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Exploring faculty readiness for digital pedagogy in rural colleges

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Abstract
The integration of digital pedagogy into higher education has become a central focus of educational reform, especially following the global shift to online and hybrid learning environments triggered by the COVID-19 pandemic. However, while urban institutions have increasingly embraced digital transformation, rural area colleges often face systemic obstacles that impede faculty readiness for effective technology-enabled instruction. This review explores the multifaceted concept of faculty readiness for digital pedagogy in rural colleges, examining current literature, empirical findings, and theoretical frameworks to identify enabling and inhibiting factors that shape the preparedness of educators in such settings.

The concept of digital readiness extends beyond access to technological devices and internet connectivity; it encompasses pedagogical competence, attitudes toward digital tools, digital literacy, and the degree of institutional support provided for ongoing faculty development. Studies conducted in countries like Indonesia, Uganda, the United States, and Bangladesh have consistently shown that rural faculty demonstrate positive attitudes towards digital pedagogy, recognizing its potential to democratize access and improve learning outcomes. However, these attitudes often coexist with limited technical skills, underdeveloped digital literacy, and minimal pedagogical training in online content delivery. The digital divide, characterized by disparities in broadband access, availability of ICT tools, and professional training, continues to act as a critical barrier to the integration of digital teaching strategies in rural contexts.

Institutional support emerges as one of the most significant factors affecting faculty readiness. Research indicates that rural faculty are more likely to adopt digital tools when institutions provide structured professional development programs, peer mentoring, technical assistance, and leadership that actively promotes a culture of innovation. The lack of such institutional scaffolding often results in inconsistent or superficial use of digital tools, with faculty relying on basic methods such as uploading PDFs or delivering lectures via unsupervised online platforms, rather than employing interactive and learner-centered strategies.

The review concludes by proposing a context-sensitive framework grounded in the TPACK (Technological Pedagogical Content Knowledge) model, adapted to incorporate the realities of rural educational settings. This framework highlights the interdependence of personal, pedagogical, technical, and organizational dimensions in determining readiness. Ultimately, enhancing faculty readiness for digital pedagogy in rural colleges demands systemic change that goes beyond training it requires investment in infrastructure, tailored professional development, ongoing mentorship, and leadership commitment to inclusive educational transformation.

Keywords: Rural colleges, inclusive educational transformation, determining readiness, rural contexts, examining current literature

Introduction
The transition toward digital pedagogy represents a pivotal evolution in educational practice, encompassing not only the use of technology but also a transformation in instructional design, assessment, and student engagement. While higher education institutions in urban settings have increasingly leveraged digital tools to enhance teaching and learning, colleges in rural areas often remain on the margins of this shift. Faculty in rural colleges many of whom operate in resource-constrained environments face significant challenges that affect their readiness to adopt and sustain digital pedagogical approaches.

Readiness for digital pedagogy is a composite construct. It entails not just the possession of technical skills but the ability to design and deliver content that leverages digital tools to improve learner engagement, assessment accuracy, and inclusivity.

The concept also includes digital literacy, which involves the critical evaluation of digital resources, ethical online behavior, and the capacity to guide students through complex digital environments. Additionally, readiness is influenced by faculty attitudes toward technology, their confidence in managing virtual learning spaces, and the degree of support they receive from institutional structures.

Rural colleges often face unique contextual constraints that differentiate them from their urban counterparts. Infrastructure remains a core concern-many institutions still lack stable internet access, up-to-date devices, or learning management systems. Even where minimal infrastructure exists, the absence of consistent electricity or IT support staff can make sustained digital engagement impractical. These challenges contribute to a low baseline of digital readiness among faculty, creating a gap between policy aspirations and on-ground implementation.

However, infrastructure is only part of the picture. Several studies have shown that faculty attitudes play a crucial role in mediating readiness. For instance, found that teachers in rural Turkey demonstrated high motivation to engage with digital tools, perceiving them as vital for reaching students in geographically isolated areas. Similarly, Nurhikmah *et al*. (2024) [6] reported that rural educators in Indonesia saw online teaching not as a burden but as an opportunity to innovate and connect, despite facing considerable infrastructural limitations. These findings suggest that attitudinal readiness may precede, and potentially catalyze, technical and pedagogical development.

