



# Bridging Digital Gaps in Rural Teacher Education: Curriculum Innovations for Inclusive and Technology-Driven Pre-Service Training

Oluwatoyin Ayodele Ajani <sup>1</sup>  & Samantha Govender <sup>2</sup> 

<sup>1</sup> University of KwaZulu-Natal, South Africa.

<sup>2</sup> Department of Educational Foundations and Management, University of Zululand, KwaDlangezwa, South Africa.

## ABSTRACT

This study examines how curriculum innovation supports inclusive education and boosts the digital competencies of pre-service teachers in rural universities within the context of TPACK, integrating technological knowledge with pedagogy and content. In response to the constraints brought about by rapid digital transformation, a systematic literature review was undertaken, identifying peer-reviewed writings published between 2000 and 2025. The reviewed works considered the crossroads of Digital Technologies, Curriculum Design and Reality of Rural Teacher Education. The results suggest that while digital technologies, such as e-learning, virtual labs, and mobile technologies hold the hope for promising integration, the implementation has so far limited infrastructure, digital illiteracy, and a lack of alignment between curricular intents and classroom practice. Online and hybrid modalities, active learning, and professional development frequently emerged from the analysis as key factors that support digital integration. Based on the TPACK framework, the research emphasizes that curriculum reforms should integrate the use of digital tools into pedagogical practice, not view their use as an occasional extra. It also suggests technology-based teacher preparation programmes that are context-relevant and ideally geared to the specific needs of rural education settings. The study contributes to the debate on the digital transformation of teacher education by providing evidence-based input into curriculum design. It further offers policymakers and educators a platform towards the creation of responsive training models that serve to bridge the digital divide and nurture teaching that is inclusive and ready for the future.

## Correspondence

Oluwatoyin Ayodele Ajani

Email:

[oaajani@gmail.com](mailto:oaajani@gmail.com)

## Publication History

Received: 18<sup>th</sup> May, 2025

Accepted: 9<sup>th</sup> September, 2025

Published online:

11<sup>th</sup> November, 2025

## To Cite this Article:

Ajani, Oluwatoyin Ayodele, and Samantha Govender. "Bridging Digital Gaps in Rural Teacher Education: Curriculum Innovations for Inclusive and Technology-Driven Pre-Service Training." *E-Journal of Humanities, Arts and Social Sciences* 6, no. 13 (2025): 1-17, <https://doi.org/10.38159/ehass.20256131>.

*Keywords: Pre-Service Teacher Education, Digital Curriculum Innovation, TPACK Framework, Inclusive Education, Rural Contexts*

## INTRODUCTION

With significant impact, the digital revolution has continued to transform educational landscapes across the globe, but the benefits are not equitably passed on, especially to rural communities. In many developing countries like those of Sub-Saharan Africa, rural teacher education institutions are inhibited from properly infusing digital technologies into their curricula.<sup>1</sup> Such disparities limit the professional growth of pre-service teachers while furthering educational inequalities, thus unravelling the complex

<sup>1</sup> Oluwatoyin Ayodele Ajani, "Equity and Access in Digital Transformation: Enhancing Curriculum Delivery at Rural Universities," *E-Journal of Humanities, Arts and Social Sciences* 6, no. 5 (April 17, 2025): 571–88, <https://doi.org/10.38159/ehass.20256515>.

underway towards inclusive and equitable quality education. This must-have digital integration for teacher education. The twenty-first-century classroom demands teaching workers who are digitally literate and pedagogically competent and able to adjust rapidly to technological advancements.<sup>2</sup> However, rural locations have hardly any infrastructure, resources, or policy support to induce these changes.<sup>3</sup>

Curriculum innovation remains the core to resolving the above-cited problems. An actively responsive and well-contextualized curriculum could embark on the digitalization journey by integrating technological, pedagogical, and content knowledge (TPACK) into teacher-trainer programmes.<sup>4</sup> The TPACK framework offers a strong conceptual mechanism to comprehend the intersections among technology, pedagogy, and content knowledge in particular contexts, such as in environments challenged by limited resources, as indicated by De Freitas and Spangenberg. Although attractive in theory in terms of digital integration, digital integration remains difficult to implement. Infrastructural challenges such as uncertain internet connectivity and the inability to buy sufficient digital gadgets remain setbacks in rural institutions.<sup>5</sup> Also, the digital divide is not just technical but epistemological in nature; it highlights issues of access, equity, and cultural relevance embedded in curriculum design.<sup>6</sup>

Further to the complicated digital transformation agenda by decolonisation of education, Scholars argue that digital tools and digital content have to be critically interrogated if they really do not reproduce the colonial knowledge system or marginalise the indigenous knowledge systems.<sup>7</sup> Curriculum innovations must be advanced in technology and responsive in culture to effect any meaningful transformation. Professional development functions as yet another aspect of great importance. Effective digital competency development requires pre-service teachers to have continuous support and training that matches their pedagogical goals and realities of the classroom.<sup>8</sup> Different blended learning modes, interactive pedagogies, and mentorship programs have proven effective in narrowing digital competence gaps, among rural educators.<sup>9</sup>

Policy frameworks provide additional impetus for the digital transformation of teacher education. At the national and institutional levels, policies should clearly prioritise digital equity and strategically guide curricular reforms, infrastructural development, and capacity building.<sup>10</sup> Disjoint innovations, when not supported by relevant policy, will do little to effectuate systemic transformation. Then the COVID-19 pandemic shed light on the dire need for digital readiness in education. The sudden shifts to remote learning exposed the vulnerabilities of the rural institution and necessitated the need for a resilient and adaptable teacher education system.<sup>11</sup> Such a crisis offers an opportunity to rethink teacher education in the digital and inclusive frameworks.

The capability approach is especially appropriate for framing the efficacy of digital transformation in education.<sup>12</sup> By emphasizing what people can do and be, it draws attention to those enabling conditions

<sup>2</sup> María Cristina Martínez Bravo, Charo Sádaba Chalezquer, and Javier Serrano-Puche, "Meta-Marco de La Alfabetización Digital: Análisis Comparado de Marcos de Competencias Del Siglo XXI," *Revista Latina de Comunicación Social*, no. 79 (July 9, 2021): 76–110, <https://doi.org/10.4185/RLCS-2021-1508>.

<sup>3</sup> Dennis Yao Dzansi and Kofi Amedzo, "Integrating ICT into Rural South African Schools: Possible Solutions for Challenges," *International Journal of Educational Sciences* 6, no. 2 (March 25, 2014): 341–48, <https://doi.org/10.1080/09751122.2014.11890145>.

<sup>4</sup> Oluwatoyin Ayodele Ajani, "Enhancing Pre-Service Teacher Education: Crafting a Technology-Responsive Curriculum for Modern Classrooms and Adaptive Learners," *Research in Educational Policy and Management* 6, no. 2 (October 27, 2024): 209–29, <https://doi.org/10.46303/repam.2024.32>.

<sup>5</sup> Emnet Tadesse Woldegiorgis, "Mitigating the Digital Divide in the South African Higher Education System in the Face of the Covid-19 Pandemic," *Perspectives in Education* 40, no. 3 (September 30, 2022): 197–211, <https://doi.org/10.18820/2519593X/pie.v40.i3.13>.

<sup>6</sup> Leon Moosavi, "The Decolonial Bandwagon and the Dangers of Intellectual Decolonisation," *International Review of Sociology* 30, no. 2 (May 3, 2020): 332–54, <https://doi.org/10.1080/03906701.2020.1776919>.

<sup>7</sup> Pam Christie, *Decolonising Schools in South Africa: The Impossible Dream?* (Routledge, 2020).

<sup>8</sup> Oluwatoyin Ayodele Ajani and Thandi Ngema, "Addressing Digital Competence Gaps in Pre-Service Teacher Education: Challenges and Strategies for Rural Schools," *International Journal of Development and Sustainability* 13, no. 10 (2024): 895–908.

<sup>9</sup> John Mangundu, "STEM Preservice Teachers' e-Readiness for Online Multimodal Teaching Methods Usage in Pietermaritzburg, South Africa: Analysis through the Adapted TPACK Framework," *African Journal of Research in Mathematics, Science and Technology Education* 27, no. 2 (2023): 137–54.

<sup>10</sup> UNESCO, "Management Report: Education Sector," Paris: UNESCO, 2023, <https://unesdoc.unesco.org/ark:/48223/pf0000385819>.

<sup>11</sup> Kirti Menon and Shireen Motala, "Pandemic Leadership in Higher Education: New Horizons, Risks and Complexities," *Education as Change* 25 (May 27, 2021), <https://doi.org/10.25159/1947-9417/8880>.

<sup>12</sup> Amartya Sen, "Elements of a Theory of Human Rights," in *Justice and the Capabilities Approach* (Routledge, 2017), 221–62.

that would ultimately allow for meaningful learning and teaching experiences.<sup>13</sup> The study is placed within the discourse of social justice and educational equity, aiming to contribute to the literature that calls for inclusive, context-sensitive models of technology use in teacher education.<sup>14</sup> This research intends to foreground rural institutions in understanding the paradigmatic and pedagogical changes needed for a sustainable digital integration.

The research adopts a systematic literature review methodological approach while incorporating peer-reviewed literature covering the period 2000 to 2025. This approach provides a comprehensive analysis of trends, issues, and innovations involved in digital curriculum design for rural teacher education. The literature review is guided by the TPACK framework, underpinned by decolonisation, capability, and social justice perspectives. This study was guided by the following research objectives:

- To describe the current state of digital integration in rural teacher education curricula.
- To highlight infrastructural, pedagogical, and policy-related challenges that impede digital transformation.
- To identify curriculum innovations that encourage inclusive, technologically responsive teacher training.
- To present a curriculum reform framework guided by the TPACK model and principles of equity and contextual relevance.

