-responsive teacher education. The sample

size of 15 institutions was determined based on data saturation principles (Guest et al., 2020), where previous QCA studies in higher education (e.g., Bozkurt et al., 2020; Zawacki-Richter & Jung, 2022) identified 12 to 18 institutions as sufficient for achieving thematic saturation across diverse geographic contexts. Selection criteria required documented evidence of three key attributes: (a) substantial innovation in digital leadership frameworks since 2020; (b) measurable success in open and distance e-learning (ODeL)-based teacher education programmes; and (c) geographic representation spanning both Global North and South contexts. Table 1 summarises the 15 institutions sampled.

Table I: Fifteen open universities sampled

Institution	Country	Document Reviewed	Selection Rationale
Open University (UK)	United Kingdom	5	EdTech Index top-ranked; pioneering blended learning
Athabasca University	Canada	3	Digital leadership in competency-based education
Indira Gandhi National Open University (IGNOU)	India	4	Large-scale teacher education programmes
Open University of China (OUC)	China	3	Mobile-first learning innovations
Universitat Oberta de Catalunya (UOC)	Spain	3	Virtual learning environment leadership
FernUniversität Hagen	Germany	2	System resilience frameworks
Open University of the Netherlands	Netherlands	2	Flexible pedagogical models
Korea National Open University	South Korea	3	Digital capacity building programmes
Universitas Terbuka	Indonesia	3	Equity-centred collaboration models

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Institution	Country	Document Reviewed	Selection Rationale
Allama Iqbal Open University (AIOU)	Pakistan	2	Rural connectivity solutions
Open University of Tanzania	Tanzania	2	African context representation
National Open University of Nigeria (NOUN)	Nigeria	3	West African ODL leadership
University of the Philippines Open University	Philippines	2	Crisis-responsive frameworks
Open University of Sri Lanka	Sri Lanka	2	Post-pandemic recovery strategies
University of Nairobi (ODL unit)	Kenya	3	East African teacher education

Data collection

A structured three-phase collection protocol governed data acquisition. The identification phase employed Boolean search strings combining key terms such as "digital leadership" AND "teacher education" with institutional descriptors ("open university" OR "ODeL"). Verification procedures followed, validating authenticity through cross-referencing digital object identifiers (DOIs), International Standard Book Numbers (ISBNs), and institutional press releases. During the curation phase, duplicates and non-English texts were eliminated to maintain analytical coherence, consistent with established protocols for QCA research (Mayring, 2021). The finalised documents were managed using NVivo 14 software, with comprehensive metadata including authorship, institutional affiliation, and publication year catalogued to ensure procedural transparency.

Documents were included if they met the following five criteria: (a) publication date between January 2019 and December 2023; (b) focus on open university teacher education or digital leadership; (c) institutional affiliation with sampled universities; (d) English language; and (e) peer-reviewed or official institutional publication status. Exclusion criteria were: (a) opinion pieces without empirical or documentary evidence; (b) duplicate publications; (c) non-English texts; and (d) documents focused solely on K-12 education.

The following seven databases were searched: Scopus; Web of Science; ERIC; Education Source; Google Scholar; ProQuest Dissertations & Theses; and institutional repositories of sampled universities. Search strings combined Boolean operators: ("digital leadership" OR "educational leadership" OR "technology leadership") AND ("teacher education" OR "teacher training" OR "initial teacher education") AND ("open university" OR "open distance learning" OR "ODeL" OR "ODL"). Institutional names were added as filters for university-specific documents (e.g., "Open University UK" OR "Open University" OR "OU"). Reference lists of retrieved articles were hand-searched for additional relevant sources.

Initial database searches yielded 1 247 records. After deduplication, 893 remained. Title and abstract screening excluded 712 records (181 remained). Full-text assessment excluded 139 documents for: K-12 focus (n=56); lack of institutional affiliation (n=42); pre-2019 publication (n=28); and non-English (n=13). Final corpus comprised 42 documents meeting all criteria. This screening process followed PRISMA guidelines (Page et al., 2021).