A deeper issue is the lack of pedagogical training tailored to digital modalities. In many cases, rural faculty are expected to shift to digital platforms without receiving adequate preparation in online instructional design, student engagement techniques, or digital assessment methods. As Ning and Danquah (2024) note in their study of faculty readiness at a Lebanese university, most educators had baseline digital familiarity but struggled to convert this into effective online pedagogy. This disconnect highlights the need for a more nuanced understanding of what digital readiness entails-one that recognizes its pedagogical core rather than reducing it to technical competence alone.

Another critical factor is institutional support. Research from the United States (Long, 2023) [3] indicates that rural faculty are more likely to adopt and sustain digital teaching practices when they feel supported by their institutions. This support includes access to professional development, opportunities for peer collaboration, recognition of digital teaching efforts in promotion pathways, and the provision of user-friendly digital platforms. The absence of such support can lead to disengagement or minimal compliance, where faculty fulfill digital mandates superficially without genuine pedagogical transformation.

In light of these findings, it becomes clear that faculty readiness for digital pedagogy in rural areas cannot be addressed through isolated training workshops or one-time infrastructure investments. Instead, what is needed is a systems approach that integrates professional learning communities, context-sensitive policy frameworks, ongoing technical support, and adaptive leadership. Moreover, readiness should be understood as a dynamic and developmental process rather than a fixed attribute. Faculty may move through stages of readiness, progressing from basic awareness to full integration and institutional strategies should be designed to support this continuum.

This paper seeks to synthesize the current body of literature on rural faculty readiness for digital pedagogy and propose a contextualized framework that accounts for the unique challenges and opportunities in rural education. By highlighting the intersections between individual capability and institutional ecosystems, the review aims to inform policy, practice, and future research in advancing equitable digital transformation in rural higher education.

Literature Review and Synthesis

Over the past decade, the concept of digital readiness has garnered significant scholarly interest, particularly within the context of expanding digital access in higher education. However, the intersection of digital pedagogy and rural faculty readiness remains a relatively underexplored domain, despite its growing importance in the wake of global educational disruptions such as the COVID-19 pandemic. A comprehensive review of literature from varied geographical and institutional settings reveals both consistent challenges and promising directions.

In Indonesia, Nurhikmah *et al*. (2024) [6] conducted a quantitative study involving over 500 teachers in rural and semi-rural districts. Their findings suggest that while educators possess a moderate level of digital literacy, their pedagogical competence in designing digital lessons remains limited. The most notable predictor of readiness in this study was not infrastructure or technical knowledge, but attitude. Specifically, faculty members who believed in the efficacy of online learning were significantly more likely to invest time and effort in developing their digital teaching capacities. This highlights a key insight: intrinsic motivation and belief in the pedagogical value of digital tools are pivotal for readiness.

In a similar vein, Aslan *et al*. (2024) explored the perceptions of mathematics teachers in remote Turkish provinces regarding digital pedagogy. Their findings emphasized the critical role of local community support and cultural attitudes. Teachers who were embedded in supportive school cultures, where principals and fellow staff encouraged experimentation with technology, displayed significantly higher confidence and competence. Conversely, educators working in isolation or within rigid institutional hierarchies reported reluctance to engage with digital methods due to fear of failure or lack of administrative understanding.

Long's (2023) [3] study in the United States provides a broader institutional perspective. Conducted in rural school districts across three states, the research examined how faculty perceptions of institutional readiness impacted their own adoption of digital tools. Interestingly, the availability of high-speed internet and devices did not necessarily correlate with higher faculty engagement. Instead, the strongest determinant was perceived support-measured through the availability of instructional designers, help desks, and peer learning groups. This finding is consistent with the theory of ecological systems in education, which posits that individual behavior is shaped by the layered influence of micro- (peer), meso- (institution), and macro- (policy) systems.