## LITERATURE REVIEW

The integration of digital technology into teacher education has thus become a global imperative, especially with regard to adequately preparing pre-service teachers for their future work in 21st-century classrooms. However, in rural teacher education institutions, systemic barriers often impede their efficient use of digital tools. The chief of these are infrastructural deficits, low levels of digital literacy, and a lack of contextually relevant models of pedagogy.<sup>15</sup> Therefore, the Technological Pedagogical Content Knowledge Framework (TPACK) provides a holistic view on how to address the issue. TPACK was developed by Mishra and Koehler, conceptualising teaching with technology as effective at the intersection of three central knowledge domains: technological knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK). Because the TPACK model brings to light the very complex relationship that exists among the three knowledge domains of TK, PK, and CK, it has received recognition in teacher education research.<sup>16</sup> In rural settings, where technological access is often minimal, the TPACK framework becomes highly instrumental in structuring curricular innovations that can reasonably be put into practice and will therefore have a greater impact.

Following a plethora of studies investigating its relevance in assessing teacher preparedness and improving professional development, Mangundu concluded that STEM pre-service teachers in rural South Africa present varying degrees of competence in TPACK, the least developed within TPACK being technological knowledge.<sup>17</sup> The results of the study justify the launch of interventions aiming at upgrading digital literacy in conjunction with pedagogical and content knowledge. One aspect of curriculum development is geared towards TPACK growth. Ajani argued for curricula that actively respond to technology and that view digital tools not as external to but rather as firmly embedded in pedagogical practice.<sup>18</sup> Such curricula would have to be based on reality-based teaching scenarios, relating pre-service teachers to digital applications, which in turn link content and teaching use, as well as student engagement.

---

<sup>13</sup> David A. Clark, "The Capability Approach: Its Development, Critiques and Recent Advances," *Global Poverty Research Group*, 2006; Caroline Sarojini Hart, "Education, Inequality and Social Justice: A Critical Analysis Applying the Sen-Bourdieu Analytical Framework," *Policy Futures in Education* 17, no. 5 (June 29, 2019): 582–98, <https://doi.org/10.1177/1478210318809758>.

<sup>14</sup> Leon, Tikly and Angeline M. Barrett, "Social Justice, Capabilities and the Quality of Education in Low Income Countries," *International Journal of Educational Development* 31, no. 1 (2011): 3–14.

<sup>15</sup> Ajani, "Equity and Access in Digital Transformation: Enhancing Curriculum Delivery at Rural Universities"; Dzansi and Amedzo, "Integrating ICT into Rural South African Schools: Possible Solutions for Challenges."

<sup>16</sup> Gert De Freitas and Erna D. Spangenberg, "Mathematics Teachers' Levels of Technological Pedagogical Content Knowledge and Information and Communication Technology Integration Barriers," *Pythagoras* 40, no. 1 (2019): a431.

<sup>17</sup> Mangundu, "STEM Preservice Teachers'e-Readiness for Online Multimodal Teaching Methods Usage in Pietermaritzburg, South Africa: Analysis through the Adapted TPACK Framework."

<sup>18</sup> Oluwatoyin Ayodele Ajani, "Exploring the Prospects and Challenges of AI Integration in Curriculum Delivery for Pre-Service Teachers at Rural Universities," *J. Res. Rev. Soc. Sci. Pakistan* 7, no. 2 (2024): 2771–89.

The blended learning model presents itself as another avenue for the integration of TPACK into teacher education. It involves a conjunction between face-to-face instruction and online learning, which offers flexibility, differentiation, and interaction in pedagogical approaches.<sup>19</sup> Due to intermittent connectivity in rural areas, blended learning presents a realistic solution that weighs technological innovation against contextual limitations. Professional development is another key antecedent of TPACK development. Olayinka and Ngcoza emphasise the significance of training programmes that expose pre-service teachers to a wide range of digital technologies and pedagogical strategies.<sup>20</sup> Such programmes should be cyclical, reflective, and attentive to the reality of rural classrooms so that the impact will be long-lasting.

The available literature also signals the issue of institutional support being vital for furthering the integration of TPACK. Few finely designed curricula might be successful if they lack infrastructure, policy support, and commitment from the leadership.<sup>21</sup> Hence, the readiness of the institutions should be appraised and strengthened as a measure of implementing digital transformation. The TPACK framework harmonises well with the capability approach, founded upon the notion of "real freedoms" that are bestowed upon individuals so that they can achieve something of value. In rural teacher education, this means the establishment of enabling environments wherein pre-service teachers freely develop and exercise their digital competencies in a meaningful capacity. The ability to develop such an environment requires the property of resolving both material and epistemic layers of inequality.<sup>22</sup>

Decolonial ideas extend and enrich the conceptual underpinning of TPACK. Scholars such as Christie and Mbembe caution against the uncritical acceptance and adoption of Western-centric digital tools and demand pedagogical approaches that are culturally responsive and locally situated.<sup>23</sup> Thus, infusing indigenous knowledge systems into digital curricula will, on the one hand, make the curricula relevant and work for epistemic justice.<sup>24</sup>

Ideas stemming from critical theory are useful in exposing the structural barriers obstructing the development of TPACK capabilities. Celikates posit that ed-tech need to be analysed for their role in breakfast social hierarchy mechanisms.<sup>25</sup> Therefore, practically speaking, a critical framework for TPACK would go further and not be exclusively about skill acquisition, but would rather be a vehicle for teachers to rally against the inequities present within digital learning environments.

The prominence of digital literacy in TPACK cannot be overemphasized. Bravo et.al., propose a meta-framework that takes account of the technical, cognitive, and socio-emotional levels of digital literacy.<sup>26</sup> In rural contexts, developing digital literacy would have to be done through prolonged exposure, mentoring, and practice rather than through ad hoc training programmes.<sup>27</sup> Empirical evidence from rural South Africa schools points to a persistent lack of digital competence by teachers. Chisango et.al. and Zenda and Dlamini record pertinent challenges, such as unwillingness or lack of confidence, lack of

<sup>19</sup> Ajani and Ngema, "Addressing Digital Competence Gaps in Pre-Service Teacher Education: Challenges and Strategies for Rural Schools."

<sup>20</sup> Theodorio Adedayo Olayinka et al., "Promoting Pre-Service Teachers' TPACK Development in an Education Science Course," in *Information and Communications Technology in STEM Education* (Routledge, 2023), 182–97.

<sup>21</sup> Emnet Tadesse Woldegiorgis, "Mitigating the Digital Divide in the South African Higher Education System in the Face of the Covid-19 Pandemic," *Perspectives in Education* 40, no. 3 (2022): 197–211; Shafika Isaacs, "South Africa's (Unequal) Digital Learning Journey: A Critical Review," in *ICT in Education and Implications for the Belt and Road Initiative*, ed. Chee-Kit Looi et al. (Singapore: Springer, 2020), 187–211, [https://doi.org/10.1007/978-981-15-6157-3\\_11](https://doi.org/10.1007/978-981-15-6157-3_11).

<sup>22</sup> Zoltán Bajmócy, Bálint Mihók, and Judit Gébert, "Furthering Social Justice for Disabled People: A Framework Based on Amartya Sen's Capability Approach," *Studia Universitatis Babeş-Bolyai Sociologia* 67, no. 1 (2022): 69–84.

<sup>23</sup> Christie, *Decolonising Schools in South Africa: The Impossible Dream?*; Achille Mbembe, "Planetary Entanglement," in *Out of the Dark Night: Essays on Decolonization* (New York: Columbia University Press, 2019), 7–41, <https://doi.org/10.7312/mbem16028-003>.

<sup>24</sup> Mutendwahothe Walter Lumadi, "Decolonising the Curriculum to Reinvigorate Equity in Higher Education: A Linguistic Transformation," *South African Journal of Higher Education* 35, no. 1 (March 2021): 37–53, <https://doi.org/10.20853/35-1-4415>; Kudakwashe Batisai, "Decolonising the Curricula and the Space in Africa: An Interdisciplinary Approach," in *Decolonising Media and Communication Studies Education in Sub-Saharan Africa*, ed. S. L. Mudavanhu, S. Mpofu, and K. Batisai (London: Routledge, 2024), 143–59.

<sup>25</sup> Robin Celikates and Thomas Flynn, "Critical Theory," in *The Stanford Encyclopedia of Philosophy (Fall 2023 Edition)*, ed. Edward N. Zalta (Stanford University, 2023). <https://plato.stanford.edu/archives/win2023/entries/critical-theory/>.

<sup>26</sup> Martínez Bravo, Sádaba Chalezquer, and Serrano-Puche, "Meta-Marco de La Alfabetización Digital: Análisis Comparado de Marcos de Competencias Del Siglo XXI."

<sup>27</sup> Dragana, Radovanović et al., "Digital Literacy Key Performance Indicators for Sustainable Development," *Social Inclusion* 8, no. 2 (2020): 151–67.

proper training, and resistance to change.<sup>28</sup> These findings call for the establishment of support systems that will nurture TPACK development over time.