Table 2 summarises the data corpus. It lists document types, publication years, geographic coverage, and the analytical tool used. The table provides a clear snapshot of the 42 sources examined in this study.

Table 2: Summarises the data corpus

Category	Description
Total documents analysed	42
Timeframe	2019-2023
Document type	Institutional reports (15), journal articles (18), case studies (6), policy briefs (3)
Geographical Coverage	Global North and South (Europe, Africa, Asia, Asia, North America)
Focused institution	Open universities
Analysis tool	NVivo 14

Data analysis

Data analysis followed Braun and Clarke's (2006) reflexive thematic analysis framework. Unlike code-reliability approaches, reflexive thematic analysis positions the researcher as the primary instrument of interpretation, with subjectivity viewed as a resource rather than a threat to validity.

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The first author engaged in repeated close reading of all 42 documents over eight weeks. Initial readings were conducted without coding, focusing on understanding document purpose, institutional context, and key arguments. Annotations noted emerging patterns, institutional strategies, and contextual factors. A reflexive journal documented initial impressions, personal assumptions about digital leadership, and potential biases shaped by experiences in South African higher education.

Line-by-line coding identified segments of text relevant to research questions. Coding focused on: leadership actions described; institutional policies documented; barrier descriptions; and reform proposals. The first author coded all documents. The second author independently coded 30% of the documents to stimulate discussion and reflexivity, not to establish reliability. Coding differences were resolved through dialogue, with the first author's interpretations refined through collaborative reflection.

Codes were grouped into initial candidate themes through iterative comparison. This process involved examining relationships between codes, identifying patterns across documents and institutions, creating visual thematic maps, and writing memo notes describing theme definitions and boundaries. Candidate themes were reviewed against coded data and entire documents. Themes were refined through merging overlapping categories, discarding themes with insufficient data support, and splitting broad themes into more specific constructs. Final themes were defined with clear boundaries and relationships.

For each document, the following information was extracted: (a) bibliographic details (author, year, institution); (b) document type and purpose; (c) key digital leadership strategies described; (d) reported challenges/barriers; (e) proposed reforms/recommendations; and (f) documented outcomes. This systematic extraction ensured consistent data capture across all 42 documents.

Table 3: Thematic development from preliminary to final themes

Preliminary Themes (after phase 3)	Final Themes (after refinement)	Mapping to RQs
Infrastructure democratisation	Structural & technological constraints	RQ2
Pedagogical agility	Pedagogical reconfiguration (blended learning)	RQ1
Capacity investment	Institutional capacity development	RQ1

Preliminary Themes (after phase 3)	Final Themes (after refinement)	Mapping to RQs
Multi-stakeholder partnerships	Equity-centred collaboration	RQ1
Crisis preparedness	Future-oriented system resilience	RQ1
Holistic change management	Integrative transformation	RQ1
Skills gaps (staff/student)	Human capital deficits	RQ2
Governance fragmentation	Policy fragmentation	RQ2
Cultural resistance to innovation	Socio-cultural barriers	RQ2

These themes underwent iterative refinement using constant comparative analysis techniques (Boeije, 2010) before contextual reinterpretation, where global findings were adapted to South African constraints. To strengthen validity, preliminary findings underwent member validation with three ODeL specialists from BRICS nations.

Ethical considerations

Ethical considerations were addressed following established digital research frameworks (Markham & Buchanan, 2012). Sensitive institutional data were anonymised during reporting, while strict citation protocols ensured respect for intellectual property rights. Southern epistemological perspectives were deliberately prioritised throughout the interpretive process to counter potential Eurocentric biases, consistent with decolonising methodological approaches (Chilisa, 2020).

Methodological rigour

Methodological rigour was ensured through multiple trustworthiness strategies. Credibility was established via prolonged engagement with data and structured peer debriefing sessions. Transferability was enhanced through a thick description of contextual factors across institutional settings. An audit trail documenting all analytical decisions supported dependability, while researcher bias was mitigated through reflexive journaling practices. This multi-layered approach maintained methodological integrity while capturing the inherent complexity of digital leadership phenomena (Lincoln & Guba, 1985).