The necessity of initiating a digital transformation in teacher education has been further emphasized by the outbreak of the COVID-19 pandemic. Menon and Motala remark that with the move to remote learning, stark inequities in access and preparedness were revealed.<sup>29</sup> The TPACK framework describes how teacher education systems can be made resilient through the creation of adaptive, technology-enhanced pedagogies. Finally, the literature calls for a holistic approach to TPACK integration comprising curriculum reform, professional development, institutional support, and policy alignment. Ajani promotes an equitable framework in which digital technologies are embedded in pedagogical practices in ways that are contextually relevant and socially just.<sup>30</sup> This approach carries great potential for closing off digital divides and empowering pre-service teachers in rural universities.

## METHODOLOGY

The qualitative research design, specifically the systematic literature review (SLR), was chosen to investigate curriculum innovations supporting digital transformation in rural teacher education. The SLR was chosen because it would take a broad expanse of scholarly arguments and empirical findings regarding the infusion of digital technologies into pre-service teacher training in under-resourced and rural settings.<sup>31</sup> The SLR was conducted following accepted standards to identify, evaluate, and synthesize findings from peer-reviewed literature. This approach lends itself to the systemic and transparent examination of existing knowledge, with the end goal of detecting patterns, gaps, and emerging themes of relevance to the study.<sup>32</sup> The review particularly concentrated on literature spanning the years 2000-2025, allowing the capture of foundational and contemporary developments in digital education and curriculum reform.

Inclusion criteria were as follows: (1) peer-reviewed journal articles, books chapters, and conference proceedings; (2) focus on digital transformation, curriculum innovation, or teacher education; (3) studies conducted in rural or resource-limited educational contexts; and (4) written in English. Exclusion criteria were opinion pieces, non-academic sources, and pieces unrelated to teacher education or digital pedagogy. A thorough search was performed using all relevant sources in the academe database cross-listed between Scopus, Web of Science, ERIC and Google Scholar. The search keywords comprised "TPACK," "digital transformation," "rural teacher education," "curriculum innovation," and "inclusive education." Boolean operators and truncation methods were added to further streamline the search.<sup>33</sup>

The first search resulted in more than 300 sources that eventually underwent a relevance screening based on titles and abstracts; after duplicates were removed and inclusion criteria applied, 85 articles were downloaded and reviewed in full. Of these, 60 papers were ultimately selected for further analysis. The selected studies were then coded thematically using NVivo software to capture emerging themes and theoretical frameworks.<sup>34</sup> As the primary analytical framework of reference for this study, the TPACK framework combines technological, pedagogical, and content knowledge to explore how curriculum innovations sustain the shaping of digital skills in pre-service teachers. The framework was most applicable to evaluate how curriculum designs catered to the demands of digitally mediated teaching in rural settings.

<sup>28</sup> Grasia Chisango et al., "Teachers' Perceptions of Adopting Information and Communication Technologies in Teaching and Learning at Rural Secondary Schools in Eastern Cape, South Africa," *Africa Education Review* 17, no. 2 (2020): 1–19; Zenda Rudairo and Rethabile Dlamini, "Examining Factors That Influence Teachers to Adopt Information and Communication Technology in Rural Secondary Schools: An Empirical Study," *Education and Information Technologies* 28, no. 1 (2023): 815–32.

<sup>29</sup> Menon and Motala, "Pandemic Leadership in Higher Education: New Horizons, Risks and Complexities."

<sup>30</sup> Ajani, "Equity and Access in Digital Transformation: Enhancing Curriculum Delivery at Rural Universities."

<sup>31</sup> Ajani, "Equity and Access in Digital Transformation: Enhancing Curriculum Delivery at Rural Universities"; Ajani and Ngema, "Addressing Digital Competence Gaps in Pre-Service Teacher Education: Challenges and Strategies for Rural Schools."

<sup>32</sup> Radovanović, Dragana, Christian Holst, S. B. Belur, R. Srivastava, G. V. Hounqbonon, E. Le Quentrec, et al. "Digital Literacy Key Performance Indicators for Sustainable Development." *Social Inclusion* 8, no. 2 (2020): 151–167.

<sup>33</sup> Martínez Bravo, Sádaba Chalezquer, and Serrano-Puche, "Meta-Marco de La Alfabetización Digital: Análisis Comparado de Marcos de Competencias Del Siglo XXI."

<sup>34</sup> Thandi Ngema and Oluwatoyin Ayodele Ajani, "Exploring Digital Transformation in Preservice Teacher Education in Africa: Prospects, Challenges, and Implications for Sustainable Lifelong Learning," *International Journal of Innovative Technologies in Economy*, no. 3(47) (September 29, 2024), [https://doi.org/10.31435/rsglobal\\_ijite/30092024/8236a](https://doi.org/10.31435/rsglobal_ijite/30092024/8236a); Ajani and Ngema, "Addressing Digital Competence Gaps in Pre-Service Teacher Education: Challenges and Strategies for Rural Schools."

The review process used strategies to ensure rigour and credibility: triangulation, peer debriefing, and audit trails. Triangulation was implemented through the juxtaposition of findings coming from different kinds of studies (qualitative, quantitative, and mixed-methods), and peer debriefing entailed meetings with experts in digital education and curriculum studies.<sup>35</sup> An audit trail was implemented to record the entire decision-making process during the review. Ethical principles were also maintained as appropriate, even though secondary data were used for the review. All identified sources were formally cited to comply with the principles of academic integrity and transparency. The study did not involve human research subjects, so there was no formal requirement to obtain ethical clearance. Instead, the ethical implications of digital inequality and access were considered and reflected during the analysis.<sup>36</sup>

The methodological limitations involved in this study are potentially those arising from publication bias, restricting the scope of perspectives considered relating to the exclusion of non-English sources; though another limitation relates to the fact that while an SLR is a rigorous method that amalgamates existing knowledge, it cannot capture such perspectives as real-time dynamics within a classroom setting or indeed the lived experiences of pre-service teachers. Such limitations are present within the framework of the analysis and are attempted to be addressed in the recommendations. Thus, the methodology enabled a systematic, graduate-level inquiry into digital curriculum innovations in rural teacher education. Adhering to rigorous review protocols and utilizing the TPACK framework enables this study to carve a subtle understanding of embedding digital transformation effectively within pre-service teacher training programs, especially in contexts hailing infrastructural and pedagogical constraints.

## PRESENTATION OF RESULTS /FINDINGS

This section presents the findings derived from a systematic literature review on digital transformation in rural teacher education. Five interrelated themes formed the structure around which the data analysis was conducted: infrastructural and technological barriers; digital competence and TPACK readiness; curriculum innovation and pedagogical reform; inclusive education and equity; and policy, leadership, and institutional support, as indicated in **Table 1** below:

**Table 1: Summary of Results/Findings**

Research Objective	Theme	Supporting Studies	Common Findings
Examine infrastructural and technological challenges in rural teacher education	Infrastructural and Technological Barriers	Ajani (2025); Dzansi & Amedzo (2014); Woldegiorgis (2022); Isaacs (2020); World Bank (2019)	Poor internet access, lack of devices, and weak institutional support hinder digital integration in rural teacher education.
Assess the digital competence of pre-service teachers and their readiness for TPACK	Digital Competence and TPACK Readiness	De Freitas & Spangenberg (2019); Mangundu (2023); Ajani (2024); Olayinka et al. (2024); Bravo et al. (2021)	Pre-service teachers often lack technological knowledge; structured training improves TPACK; digital competence includes critical and adaptive skills.
Explore curriculum innovations that support digital transformation	Curriculum Innovation and Pedagogical Reform	Ajani (2024); Ajani & Ngema (2024); Chisango et al. (2020); Mangundu (2023); Ajani (2025)	Traditional curricula are rigid; blended and project-based learning enhance engagement;

<sup>35</sup> Oluwatoyin Ayodele Ajani and Sithabile Ntombela, "Advancing Inclusive Education in Higher Education: Challenges and Opportunities in Preparing Pre-Service Teachers to Support Students with Disabilities," *International Journal of Management, Knowledge and Learning* 14 (March 23, 2025), <https://doi.org/10.53615/2232-5697.14.25-41>.

<sup>36</sup> Zoltán Bajmócy, Barbara Mihók, and Judit Gébert, "Furthering Social Justice for Disabled People. A Framework Based on Amartya Sen's Capability Approach," *Studia Universitatis Babeş-Bolyai Sociologia* 67, no. 1 (June 1, 2022): 69–84, <https://doi.org/10.2478/subbs-2022-0003>.

			curriculum reform requires leadership and stakeholder involvement.
Investigate how digital tools can promote inclusive education in rural contexts	Inclusive Education and Equity	Ajani & Ntombela (2025); Sen (2004); Bajmócy et al. (2022); Batisai (2024); Christie (2020)	Digital tools can support inclusion if access and training are equitable; assistive tech is

Source: Author (2025)

The themes are explored in-depth to present the associated challenges, opportunities, and strategies for introducing digital technology in pre-service teacher education in a rural setup. The findings are analyzed with the TPACK framework and supplemented by more general theoretical perspectives concerning equity, inclusion, and educational change.

### **Theme 1: Infrastructural and Technological Barriers**

A recurring theme in the literature is the continued infrastructural deficit that precludes digital transformation in rural teacher education. Most rural institutions exhibit intermittent internet connectivity, availability of digital device, or technical know-how; therefore, they cannot integrate digital tools into teaching and learning.<sup>37</sup> Such restrictions are severely felt in the remotest rural corners where broadband rollouts have yet to take effect. Poor infrastructure, therefore, compromises access and makes online engagement increasingly difficult. There are many times when teachers or learners would experience interruptions, disrupting continuity and lessen learners' perceptions of the intended benefits of digital instruction.<sup>38</sup> Such infrastructural weaknesses work against the integration of technology into pedagogical practice-intended by the TPACK framework.

While perhaps a technological problem, the digital divide is simultaneously socio-economic. Students from disadvantaged backgrounds are disproportionately impacted by infrastructure gaps, thus widening the existing educational disparities.<sup>39</sup> This unfairness negates the spirit of inclusive education and calls forth special attention to digital deployment in rural areas.

Furthermore, the literature points out the infrastructure of institutional support systems being ill-equipped. In many rural universities, there is a paucity of ICT units or personnel that are trained to maintain and manage these digital platforms.<sup>40</sup> The development of digital curricula and professional development only further benefits from the lack of technical expertise.

However, some studies have shown the slow advance in improving digital infrastructure in rural schools under government and donor-funded projects.<sup>41</sup> However, such interventions would still face challenges with sustained impact, unless attendant systemic policy adjustments and uninterrupted monetary obligations take shape.

### **Theme 2: Digital Competence and TPACK Readiness**

The development of digital competency by pre-service teachers is at the core of technology-enhanced education. To this end, the TPACK framework has offered a very useful view in relation to how the integration between technology, pedagogy and content knowledge is achieved in the teaching preparation

<sup>37</sup> Joshua Ebere Chukwuere, "From Decolonisation to Digitalisation of Education in South Africa," *PONTE International Scientific Research Journal* 73, no. 12 (2017), <https://doi.org/10.21506/j.ponte.2017.12.15>; Ai-Thu Dang, "Amartya Sen's Capability Approach: A Framework for Well-Being Evaluation and Policy Analysis?," *Review of Social Economy* 72, no. 4 (October 2, 2014): 460–84, <https://doi.org/10.1080/00346764.2014.958903>.

<sup>38</sup> Daniel Dei, "Making Higher Education Count in Sub-Saharan Africa: Lessons from John Dewey's *My Pedagogic Creed*," in *Pedagogy: Challenges, Recent Advances, New Perspectives, and Applications*, ed. Hakan Şenol (London: IntechOpen, 2022), <https://doi.org/10.5772/intechopen.104087>.

<sup>39</sup> Mishack T Gumbo, "Digitisation of Higher Education and Research: Raising Inclusivity and Equity Issues for Indigenous Students," *South African Computer Journal* 35, no. 1 (2023): 149–63.

<sup>40</sup> Aneta Hayes, Kathy Luckett, and Greg Misiaszek, "Possibilities and Complexities of Decolonising Higher Education: Critical Perspectives on Praxis," *Teaching in Higher Education* (Taylor & Francis, 2021).

<sup>41</sup> World Bank, "Achieving Broadband Access for All in Africa," World Bank, October 17, 2019, <https://www.worldbank.org/en/news/press-release/2019/10/17/achieving-broadband-access-for-all-in-africa-comes-with-a-100-billion-price-tag>.

programmes.<sup>42</sup> Results, however, show that most pre-service teachers within the rural contexts display very low levels of technological knowledge or TK, thus hindering their capacities to effectively enact TPACK.<sup>43</sup>

Zavale claims that whereas pedagogical and content knowledge are often well developed, the technological knowledge component remains a very little addressed aspect of most teacher education curricula.<sup>44</sup> Such an imbalance limits the capacity of pre-service teachers to prepare and deliver digitally augmented lessons (especially) in an environment with limited resources. Some professional development interventions, aimed at improving TPACK, were successful. Olayinka et al. state that through well-structured professional trainings, which provide opportunities for pre-service teachers to work with digital technologies, there has been a huge gain in the confidence and competency of pre-service teachers. However, such programmes are not available in rural institutions.

The literature further shows that digital competence is neither a technical nor the only technical skill, but rather calls for critical reasoning, flexibility, and reflective practice.<sup>45</sup> These are the competencies necessary to navigate the complexities of digital pedagogy and foster learner-centred approaches in a variety of educational settings. In addition, the TPACK framework must be contextualised in rural contexts. In that sense, a generic or one-size-fits-all type of digital training will only fail to address the concrete challenges posed and/or potential that rural settings bring. Hence, TPACK interventions must be customised based on concrete local realities.<sup>46</sup>

### ***Theme 3: Curriculum Innovation and Pedagogical Reform***

Curriculum innovation is a major enabler of digital transformation in teacher education. The findings of the study indicate that traditional curricula in many rural institutions remain rigid and very content-based, leaving no room to embrace digital tools and pedagogical experimentation.<sup>47</sup> Non-alignment between the design of curricula and digital pedagogy thereby limits the power of technology to foster teaching and learning.

Curriculum designs that are innovative and integrate blended learning, project-based learning, and flipped classrooms have yielded successful results concerning digital engagement.<sup>48</sup> These models emphasize active learning whilst also affording pre-service teachers with the ability to interact with digital tools in genuine teaching settings. However, the practices of these models are highly uneven. Inertia within the institutions, lack of curriculum autonomy, and resistance of faculty to change stand out as some of the major barriers.<sup>49</sup> In this sense, such scenarios demand support from leadership and policy for curriculum reform.

Other literature also points to the need for curriculum content to be matched to the TPACK framework to prevent digital tools from being treated as an additional aspect of pedagogy.<sup>50</sup> This ensures the integration of digital tools within the actual pedagogical processes and lends coherence and relevance to teacher education programmes. Also, curriculum reform for digital education cannot take place in a vacuum. Stakeholders, including students, educators, and community members, should participate in the

<sup>42</sup> Nelson Casimiro Zavale, "Is Sub-Saharan Africa a Knowledge Society or Economy?," in *Decolonizing African Studies Pedagogies*, ed. Nathan Andrews and Nene Ernest Khalema (Cham: Palgrave Macmillan, 2023), 145–63, [https://doi.org/10.1007/978-3-031-37442-5\\_7](https://doi.org/10.1007/978-3-031-37442-5_7).

<sup>43</sup> Rudairo and Dlamini, "Examining Factors That Influence Teachers to Adopt Information and Communication Technology in Rural Secondary Schools: An Empirical Study."

<sup>44</sup> Zavale, "Is Sub-Saharan Africa a Knowledge Society or Economy?"

<sup>45</sup> Michael C. Jensen and William H. Meckling, "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure," *Journal of Financial Economics* 3, no. 4 (October 1976): 305–60, [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X).

<sup>46</sup> Christoph B. Knaus, Takashi Mino, and Johannes Seroto, *Decolonising African Higher Education: Practitioner Perspectives from Across the Continent* (London: Routledge, 2022).

<sup>47</sup> B. Dan Wood, "Agency Theory and the Bureaucracy," in *The Oxford Handbook of American Bureaucracy*, ed. Robert F. Durant (Oxford: Oxford University Press, 2010), <https://doi.org/10.1093/oxfordhb/9780199238958.003.0008>.

<sup>48</sup> World Bank, "Achieving Broadband Access for All in Africa."

<sup>49</sup> Alexander W Wiseman and Petrina M Davidson, "Institutionalized Inequities and the Cloak of Equality in the South African Educational Context," *Policy Futures in Education* 19, no. 8 (2021): 992–1009.

<sup>50</sup> Michael Walimbwa, "Digital Transformation of Higher Education and Twenty-First-Century Skilling in Sub-Saharan Africa: Potentials and Challenges," *Higher Education in Sub-Saharan Africa in the 21st Century: Pedagogy, Research and Community-Engagement*, 2023, 313–25.

design process to generate ownership of the reforms and ensure that such innovations truly respond to the needs and aspirations of the community.<sup>51</sup>

#### **Theme 4: Inclusive Education and Equity**

Inclusive education is a founding principle of present-day teacher education, even more so in rural areas where its implementation remains far from being realised. It is observed that digital transformation can either lessen inequalities or increase them, depending on the approach put in place.<sup>52</sup> When there are no specific interventions to circumvent all forms of digital exclusion, these tools may well end up deepening existing exclusions. The capability approach, as discussed by the UN, provides just an apt framework to view inclusion from a different angle—far from just that of being about resources and focusing on the actual freedom that an individual has to achieve educational goals.<sup>53</sup> In rural teacher education, this translates into establishing enabling environments in which all students, including those with disabilities, can reap benefits from the new digital developments.<sup>54</sup>

Some studies demonstrate the role of assistive technology that could support learners with diverse needs. However, the availability and use of these technologies remain limited in rural institutions due to costs, awareness, and training.<sup>55</sup> The solution of these obstacles can be made through targeted investment and capacity building. An inclusive digital education also covers cultural and language aspects. Curriculum content and digital platforms should be representative of rural learners' language and their online experiences to nurture the process of engagement and sense of belonging.<sup>56</sup> This involves applying a decolonial perspective on curriculum and digital content development.

Lastly, equity concerns intersect with gender, socio-economic status, and region. Intersectional analyses show that rural women stand in the middle of numerous barriers is meant to participation in the digital arena. The resolution of these barriers is meant to be a focal point for ensuring the aspirations of social justice and educational transformation.<sup>57</sup>

#### **Theme 5: Policy, Leadership, and Institutional Support**

The role of policy and leadership in enabling digital transformation has been a key theme found in the literature. The integration of digital technologies into rural teacher education must consider policies that favour infrastructure, training, and curriculum reform.<sup>58</sup> Fragmentation and under-resourcing colour the triumphs of implementation. Another equally important role is leadership at the institutional level. In essence, it is visionary and supportive leadership that cultivates an innovation culture built on collaboration, an essential element needed for the sustenance of digital initiatives.<sup>59</sup> On the contrary, lack of leadership commitment often results in ad hoc and unsustainable interventions.