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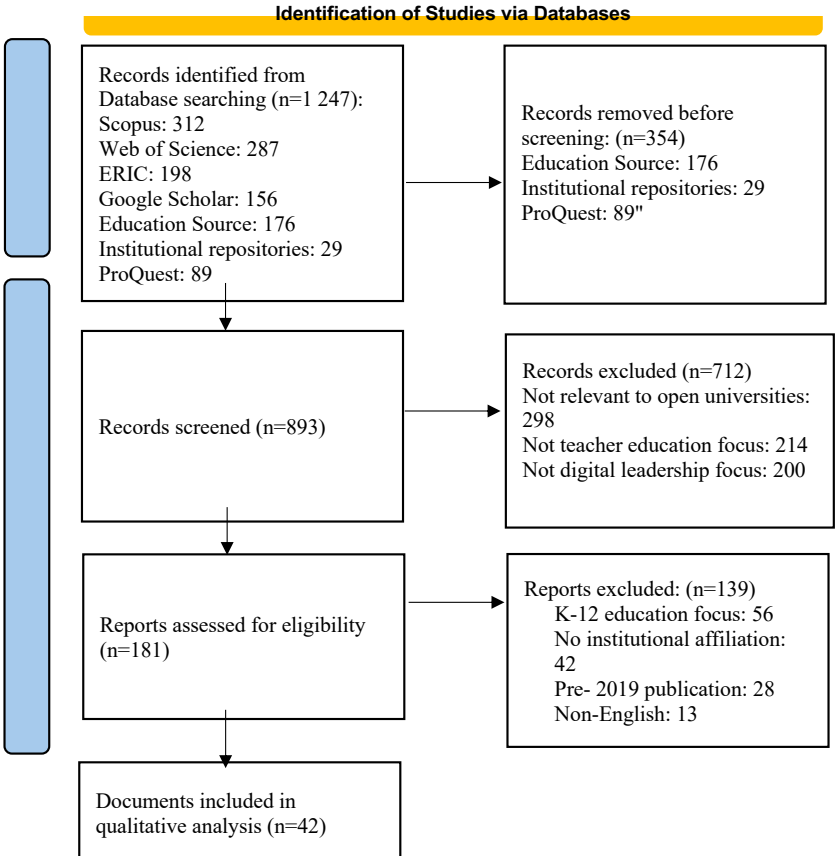


Figure I: Flow diagram of the included studies

Findings

This section presents the descriptive findings organised around the three research questions. The analysis drew on 42 documents from 15 open universities worldwide, supplemented by South Africa-specific literature. In Table 4, the findings are presented as they emerged from the data.

Table 4: Thematic analysis results and reform mapping

RQ1: How have global open universities implemented digital leadership to transform teacher education post-pandemic?			
S/N	**Theme**	**Definition**	
1	**Institutional capacity development**	Structured faculty development programmes; innovation incubators; revised promotion criteria incentivising pedagogical innovation	
2	**Equity-centred collaboration**	Multi-stakeholder partnerships with governments and technology providers; device distribution schemes; community learning hubs	
3	**Future-oriented system resilience**	Modular curricular structures; crisis-response protocols; culturally responsive digital pedagogies	
4	**Integrative transformation**	Simultaneous change across pedagogy, capacity, equity, resilience, and governance; coordinated multi-domain strategies	
RQ2: What contextual barriers impede the adoption of digital leadership models in the South African open university?			
S/N	**Theme**	**Definition**	
1	**Financial resource constraints**	Insufficient funding for infrastructure, data subsidies, and digital specialist recruitment	
2	**Structural and technological constraints**	Inadequate physical infrastructure; connectivity gaps; device shortages; intermittent electricity	