Institutions that support structures such as ICT departments, digital learning centres, or professional learning communities contribute immensely to the outcomes of digital strategies. The presence of these structures increases the capacity of the institutions to respond to technological changes and to support staff and students adequately.<sup>60</sup> The literature also cites monitoring and evaluation as important. In the absence of strong mechanisms to evaluate the impact of ICT interventions, it remains

<sup>51</sup> Roy Venkatesamy and Zijing Hu, “Exploring Challenges Experienced by Foundation Phase Teachers in Using Technology for Teaching and Learning : A South African Case Study,” *Journal for the Education of Gifted Young Scientists* 10, no. 2 (June 30, 2022): 221–38, <https://doi.org/10.17478/jegys.1085660>.

<sup>52</sup> Piotr Urbanek, “Reform of the Higher Education System in Poland from the Perspective of Agency Theory,” *European Journal of Higher Education* 10, no. 2 (April 2, 2020): 130–46, <https://doi.org/10.1080/21568235.2018.1560344>.

<sup>53</sup> United Nations, “United Nations Sustainable Development Cooperation Framework: Internal Guidance (Final June 2019),” New York: United Nations, 2019, [https://unsdg.un.org/sites/default/files/2019-10/UN-Cooperation-FrameworkInternal-Guidance-Final-June-2019\\_1.pdf](https://unsdg.un.org/sites/default/files/2019-10/UN-Cooperation-FrameworkInternal-Guidance-Final-June-2019_1.pdf); UNESCO, “Management Report: Education Sector”; Delia Bădescu et al., “A Narrative Review of the Link between Sport and Technology,” *Sustainability* 14, no. 23 (December 6, 2022): 16265, <https://doi.org/10.3390/su142316265>.

<sup>54</sup> UNICEF, “Leading the UN Mission for Children,” New York: UNICEF, 2009, <https://www.unicef.org>.

<sup>55</sup> UNESCO, *Education for All Monitoring Report: Strong Foundations* (Paris: UNESCO, 2007).

<sup>56</sup> Tunjera, Nyaradzo, and Agnes Chigona. “Assisting Teacher Educators with Constructive Technology Integration into Curriculum Delivery in the 21st Century.” In *Conference of the South African Institute of Computer Scientists and Information Technologists 2020*, 12–18. <https://dl.acm.org/doi/abs/10.1145/3410886.3410900>.

<sup>57</sup> Sue Timmis et al., *Rural Transitions to Higher Education in South Africa: Decolonial Perspectives* (Routledge, 2021).

<sup>58</sup> United Nations, “United Nations Sustainable Development Cooperation Framework: Internal Guidance (Final June 2019).”

<sup>59</sup> Wiseman and Davidson, “Institutionalized Inequities and the Cloak of Equality in the South African Educational Context.”

<sup>60</sup> Walimbwa, “Digital Transformation of Higher Education and Twenty-First-Century Skilling in Sub-Saharan Africa: Potentials and Challenges.”

problematic to identify best practices or scale the models that work.<sup>61</sup> Accordingly, data-based decision-making should be an integral part of institutional planning processes.

Transforming digital initiatives through partnerships with government, industry, and civil society would further enhance their reach and impact. Collaborative models that harness external expertise and resources have been observed to enhance innovation and institutional robustness.<sup>62</sup>

## DISCUSSION

The study finds the multifaceted nature of digital transformation in rural teacher education. In this discourse, the TPACK framework sits central, providing a sound structural concept for understanding technology integration with pedagogy and content knowledge in pre-service teacher training. The ensuing discussion locates the findings within the broader theoretical base and in the context of enacted educational practice. The infrastructural and technological barriers discovered are consistent with prior studies highlighting the digital divide existing between urban and rural educational institutions.<sup>63</sup> Unreliable Internet access, low familiarity with digital devices, and the absence of technical support have been some of the constraints of digital curriculum development in rural universities. Such infrastructural deficits hamper not only the full blossoming of technological knowledge (TK) but also education for equality and inclusion at large.<sup>64</sup>

The study maintains a general imbalance of members of pre-service teachers in terms of digital competence, with TK competencies generally weaker than TPK and TCK competencies.

In rural contexts, this imbalance is more severe because of the fewer opportunities for digital exposure and training.<sup>65</sup> The TPACK framework suggests a reciprocal dependence between its three domains such that a weakness in any one of them inevitably impacts the effectiveness of the process in the totality of teaching and learning.<sup>66</sup> Furthermore, professional development is highlighted as a factor that facilitates the integration of TPACK. The Stanford Encyclopedia of Philosophy offers evidence to show that, with proper contextualized training, pre-service teachers may enhance their confidence and ability to utilize various digital tools.<sup>67</sup> However, the sustainability of such programs depends largely on the institutions' commitment and the availability of resources, which are usually limited in rural areas.<sup>68</sup>

Curriculum innovation is another theme that is gaining a lot of resonance in literature. According to Syafriadi et.al., the possible primary characteristic of the conventional teacher education curriculum is its rigidity and excessive leaning toward content, hence failing to accommodate the dynamic nature of digital pedagogy.<sup>69</sup> As alternatives along the lines of the TPACK model, promoting active, learner-centred teaching, blended learning, flipped classrooms, and project-based learning receive deserved attention.<sup>70</sup> These curriculum models find further endorsement in the elaborations for pedagogical reforms argued in line with the agenda of 21st-century education.<sup>71</sup> However, innovating pedagogy demands more than curricular flexibility; it requires a change in institutional culture. This a transformation is largely resisted by the old academic traditions.<sup>72</sup>

<sup>61</sup> Venketsamy and Hu, "Exploring Challenges Experienced by Foundation Phase Teachers in Using Technology for Teaching and Learning : A South African Case Study."

<sup>62</sup> Urbaneck, "Reform of the Higher Education System in Poland from the Perspective of Agency Theory."

<sup>63</sup> United Nations, "United Nations Sustainable Development Cooperation Framework: Internal Guidance (Final June 2019)"; Nyarai Tunjera and Agnes Chigona, "Assisting Teacher Educators with Constructive Technology Integration into Curriculum Delivery in the 21st Century," in *Conference of the South African Institute of Computer Scientists and Information Technologists 2020* (New York, NY, USA: ACM, 2020), 12–18, <https://doi.org/10.1145/3410886.3410900>.

<sup>64</sup> Timmis et al., *Rural Transitions to Higher Education in South Africa: Decolonial Perspectives*.

<sup>65</sup> Tikly and Barrett, "Social Justice, Capabilities and the Quality of Education in Low Income Countries."

<sup>66</sup> Michael Togara Tigere and Tshilidzi Netshitangani, "School Management Teams' Perceptions of ICT Integration in Township and Rural Secondary Schools of KwaZulu-Natal, South Africa: Infrastructure Challenges," *Gender and Behaviour* 20, no. 3 (2022): 20022–41.

<sup>67</sup> Stanford Encyclopedia of Philosophy, "The Capability Approach," Stanford University, 2020, <https://plato.stanford.edu/entries/capability-approach/>.

<sup>68</sup> Eko Syafriadi et al., "The Impact of Agency Theory on Organizational Behavior: A Systematic Literature Review of the Latest Research Findings," *Brazilian Journal of Development* 9, no. 12 (2023): 31895–911.

<sup>69</sup> Sen, "Elements of a Theory of Human Rights."

<sup>70</sup> Amartya Sen, "Poor, Relatively Speaking," *Oxford Economic Papers* 35, no. 2 (1983): 153–69.

<sup>71</sup> Research ICT Africa, *The State of ICT in Kenya: Report 2017* (Cape Town : Research ICT Africa, 2017).

<sup>72</sup> Aradhana Ramnund-Mansingh and Nikita Reddy, "South African Specific Complexities in Aligning Graduate Attributes to Employability," *Journal of Teaching and Learning for Graduate Employability* 12, no. 2 (2021): 206–21.

Without a doubt, inclusion is a concern that has been debated in tandem with the gaps revealed by the digital transformation of rural teacher education. The capability approach, as expounded by Radovanović et.al., sets forth grounds for critiquing the degree to which digital innovations bring about real freedom to the parties, i.e., learners and educators concerned.<sup>73</sup> Here, inclusion is seen as more than just access; it concerns real participation and achievement.<sup>74</sup> Assistive technology and culturally relevant digital content must be made available to cater for learners with diverse needs. However, the literature documents their lack of use in rural institutions, mainly due to costs, ignorance, and inadequate training.<sup>75</sup> Filling this gap requires a comprehensive approach that includes policy reform, adequate resource provision, and capacity building.

Besides enriching the discussion, the decolonial critique of digital education seeks to shed light on sinister manifestations in the current landscape of digital education. Scholars such as Olayinka et.al and Olaopa warn of the harmful effects of embracing Western-centric digital tools and pedagogies without critique, which may serve the interests of marginalisation of Indigenous knowledge systems.<sup>76</sup> Therefore, the decolonial TPACK framework calls for the inclusion of local languages, cultural narratives, and community-based knowledge in digital curricula.

Policy direction and leadership would characterize the next leg of digital transformation. These findings support the Ocholla and Ndlovu and Meyer positions, which stress digital equity-governed policies guided by sound coherence and adequate resourcing.<sup>77</sup> Equally, institutional leadership should take up an aggressive role in grooming an innovation culture and furthering staff development.<sup>78</sup>

What will give life to the digital strategies are institutional support structures like ICT departments and digital learning centres. The absence of such units in many rural institutions poses a serious disadvantage to the expansion and sustainability of digital initiatives.<sup>79</sup> This observation brings home the idea of systemic investment in institutional capacity. Monitoring and evaluation mechanisms may also contribute to understanding the consequences of digital transformation. By means of data-based decision-making processes, institutions acquire the ability to recognize partners in best practices, to address emerging challenges, and to update their strategies in due course.<sup>80</sup> Nonetheless, such mechanisms are often vaguely configured in the rural context where the ability to collect and analyse data is limited.

The findings also present an opening for partnerships to push forward digital transformation. Partners from government agencies, private sector actors, and CSOs can provide the resources, expertise, and networks crucial for fostering innovations in the rural teacher education arena.<sup>81</sup> For a successful application, these partnerships must have a foundations of equality and shared interests. Conversely, the discussion has stated that bridging digital divides in rural teacher education requires an array of perspectives applied across contexts, intertwining with the TPACK framework. The integration of technology with pedagogy and content is great when reflected in all TPACK domains; however, infrastructural, institutional, and socio-cultural barriers have to be managed in actualizing these ideals.<sup>82</sup>

<sup>73</sup> Radovanović et al., “Digital Literacy Key Performance Indicators for Sustainable Development.”

<sup>74</sup> Tamanna Quraishi et al., “Empowering Students through Digital Literacy: A Case Study of Successful Integration in a Higher Education Curriculum,” *Journal of Digital Learning and Distance Education* 2, no. 9 (2024): 667–81.

<sup>75</sup> Alexander Pepper and Julie Gore, “Behavioral Agency Theory,” *Journal of Management* 41, no. 4 (May 27, 2015): 1045–68, <https://doi.org/10.1177/0149206312461054>.

<sup>76</sup> Olayinka et al., “Promoting Pre-Service Teachers’ TPACK Development in an Education Science Course”; Olawale R Olaopa, “Pan-Africanism and the Challenges of Economic Reconstruction in Africa: Exploring the Role of African Indigenous Knowledge (AIK).,” *African Renaissance* (1744-2532) 20, no. 4 (2023).

<sup>77</sup> Dennis Ocholla, “Decolonizing Higher Education in Africa: Implications and Possibilities for University Libraries,” *College & Research Libraries News* 81, no. 6 (June 11, 2020): 289, <https://doi.org/10.5860/crln.81.6.289>; Mdutshekela Ndlovu and Debbie Meyer, “Teachers’ TPACK Readiness to Teach Mathematics with Technology: A Case Study of a Private High School in South Africa,” in *Information and Communications Technology in STEM Education* (Routledge, 2023), 145–59.

<sup>78</sup> Samwel Dick Mwapwele et al., “Teachers’ ICT Adoption in South African Rural Schools: A Study of Technology Readiness and Implications for the South Africa Connect Broadband Policy,” *The African Journal of Information and Communication* 24 (2019): 1–21.

<sup>79</sup> Moosavi, “The Decolonial Bandwagon and the Dangers of Intellectual Decolonisation.”

<sup>80</sup> Adnan J. Mohammed, “United Nations Sustainable Development Cooperation Framework – Internal Guidance,” 2019, <https://unsdg.un.org/resources/united-nations-sustainable-development-cooperation-framework-guidance>.

<sup>81</sup> Ephraim Mhlanga, “Shifting Trends in Higher Education in Sub-Saharan Africa and Implications for Quality,” *Mediating Learning in Higher Education in Africa*. Brill, 2021, 174–92; Menon and Motala, “Pandemic Leadership in Higher Education: New Horizons, Risks and Complexities.”

<sup>82</sup> Xolile Mdingi and Agnes Chigona, “Teachers’ Integration of Instructional Technology into Curriculum Delivery in Disadvantaged Communities: A Case of Cape Flats Schools in South Africa,” in *EdMedia+ Innovate Learning* (Association for the Advancement of Computing in Education (AACE), 2021), 97–106.

Advances in curriculum innovations will foster rural teacher education's transformation into digital inclusiveness and equity-oriented practice in the future.

## RECOMMENDATIONS

The findings lend this study a double character, one theoretical and the other practical, to guide the digital transformation of rural teacher education. From a theoretical viewpoint, the TPACK framework should be further contextually adapted to capture the socio-economic and infrastructural realities of rural education systems in general. Although the TPACK provides a robust model for the integration of technology with pedagogy and content knowledge, the way it is applied to rural contexts requires some adjustment that reflects thereby limited or absent access to digital tools and the skewed pathology of digital literacy.<sup>83</sup> Future research could propose a "contextualised TPACK" that considers local knowledge systems, indigenous pedagogies, and community-based learning practices.

Practically speaking, curriculum reform needs to be prioritized with the explicit aim of incorporating digital competences in all levels and stages of teacher education. This would mean changing from the situation where the curriculum is very content-heavy and taught primarily through lectures to one that favors a more interactive, blended, and project-based approach to learning.<sup>84</sup> Institutions must rethink how their curricula articulate digital technologies so that these tools are not viewed as adjuncts, but rather as core and integral to their teaching methodologies. Furthermore, curriculum design needs to be undertaken as a participatory process, involving educators, students and other community members to ensure that it is locally relevant and responsive to community needs.<sup>85</sup>

Professional development must equally equip both pre-service and in-service teachers to deal with digital learning environments. Institutions must create the type of continuous scaffolded training programmes beyond one-off workshops to promote constant engagement with the use of digital tools and the development of related pedagogical processes.<sup>86</sup> Such programmes have to be again aligned with the theoretical TPACK framework, and practically adapted to the peculiar challenges confronted by rural teaching, including but not limited to low connectivity and low availability of devices.<sup>87</sup>

At the policy level, digital equity must be prioritized on the national and institutional fronts. Governments should invest in the creation of rural digital infrastructure, from broadband down to devices, and the establishment of digital learning hubs. Policy instruments should require that the principles of digital literacy and inclusive education be part of the standards for teacher training. Leaders on the institutional level should therefore champion these reform efforts to ensure that the digital transformation has strategic planning and allocation of resources firmly embedded within it.

Future research needs to follow up on digital transformation initiatives to gauge the long-term effects of digital transformation initiatives in rural teacher education. Longitudinal studies could explore the variations in TPACK competencies as they evolve and their effects on teaching practices and learner outcomes. Also, comparative studies across different rural contexts might inform evidence for best practice and prove to be good blueprints to be scaled up for digital integration.<sup>88</sup> Research should also examine the intersections of digital pedagogy and decolonial and capability approaches to ensure that digital transformation advances equity and justice.

Lastly, digital transformation should open new avenues for interdisciplinary collaboration and innovation. Hence, collaboration between higher education institutions, technology providers, and civil society organisations ensures the co-creation of digital tools and resources that are culturally relevant and pedagogically sound. These collaborations should be grounded in the spirit of mutual respect and common

---

<sup>83</sup> Ruth M Mampane, Margaret F Omidire, and Folake Ruth Aluko, "Decolonising Higher Education in Africa: Arriving at a Glocal Solution," *South African Journal of Education* 38, no. 4 (2018); Lumadi, "Decolonising the Curriculum to Reinvigorate Equity in Higher Education: A Linguistic Transformation."

<sup>84</sup> Carol M Kopp, "Agency Theory: Definition, Examples of Relationships, and Disputes," *Dipetik Oktober* 24 (2021): 2022.

<sup>85</sup> Knaus, Mino, and Seroto, *Decolonising African Higher Education: Practitioner Perspectives from Across the Continent*.

<sup>86</sup> Isaacs, "South Africa's (Unequal) Digital Learning Journey: A Critical Review."

<sup>87</sup> Hayes, Lockett, and Misiaszek, "Possibilities and Complexities of Decolonising Higher Education: Critical Perspectives on Praxis."

<sup>88</sup> Olaopa, "Pan-Africanism and the Challenges of Economic Reconstruction in Africa: Exploring the Role of African Indigenous Knowledge (AIK)."

aspirations to ensure that rural teacher education is not only digitally transformed but also socially transformed.

## CONCLUSION

This paper has explored the complex intertwining of digital transformation, curriculum innovation, and inclusive teacher education in rural contexts. The findings reveal that indeed, digital tools can benefit pre-service teacher training; however, there are several impediment restricting their full realization, namely: infrastructural limitations, digital illiteracy, and curricula unsynchronized with digital progress. This is where TPACK has come to the forefront; by applying TPACK, one acknowledges the existing challenges and also engenders possible solutions that straddle the triune aspects of technology, pedagogy, and content knowledge. In light of this, the study also views curriculum reforms relevant to context, ongoing professional development, and inclusive pedagogical strategies as the cornerstones for achieving an equitable and successful digital transformation. Further provoking the issue were the findings that suggest the necessity of precise institutional leadership and policy coherence towards contributing to partnership efforts to bridge the digital divide. Such collaborations should support the integration of assistive technologies, culturally competent content, and decolonial design thinking into teacher education programs, to help promote inclusivity and social generality in the learning environment. Therefore, it concludes that a thoroughgoing approach—allied with TPACK and capability approaches—informed by a sensitive view of local realities, is required to develop the digital capacity of pre-service teachers in rural universities for modern education.