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3	**Human capital and leadership deficits**	Staff and student digital competency gaps; cultural resistance; ineffective governance	
4	**Policy fragmentation**	Uncoordinated governmental and institutional initiatives; overlapping mandates; implementation gaps	
5	**Socio-cultural adaptation barriers**	Resistance to pedagogical innovation; insufficient change management; historical mistrust	
RQ3: What reforms are required to optimise digital transformation in teacher education at the South African open university in the post-COVID era?			
S/N	**Theme**	**Definition**	**Reform Alignment**
1	**Strategic investment and inclusive infrastructure**	Device subsidies; zero-rated content; telecom partnerships; infrastructure upgrades	Infrastructure justice - ensures equitable access through offline-first design, community hubs, and affordable connectivity
2	**Educator capacity building**	Accredited professional development programmes; release time; mentorship models	Participatory governance - empowers faculty to co-lead transformation; curriculum sovereignty - enables creation of locally relevant digital content
3	**Flexible pedagogical models and wellbeing support**	Hybrid delivery; adaptive pacing; mental health interventions	Assessment decolonisation - supports portfolio-based, culturally responsive evaluation; curriculum sovereignty - allows integration of indigenous knowledge and languages
4	**Structural interventions for systemic equity**	Equity-weighted funding; public accountability; community oversight	Infrastructure justice (resource redistribution) and participatory governance (community voice in decision-making)

5	**Policy reform and decolonial leadership**	National Qualifications Framework (NQF) revision; decolonial curriculum; governance reform	All four dimensions directly address curriculum sovereignty, infrastructure justice, participatory governance, and assessment decolonisation through systemic policy change

Table 5 presents the result of the document analysis. Four themes from the quest for how open universities have implemented digital leadership to transform teacher education in post-pandemic period. Similarly, five barriers were identified as impediment to effective implementation of digital leadership models in the South Africa open university. To optimise digital leadership in the South African open university, five reformative strategies were found useful.

Table 5: Prioritised reform implementation framework

S/N	Priority	Reform Area	Phasing	Funding Intensity	Impact Potential (Equity)	Implementation Risks	Success Indicators
1	Immediate	Strategic investment & inclusive infrastructure	6-12 months	High	Very high	Procurement delays; telecom partner availability; budget allocation	50% increase in student device access; 80% rural connectivity
2	Short-term	Educator capacity building (accredited programmes)	12-18 months	Medium	High	Faculty resistance; programme quality; release time availability	60% faculty completion; 70% self-reported competence gain

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S/N	Priority	Reform Area	Phasing	Funding Intensity	Impact Potential (Equity)	Implementation Risks	Success Indicators
3	Short-term	Flexible pedagogical models & wellbeing support	12-24 months	Medium	High	Technology adoption; student engagement; support infrastructure	40% course redesign; 50% student satisfaction increase
4	Medium-term	Structural interventions for systemic equity	18-30 months	High	Very high	Governance resistance; funding sustainability; implementation coordination	30% reduction in equity gaps; 50% rural student retention
5	Long-term	Policy reform & decolonial leadership	24-36 months	Low (policy)	Medium (indirect)	Bureaucratic resistance; political constraints; consultation time	2 policy revisions; 1 new decolonial strategy

Rationale: Infrastructure investment and financial mechanisms must precede pedagogical innovation. Funding for infrastructure is the prerequisite enabling condition for all other reforms, with specific financial mechanisms (device subsidies, zero-rated content, telecom partnerships) prioritised in reform 1.

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Conceptual framework

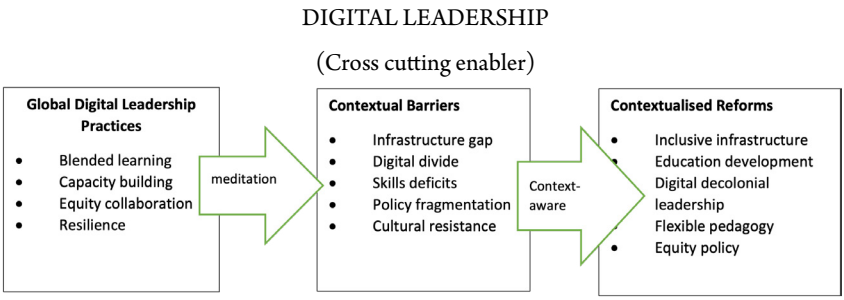


Figure 2: Contextualised digital leadership framework for teacher education transformation

Theoretical integration: Transformative learning in digital leadership

Transformative learning theory (Fleming, 2018; Mezirow, 2000) provides the analytical lens for understanding how digital leadership facilitates fundamental change in teacher education. The framework operationalises three transformative dimensions:

Critical Reflection: Digital leadership must enable faculty to examine assumptions about pedagogy, assessment, and technology. This mirrors Mezirow>s (2000, p. 13-14) concept of "disorienting dilemmas", the pandemic served as such a dilemma, forcing educators to question traditional practices.

Dialogue and Discourse: Transformative learning requires open dialogue where diverse perspectives inform new understandings. The current framework positions equity-centred collaboration and participatory governance as mechanisms for fostering such dialogue across stakeholder groups.

Perspective Transformation: Sustainable change requires new frames of reference for teaching and learning. The 'digital-decolonial leadership' dimensions, curriculum sovereignty, infrastructure justice, participatory governance, and assessment decolonisation, constitute the transformed perspectives necessary for contextually appropriate digital transformation.

This theoretical integration informs data interpretation throughout findings and discussion, where we evaluate whether documented leadership strategies foster or inhibit transformative conditions.

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Discussion

The aim of the current study was to explore how digital leadership in global open universities could inform the transformation of teacher education within South African open university, with specific attention to the South African open university as a primary case. The findings reveal that while global institutions have implemented five integrated digital leadership strategies (pedagogical reconfiguration, capacity development, equity collaboration, system resilience, and integrative transformation), these models face significant barriers when transferred to the South African context. Financial constraints, structural and technological deficits, human capital gaps, policy fragmentation, and socio-cultural resistance collectively impede the adoption of global best practices. This discussion synthesises these findings, connects them to existing literature, and highlights the distinctive contributions of the study.

Globally, we found digital leadership operationalised through five integrated strategies. The emphasis on blended learning and capacity building aligns with post-pandemic trends documented extensively in the literature (Bozkurt et al., 2020; Laufer et al., 2021; Zawacki-Richter & Jung, 2022). However, our findings expose a crucial misalignment in how equity is approached. Global exemplars, particularly from the Global North, operationalise equity primarily through device distribution schemes, subsidised connectivity, and accessible learning management systems (Kilcoyne, 2026; Morze et al., 2021). While valuable, these solutions assume baseline conditions, reliable electricity, consistent broadband, functional devices, and digital literacy, that cannot be taken for granted in South Africa. This misalignment validates Czerniewicz's (2018) critique of uncritical technology transfer and extends it to the domain of digital leadership.

Financial and economic challenges constitute a foundational barrier. The South African open university operates with lower per-student funding than the Open University UK. Unisa Annual Report 2020/2021 documented R42 000 per student for 2020, while Open University UK financial statements 2022 reported £5 200 per student. South African government funding allocations per contact hour were lower than Global North counterparts. This resonates with Chomunorwa et al. (2023) and Shava (2022), who documented that inadequate funding severely constrains digital infrastructure investments in South African higher education. Similarly, Asiyai (2022) observed that insufficient funding prevents Nigerian higher education institutions from performing up to expectations.

Structural and technological constraints emerged as the next most cited barrier. Only 40% of rural households in South Africa have reliable Internet access (Stats SA, 2022), and connectivity gaps are compounded by intermittent electricity supply and low device penetration. Our documentary analysis revealed that global equity solutions, such as device distribution schemes and subsidised connectivity, presume conditions that do not exist in much of South Africa. This aligns with Kanwar et al. (2018) and Tulinayo et al. (2018), who found that African ODL institutions face unique infrastructural deficits that render many technologically sophisticated solutions inappropriate. Furthermore, Rakgoale et al. (2024) noted that inadequate physical infrastructure remains a persistent challenge across South African digitalisation efforts. Unlike their Global North counterparts who focus on optimising existing digital ecosystems, academic leaders in South African open university must first build the foundational infrastructure that enables any form of digital learning. This distinction is critical: digital leadership here is not about innovation within abundance, but about creating basic functionality under scarcity.