## BIBLIOGRAPHY

- Ajani, Oluwatoyin Ayodele. “Enhancing Pre-Service Teacher Education: Crafting a Technology-Responsive Curriculum for Modern Classrooms and Adaptive Learners.” *Research in Educational Policy and Management* 6, no. 2 (October 27, 2024): 209–29. <https://doi.org/10.46303/repam.2024.32>.
- . “Equity and Access in Digital Transformation: Enhancing Curriculum Delivery at Rural Universities.” *E-Journal of Humanities, Arts and Social Sciences* 6, no. 5 (April 17, 2025): 571–88. <https://doi.org/10.38159/ejass.20256515>.
- . “Exploring the Prospects and Challenges of AI Integration in Curriculum Delivery for Pre-Service Teachers at Rural Universities.” *J. Res. Rev. Soc. Sci. Pakistan* 7, no. 2 (2024): 2771–89.
- Ajani, Oluwatoyin Ayodele, and Thandi Ngema. “Addressing Digital Competence Gaps in Pre-Service Teacher Education: Challenges and Strategies for Rural Schools.” *International Journal of Development and Sustainability* 13, no. 10 (2024): 895–908.
- Ajani, Oluwatoyin Ayodele, and Sithabile Ntombela. “Advancing Inclusive Education in Higher Education: Challenges and Opportunities in Preparing Pre-Service Teachers to Support Students with Disabilities.” *International Journal of Management, Knowledge and Learning* 14 (March 23, 2025). <https://doi.org/10.53615/2232-5697.14.25-41>.
- Bădescu, Delia, Nicoleta Zaharie, Iulian Stoian, Mircea Bădescu, and Cristian Stanciu. “A Narrative Review of the Link between Sport and Technology.” *Sustainability* 14, no. 23 (December 6, 2022): 16265. <https://doi.org/10.3390/su142316265>.
- Bajmócy, Zoltán, Bálint Mihók, and Judit Gébert. “Furthering Social Justice for Disabled People: A Framework Based on Amartya Sen’s Capability Approach.” *Studia Universitatis Babeş-Bolyai Sociologia* 67, no. 1 (2022): 69–84.
- Bajmócy, Zoltán, Barbara Mihók, and Judit Gébert. “Furthering Social Justice for Disabled People. A Framework Based on Amartya Sen’s Capability Approach.” *Studia Universitatis Babeş-Bolyai Sociologia* 67, no. 1 (June 1, 2022): 69–84. <https://doi.org/10.2478/subbs-2022-0003>.
- Batisai, Kudakwashe. “Decolonising the Curricula and the Space in Africa: An Interdisciplinary Approach.” In *Decolonising Media and Communication Studies Education in Sub-Saharan Africa*, edited by S. L. Mudavanhu, S. Mpofu, and K. Batisai, 143–59. London: Routledge, 2024.
- Celikates, Robin, and Thomas Flynn. “Critical Theory.” In *The Stanford Encyclopedia of Philosophy*

- (Fall 2023 Edition), edited by Edward N. Zalta. Stanford University, 2023.
- Chisango, Grasia, Newlin Marongwe, Nomxolisi Mtsi, and Thembisile E Matyedi. "Teachers' Perceptions of Adopting Information and Communication Technologies in Teaching and Learning at Rural Secondary Schools in Eastern Cape, South Africa." *Africa Education Review* 17, no. 2 (2020): 1–19.
- Christie, Pam. *Decolonising Schools in South Africa: The Impossible Dream?* Routledge, 2020.
- Chukwuere, Joshua Ebere. "From Decolonisation to Digitalisation of Education in South Africa." *PONTE International Scientific Researchs Journal* 73, no. 12 (2017).  
<https://doi.org/10.21506/j.ponte.2017.12.15>.
- Clark, David A. "The Capability Approach: Its Development, Critiques and Recent Advances." *Global Poverty Research Group*, 2006.
- Dang, Ai-Thu. "Amartya Sen's Capability Approach: A Framework for Well-Being Evaluation and Policy Analysis?" *Review of Social Economy* 72, no. 4 (October 2, 2014): 460–84.  
<https://doi.org/10.1080/00346764.2014.958903>.
- Dei, Daniel. "Making Higher Education Count in Sub-Saharan Africa: Lessons from John Dewey's *My Pedagogic Creed*." In *Pedagogy: Challenges, Recent Advances, New Perspectives, and Applications*, edited by Hakan Şenol. London: IntechOpen, 2022.  
<https://doi.org/10.5772/intechopen.104087>.
- Dzansi, Dennis Yao, and Kofi Amedzo. "Integrating ICT into Rural South African Schools: Possible Solutions for Challenges." *International Journal of Educational Sciences* 6, no. 2 (March 25, 2014): 341–48. <https://doi.org/10.1080/09751122.2014.11890145>.
- Freitas, Gert De, and Erna D. Spangenberg. "Mathematics Teachers' Levels of Technological Pedagogical Content Knowledge and Information and Communication Technology Integration Barriers." *Pythagoras* 40, no. 1 (2019): a431.
- Gumbo, Mishack T. "Digitisation of Higher Education and Research: Raising Inclusivity and Equity Issues for Indigenous Students." *South African Computer Journal* 35, no. 1 (2023): 149–63.
- Hart, Caroline Sarojini. "Education, Inequality and Social Justice: A Critical Analysis Applying the Sen-Bourdieu Analytical Framework." *Policy Futures in Education* 17, no. 5 (June 29, 2019): 582–98.  
<https://doi.org/10.1177/1478210318809758>.
- Hayes, Aneta, Kathy Luckett, and Greg Misiasek. "Possibilities and Complexities of Decolonising Higher Education: Critical Perspectives on Praxis." *Teaching in Higher Education*. Taylor & Francis, 2021.
- Isaacs, Shafika. "South Africa's (Unequal) Digital Learning Journey: A Critical Review." In *ICT in Education and Implications for the Belt and Road Initiative*, edited by Chee-Kit Looi, Hongli Zhang, Yuhui Gao, and Liting Wu, 187–211. Singapore: Springer, 2020.  
[https://doi.org/10.1007/978-981-15-6157-3\\_11](https://doi.org/10.1007/978-981-15-6157-3_11).
- Jensen, Michael C., and William H. Meckling. "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure." *Journal of Financial Economics* 3, no. 4 (October 1976): 305–60.  
[https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X).
- Knaus, Christoph B., Takashi Mino, and Johannes Seroto. *Decolonising African Higher Education: Practitioner Perspectives from Across the Continent*. London: Routledge, 2022.
- Kopp, Carol M. "Agency Theory: Definition, Examples of Relationships, and Disputes." *Dipetik Oktober* 24 (2021): 2022.
- Lumadi, Mutendwahothe Walter. "Decolonising the Curriculum to Reinvigorate Equity in Higher Education: A Linguistic Transformation." *South African Journal of Higher Education* 35, no. 1 (March 2021): 37–53. <https://doi.org/10.20853/35-1-4415>.
- Mampane, Ruth M, Margaret F Omidire, and Folake Ruth Aluko. "Decolonising Higher Education in Africa: Arriving at a Glocal Solution." *South African Journal of Education* 38, no. 4 (2018).
- Mangundu, John. "STEM Preservice Teachers'e-Readiness for Online Multimodal Teaching Methods Usage in Pietermaritzburg, South Africa: Analysis through the Adapted TPACK Framework." *African Journal of Research in Mathematics, Science and Technology Education* 27, no. 2 (2023): 137–54.
- Martínez Bravo, María Cristina, Charo Sádaba Chalezquer, and Javier Serrano-Puche. "Meta-Marco de

- La Alfabetización Digital: Análisis Comparado de Marcos de Competencias Del Siglo XXI.” *Revista Latina de Comunicación Social*, no. 79 (July 9, 2021): 76–110.  
<https://doi.org/10.4185/RLCS-2021-1508>.
- Mbembe, Achille. “Planetary Entanglement.” In *Out of the Dark Night: Essays on Decolonization*, 7–41. New York: Columbia University Press, 2019. <https://doi.org/10.7312/mbem16028-003>.
- Mdingi, Xolile, and Agnes Chigona. “Teachers’ Integration of Instructional Technology into Curriculum Delivery in Disadvantaged Communities: A Case of Cape Flats Schools in South Africa.” In *EdMedia+ Innovate Learning*, 97–106. Association for the Advancement of Computing in Education (AACE), 2021.
- Menon, Kirti, and Shireen Motala. “Pandemic Leadership in Higher Education: New Horizons, Risks and Complexities.” *Education as Change* 25 (May 27, 2021). <https://doi.org/10.25159/1947-9417/8880>.
- Mhlanga, Ephraim. “Shifting Trends in Higher Education in Sub-Saharan Africa and Implications for Quality.” *Mediating Learning in Higher Education in Africa*. Brill, 2021, 174–92.
- Mohammed, Adnan J. “United Nations Sustainable Development Cooperation Framework – Internal Guidance,” 2019. <https://unsdg.un.org/resources/united-nations-sustainable-development-cooperation-framework-guidance>.
- Moosavi, Leon. “The Decolonial Bandwagon and the Dangers of Intellectual Decolonisation.” *International Review of Sociology* 30, no. 2 (May 3, 2020): 332–54.  
<https://doi.org/10.1080/03906701.2020.1776919>.
- Mwapwele, Samwel Dick, Mario Marais, Sifiso Dlamini, and Judy Van Biljon. “Teachers’ ICT Adoption in South African Rural Schools: A Study of Technology Readiness and Implications for the South Africa Connect Broadband Policy.” *The African Journal of Information and Communication* 24 (2019): 1–21.
- Ndlovu, Mdutshekwa, and Debbie Meyer. “Teachers’ TPACK Readiness to Teach Mathematics with Technology: A Case Study of a Private High School in South Africa.” In *Information and Communications Technology in STEM Education*, 145–59. Routledge, 2023.
- Ngema, Thandi, and Oluwatoyin Ayodele Ajani. “Exploring Digital Transformation in Preservice Teacher Education in Africa: Prospects, Challenges, and Implications for Sustainable Lifelong Learning.” *International Journal of Innovative Technologies in Economy*, no. 3(47) (September 29, 2024). [https://doi.org/10.31435/rsglobal\\_ijite/30092024/8236a](https://doi.org/10.31435/rsglobal_ijite/30092024/8236a).
- Ocholla, Dennis. “Decolonizing Higher Education in Africa: Implications and Possibilities for University Libraries.” *College & Research Libraries News* 81, no. 6 (June 11, 2020): 289.  
<https://doi.org/10.5860/crln.81.6.289>.
- Olaopa, Olawale R. “Pan-Africanism and the Challenges of Economic Reconstruction in Africa: Exploring the Role of African Indigenous Knowledge (AIK).” *African Renaissance (1744-2532)* 20, no. 4 (2023).
- Olayinka, Theodorio Adedayo, Kenneth Ngcoza, Clement Simuja, and Brian Shambare. “Promoting Pre-Service Teachers’ TPACK Development in an Education Science Course.” In *Information and Communications Technology in STEM Education*, 182–97. Routledge, 2023.
- Pepper, Alexander, and Julie Gore. “Behavioral Agency Theory.” *Journal of Management* 41, no. 4 (May 27, 2015): 1045–68. <https://doi.org/10.1177/0149206312461054>.
- Quraishi, Tamanna, Helena Ulusi, Asma Muhid, Musawer Hakimi, and Mohammad Reshad Olusi. “Empowering Students through Digital Literacy: A Case Study of Successful Integration in a Higher Education Curriculum.” *Journal of Digital Learning and Distance Education* 2, no. 9 (2024): 667–81.
- Radovanović, Dragana, Christian Holst, Shruthi B. Belur, Rahul Srivastava, Gilles V. Hounghonon, and Emmanuel Le Quentrec. “Digital Literacy Key Performance Indicators for Sustainable Development.” *Social Inclusion* 8, no. 2 (2020): 151–67.
- Ramund-Mansingh, Aradhana, and Nikita Reddy. “South African Specific Complexities in Aligning Graduate Attributes to Employability.” *Journal of Teaching and Learning for Graduate Employability* 12, no. 2 (2021): 206–21.
- Research ICT Africa. *The State of ICT in Kenya: Report 2017*. Cape Town : Research ICT Africa,