Human capital and leadership deficits form a third category of impediment. Our analysis found that both staff and students lack essential digital competencies, and cultural resistance to technological change creates adoption inertia. Mpungose (2024) and Enakrire et al. (2025) similarly documented that South African academics often lack training and confidence in online pedagogy beyond basic learning management system functionality. This mirrors findings from Nigeria, where staff misconceptions about change, fearing demotion, redundancy, or exposure of incompetence, frequently obstruct institutional transformation (Aslam et al., 2018; Parent & Lovelace, 2018). Additionally, ineffective governance structures and fragmented decisionmaking undermine strategic direction (Mpulu, 2025). Unlike global exemplars where faculty development programmes assume baseline digital literacy, South African institutions must address foundational skills before advancing to pedagogical innovation. The human capital barrier is, therefore, not simply a training issue, but a systemic challenge requiring redesigned recruitment, promotion, and professional development pathways.

Policy fragmentation was identified as a fourth barrier. Uncoordinated governmental and institutional initiatives lead to disjointed transformation efforts that directly inhibit digital equity. Mulaudzi (2024) and Loglo (2024) noted that South Africa's eeducation policies, while progressive on paper, suffer from implementation gaps and a lack of coherence across national, provincial, and institutional levels. In South African open university, academic leaders must navigate overlapping mandates from the Department of Higher Education,

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the Department of Basic Education (for teacher education), and multiple quality assurance bodies—each with sometimes conflicting priorities. This fragmentation means that even when resources are available, their deployment is often delayed or misdirected.

Socio-cultural adaptation barriers complete the picture. Deepseated resistance to pedagogical innovation, insufficient change management frameworks, and the legacy of apartheidera inequities impede the development of digital fluency among academic staff. Enakrire et al. (2025) found that cultural resistance to technological change is pervasive in South African ODL institutions. Similarly, from the Nigerian context, Aslam et al. (2018) and Parent and Lovelace (2018) observed that staff adherence to old ways of doing things and misconceptions about change can derail even wellplanned initiatives. Unlike global contexts where professional culture generally embraces innovation, South African academic leaders must address a historical legacy of underresourcing and mistrust that makes faculty sceptical of topdown digital mandates. Sociocultural barriers are, therefore, not superficial, but deeply embedded in institutional histories and personal experiences.

Based on the integrated findings from RQ1, RQ2, and RQ3, a contextualised digital leadership framework for teacher education transformation was developed (Figure 1). The framework illustrates how global digital leadership practices are mediated by South African contextual barriers, resulting in contextually adapted reform strategies. Digital leadership operates as a cross-cutting enabler that drives inclusive, sustainable transformation. The framework specifies three core components: (a) global innovation inputs (pedagogical agility, capacity building, equity collaboration, future resilience); (b) local barrier filters (financial, structural, human capital, policy fragmentation, socio-cultural); and (c) contextually adapted reform outputs (infrastructure investment, capacity building, policy reform, flexible pedagogy, equity interventions). This framework provides an actionable roadmap for South African open university seeking to transform teacher education in the post-pandemic era.

A significant theoretical contribution of this study is the operationalisation of what we term 'digitaldecolonial leadership', a framework that emerged from the intersection of our global findings and barrier analyses. While decolonial critiques of educational technology are wellestablished (Makumane et al., 2024; Msila, 2022; Turner, 2023), these critiques have seldom been translated into actionable leadership frameworks. The study addresses this gap by specifying four measurable dimensions: curriculum sovereignty (digital content reflecting local languages and epistemologies); infrastructure justice (offlinefirst design and communitybased Internet access); participatory governance (stakeholder inclusion

in technology decisions); and assessment decolonisation (portfoliobased evaluation over proctored exams). These dimensions provide a concrete framework for institutional leaders to evaluate their digital transformation strategies, moving beyond critique to actionable guidance.

Among the specific implementation strategies identified, offlinefirst design warrants particular attention, because it challenges a core assumption of mainstream digital education discourse: that meaningful online learning requires continuous Internet connectivity. In South Africa, where 60% of rural households lack reliable Internet access (Stats SA, 2022), offlinefirst design is not a technical nicety, but an equity necessity. Drawing on the documentary analysis and synthesis of African ODL innovations (Kanwar et al., 2018; Ndongfack, 2025; Tulinayo et al., 2018), five implementation strategies were identified: mobilefirst, offlinecapable applications; SMS/USSDbased assessment submission; community learning hubs with cached content; zerorated educational domains; and printondemand integration. These strategies collectively shift the equity question from "How do we give everyone the same digital access?" to "How do we design educational experiences that work equitably across wildly different access conditions?"

A finding that emerged strongly from the barrier analysis is that financial resource constraints are foundational, however, not deterministic. Additional funding is undoubtedly necessary. However, the analysis suggests that increased budgets without conditional frameworks and governance reforms often reinforce existing inequalities rather than reducing them. This counterintuitive finding requires explanation. In contexts with weak accountability mechanisms, fragmented governance, and entrenched institutional hierarchies (Mpulu, 2025; Mulaudzi, 2024), additional resources are often captured by wellresourced departments or central administration priorities. Building on Carrim's (2019) analysis of postapartheid education funding, we propose three governance reforms that should accompany any new investment: equityweighted funding formulas that allocate more resources to the most disadvantaged populations; public dashboards tracking digital access outcomes; and community oversight committees including student representatives. These governance reforms are not substitutes for increased investment; they are complements that ensure increased investment achieves its intended equity effects.

The most theoretically and significant finding of the current study is that the most successful global exemplars addressed pedagogy, capacity, equity, resilience, and governance simultaneously, as an integrated system rather than as isolated initiatives. We term this finding 'integrative transformation'. Integrative transformation stands in contrast to the fragmented, projectbased, or crisisdriven approaches that characterise much digital

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change in resourceconstrained settings. In fragmented approaches, an institution might secure funding for a new learning management system, but provide no corresponding investment in faculty training or connectivity subsidies for rural students. The result is a technologically sophisticated system that excludes the very students most in need of access. The analysis revealed that institutions achieving sustainable postpandemic transformation shared three characteristics: they had preexisting integrative strategies that the pandemic accelerated; they possessed governance structures capable of coordinating across multiple domains; and they treated infrastructure investment as a nonnegotiable prerequisite enabling all other reforms. For South African open university, isolated interventions are unlikely to succeed.

This study distinguishes itself by addressing an underexplored area within the South African and broader African higher education literature. While previous studies have examined technology adoption (Czerniewicz et al., 2020; Mpungose, 2024) or student challenges (Letseka & Pitsoe, 2014) in isolation, few have focused specifically on how digital leadership principles, as evidenced in successful global open university responses to the pandemic, can be strategically adapted to drive sustainable transformation of teacher education. Moreover, the current study moves beyond critique to offer actionable strategies: the prioritised implementation framework and the four dimensions of digitaldecolonial leadership provide concrete guidance for policymakers, institutional leaders, and practitioners.

In addition, this study contributes to change leadership theory (Nilakant & Ramarayan, 2006). It specifies how the four phases, appreciating change, mobilising support, executing change, and building change capability, must be adapted for contexts where infrastructure deficits and decolonial imperatives are paramount. For example, 'appreciating change' in South African open university requires leaders to critically examine the colonial legacies embedded in curriculum and assessment, while 'executing change' demands offlinefirst technical solutions rather than highbandwidth platforms. These findings demonstrate how digital leadership can foster transformative learning conditions at an institutional level. The "disorienting dilemma" (Mezirow, 2000, p. 13-14) created by the pandemic forced critical reflection on traditional pedagogies. However, the findings of the current study suggest that without deliberate leadership interventions, particularly those fostering dialogue and equity-centred collaboration, this reflection does not automatically lead to perspective transformation. The integrative transformation strategy identified in global exemplars mirrors Mezirow's emphasis on "critical reflection, dialogue, and developing new

perspectives" (Fleming, 2018, p. 124). The barrier analysis reveals that these conditions are systematically undermined in resource-constrained settings by infrastructure deficits and policy fragmentation.