2017.

- Rudairo, Zenda, and Rethabile Dlamini. "Examining Factors That Influence Teachers to Adopt Information and Communication Technology in Rural Secondary Schools: An Empirical Study." *Education and Information Technologies* 28, no. 1 (2023): 815–32.
- Sen, Amartya. "Elements of a Theory of Human Rights." In *Justice and the Capabilities Approach*, 221–62. Routledge, 2017.
- . "Poor, Relatively Speaking." *Oxford Economic Papers* 35, no. 2 (1983): 153–69.
- Stanford Encyclopedia of Philosophy. "The Capability Approach." Stanford University, 2020. <https://plato.stanford.edu/entries/capability-approach/>.
- Syafriadi, Eko, Herdini Br Sitepu, Yasha Putri Andini, Iskandar Muda, and Sambas Ade Kesuma. "The Impact of Agency Theory on Organizational Behavior: A Systematic Literature Review of the Latest Research Findings." *Brazilian Journal of Development* 9, no. 12 (2023): 31895–911.
- Tigere, Michael Togara, and Tshilidzi Netshitangani. "School Management Teams' Perceptions of ICT Integration in Township and Rural Secondary Schools of KwaZulu-Natal, South Africa: Infrastructure Challenges." *Gender and Behaviour* 20, no. 3 (2022): 20022–41.
- Tikly, Leon, and Angeline M. Barrett. "Social Justice, Capabilities and the Quality of Education in Low Income Countries." *International Journal of Educational Development* 31, no. 1 (2011): 3–14.
- Timmis, Sue, Thea De Wet, Kibashini Naidoo, Sheila Trahar, Lisa Lucas, Emmanuel Mfanafuthi Mgqwashu, Patricia Muhuro, and Gina Wisker. *Rural Transitions to Higher Education in South Africa: Decolonial Perspectives*. Routledge, 2021.
- Tunjera, Nyarai, and Agnes Chigona. "Assisting Teacher Educators with Constructive Technology Integration into Curriculum Delivery in the 21st Century." In *Conference of the South African Institute of Computer Scientists and Information Technologists 2020*, 12–18. New York, NY, USA: ACM, 2020. <https://doi.org/10.1145/3410886.3410900>.
- UNESCO. *Education for All Monitoring Report: Strong Foundations*. Paris: UNESCO, 2007.
- . "Management Report: Education Sector." Paris: UNESCO, 2023. <https://unesdoc.unesco.org/ark:/48223/pf0000385819>.
- UNICEF. "Leading the UN Mission for Children." New York: UNICEF, 2009. <https://www.unicef.org>.
- United Nations. "United Nations Sustainable Development Cooperation Framework: Internal Guidance (Final June 2019)." New York: United Nations, 2019. [https://unsdg.un.org/sites/default/files/2019-10/UN-Cooperation-FrameworkInternal-Guidance-Final-June-2019\\_1.pdf](https://unsdg.un.org/sites/default/files/2019-10/UN-Cooperation-FrameworkInternal-Guidance-Final-June-2019_1.pdf).
- Urbanek, Piotr. "Reform of the Higher Education System in Poland from the Perspective of Agency Theory." *European Journal of Higher Education* 10, no. 2 (April 2, 2020): 130–46. <https://doi.org/10.1080/21568235.2018.1560344>.
- Venketsamy, Roy, and Zijing Hu. "Exploring Challenges Experienced by Foundation Phase Teachers in Using Technology for Teaching and Learning : A South African Case Study." *Journal for the Education of Gifted Young Scientists* 10, no. 2 (June 30, 2022): 221–38. <https://doi.org/10.17478/jegys.1085660>.
- Walimbwa, Michael. "Digital Transformation of Higher Education and Twenty-First-Century Skilling in Sub-Saharan Africa: Potentials and Challenges." *Higher Education in Sub-Saharan Africa in the 21st Century: Pedagogy, Research and Community-Engagement*, 2023, 313–25.
- Wiseman, Alexander W, and Petrina M Davidson. "Institutionalized Inequities and the Cloak of Equality in the South African Educational Context." *Policy Futures in Education* 19, no. 8 (2021): 992–1009.
- Woldegiorgis, Emnet Tadesse. "Mitigating the Digital Divide in the South African Higher Education System in the Face of the Covid-19 Pandemic." *Perspectives in Education* 40, no. 3 (2022): 197–211.
- . "Mitigating the Digital Divide in the South African Higher Education System in the Face of the Covid-19 Pandemic." *Perspectives in Education* 40, no. 3 (September 30, 2022): 197–211. <https://doi.org/10.18820/2519593X/pie.v40.i3.13>.
- Wood, B. Dan. "Agency Theory and the Bureaucracy." In *The Oxford Handbook of American Bureaucracy*, edited by Robert F. Durant. Oxford: Oxford University Press, 2010. <https://doi.org/10.1093/oxfordhb/9780199238958.003.0008>.

World Bank. "Achieving Broadband Access for All in Africa." World Bank, October 17, 2019.

<https://www.worldbank.org/en/news/press-release/2019/10/17/achieving-broadband-access-for-all-in-africa-comes-with-a-100-billion-price-tag>.

Zavale, Nelson Casimiro. "Is Sub-Saharan Africa a Knowledge Society or Economy?" In *Decolonizing African Studies Pedagogies*, edited by Nathan Andrews and Nene Ernest Khalema, 145–63. Cham: Palgrave Macmillan, 2023. [https://doi.org/10.1007/978-3-031-37442-5\\_7](https://doi.org/10.1007/978-3-031-37442-5_7).

## ABOUT AUTHORS

Dr. Oluwatoyin Ayodele Ajani is a Senior Lecturer in Curriculum/Education Studies at the University of KwaZulu-Natal and a leading scholar in curriculum theory, higher education, and digital transformation in rural contexts. His research explores the intersections of technology, social justice, and pedagogical innovation, particularly through frameworks such as TPACK, UTAUT, and Diffusion of Innovation, to enhance learning and teaching in under-resourced universities. Dr. Ajani's work on the Scholarship of Teaching and Learning (SoTL) foregrounds the need for humanising, decolonial, and equity-driven pedagogies that empower students and educators in rural South Africa. He has published extensively in peer-reviewed journals, contributed to national and international conferences, and mentors emerging academics through SoTL writing retreats and research capacity programmes. His scholarly and professional engagements reflect a sustained commitment to advancing inclusive curriculum reform, digital literacy, and the scholarship of teaching as a transformative force in higher education.

Prof. Samantha Govender is a distinguished scholar and higher education leader whose research and practice focus on curriculum studies, teacher education, and the Scholarship of Teaching and Learning (SoTL). She has extensive experience in academic development, quality assurance, and the professional growth of university educators across South Africa. Prof. Govender's work advances inclusive and contextually grounded pedagogies that respond to the complexities of post-apartheid higher education, with a particular emphasis on student success, reflective practice, and curriculum transformation. She has published and presented widely on SoTL, decolonial education, and evidence-based teaching innovations, and she actively mentors emerging academics in building research-informed teaching portfolios. Prof. Govender serves as the Deputy -Dean, Faculty of Education, University of Zululand, KwaDlangezwa, where she is dedicated to advancing teaching excellence, SoTL capacity-building, and higher education leadership in South Africa.