Conclusion

In conclusion, the COVID-19 pandemic irrevocably altered teacher education globally, exposing pre-existing inequalities and accelerating digital transformation. This study demonstrates that digital leadership holds significant potential for reshaping teacher education within South African open university, but only if adapted contextually. Insights from global leaders offer valuable strategies, however, the profound structural, human, policy, and socio-cultural barriers in South Africa necessitate more than imitation. Sustainable transformation requires contextually grounded reforms: substantial investment in inclusive digital infrastructure, systematic educator capacity building, adaptive policy reform, decolonial leadership approaches, flexible pedagogical models, wellbeing support, and targeted equity interventions. By embracing such a multifaceted and contextually sensitive approach, South African open university can develop teacher education systems that are resilient, equitable, accessible, and truly prepared for the future.

Table 6 offers practical guidance for different stakeholder groups. It sets out priority actions and suggested timeframes for policymakers, institutional leaders, and faculty members. The recommendations stem directly from the study's findings and are designed to support contextually appropriate digital transformation in teacher education.

Table 6: Practice recommendations for stakeholders

Stakeholder	Priority Action	Timeframe
Policymakers (DHET)	Revise NQF to mandate digital competencies; fund reparative infrastructure (device subsidies, zero-rated content, telecom partnerships)	12 months
Institutional leaders	Adopt digital-decolonial approaches by establishing a decolonial digital pedagogy task force with faculty, student, and community representation; implementing quarterly equity audits; and mandating that 30% of digital content be in indigenous languages	6-18 months
Practitioners (faculty)	Engage in protected-time upskilling; participate in mentorship for pedagogical innovation	Ongoing

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Stakeholder	Priority Action	Timeframe
Institutional leaders	Implement offline-first design through phased rollout: (a) pilot SMS/USSD assessment submission in five rural districts; (b) develop community learning hubs with cached content in partnership with local libraries; (c) negotiate zero-rating for institutional learning platforms with all major telecom providers	12-18 months

Implications

This study underscores three critical imperatives for South African open university. Policymakers must urgently revise the NQF to mandate digital competencies and fund reparative infrastructure, device subsidies, zero-rated educational content, and telecom partnerships, to bridge rural connectivity gaps. Institutional leaders should adopt digital-decolonial approaches, prioritising context-responsive pedagogies (offline-first design) and accredited faculty development programmes over imported tech solutions. Practitioners require protected time for upskilling and mentorship to transition from passive users to pedagogical innovators.

Limitations and future research

This study has several limitations. The document analysis (2019-2023) precluded capturing stakeholder perspectives (faculty/student voices) or post-2023 innovations including generative artificial intelligence (AI). The focus on top-ranked global institutions may overrepresent Global North strategies, potentially biasing the 'global best practices' identified. South Africa-specific findings, primarily contextualised around open distance learning institutions, may not transfer directly to other African higher education models such as traditional residential universities or technical colleges.

Future studies should track the longitudinal impact of reforms, such as blended learning and decolonial leadership, on teacher readiness and retention. Co-designing decolonial frameworks with rural educators would provide ground-level insights into localised technology integration. Cost-effectiveness audits of equity interventions (e.g., community networks vs. device subsidies) and exploration of AI ethics in resource-constrained teacher education are also urgently needed. Additionally, future research could employ mixed methods to capture faculty and student voices, complementing the documentary analysis presented here.

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Data availability statement: The documentary corpus analysed for the current study comprises publicly available institutional reports, peer-reviewed articles, and policy briefs. A full reference list with DOIs/ISBNs where available, is provided below. The coded NVivo 14 project file and detailed codebook are available from the corresponding author upon reasonable request.

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