In their mixed-methods study conducted at a Lebanese university, emphasized the interplay between technology knowledge and pedagogical application. Faculty participants

generally understood how to use basic digital tools (e.g., Microsoft Teams, Moodle), but lacked the pedagogical skills to foster interactivity, scaffold digital learning, or assess student engagement in online settings. This disconnect mirrors the long-standing critique of TPACK implementation-namely, that many institutions assume technical training alone is sufficient, when in fact, pedagogical and content-specific digital integration is the most complex component.

Data from China published in *Nature* (2023) adds a quantitative dimension to this discussion. Using a sample of over 2,000 educators, the study assessed digital competence and readiness through a structured evaluation. The results showed a marked rural-urban divide, with rural educators scoring significantly lower in data literacy and digital instructional design. What made this study particularly notable was its use of path analysis to demonstrate that data literacy had the most powerful indirect effect on teaching performance, even more so than basic ICT skills.

Across all studies, a recurring theme emerges: faculty readiness is not solely a function of individual capacity, but of environmental enablement. Even the most enthusiastic and digitally literate educators struggle without consistent access to electricity, professional development, and pedagogical mentorship. Conversely, institutions that foster collaborative digital communities and invest in sustainable training structures tend to see more robust faculty transformation-even in resource-constrained settings.

Another theme is the limited customization of professional development. Many programs are generic, urban-centric, or technology-focused without addressing rural faculty's pedagogical context. For instance, asynchronous e-learning workshops may be poorly attended in areas with low connectivity. Similarly, training that does not incorporate local curricular needs or cultural values may be met with resistance or apathy. As such, there is a growing call for "contextual pedagogy"-training that integrates digital tools with rural realities, including multilingualism, community-based learning models, and infrastructure-sensitive strategies.

Finally, while faculty development literature often emphasizes workshops and online courses, several scholars argue for broader models of mentorship and learning networks. Bonder *et al*. (2013) [2] stress the value of peer mentoring in rural faculties, especially when senior teachers are trained to support novice users. These decentralized, non-hierarchical models of learning not only build digital confidence but also contribute to a sense of community, reducing professional isolation.

Taken together, these studies suggest that readiness for digital pedagogy in rural colleges is best understood through a layered model-one that incorporates the technical, pedagogical, psychological, and institutional dimensions. In the following section, we propose such a framework.

Proposed Framework: Rural-TPACK-R Model

In response to the multi-dimensional challenges identified in the literature, this paper proposes an expanded readiness model titled Rural-TPACK-R-a contextualized adaptation of the established Technological Pedagogical Content Knowledge (TPACK) framework, designed specifically for rural faculty in higher education. At its core, the TPACK model emphasizes the integration of three domains: technological knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK). In practice, this means an effective educator not only knows their subject matter but can teach it effectively using appropriate digital tools. However, in rural contexts, several external and internal variables impact the expression of this knowledge.

The Rural-TPACK-R Model introduces four contextual layers to augment the original framework:

1. **Infrastructure Context (IC):** This encompasses availability of electricity, internet bandwidth, device quality, and LMS access. Without stable infrastructure, even well-trained faculty cannot implement digital pedagogy. The model assigns infrastructural readiness as a foundational layer, essential but not sufficient on its own.
2. **Institutional Support (IS):** Rural-TPACK-R elevates the importance of institutional mechanisms-such as training schedules, tech support units, and digital policy integration-that directly influence faculty behavior. Readiness improves when institutions provide ongoing scaffolding rather than sporadic training.
3. **Motivational Disposition (MD):** Reflecting findings by Nurhikmah *et al*. (2024) [6], this component emphasizes the importance of faculty attitudes, confidence, and perceived self-efficacy. Even in poorly resourced contexts, strong motivational disposition can drive digital exploration and adoption.
4. **Cultural Relevance (CR):** In rural areas, educational success often depends on the cultural alignment of content and delivery. Digital pedagogy that respects local languages, incorporates community practices, or uses familiar analogies tends to be more effective. The model integrates this factor to encourage inclusive and meaningful instruction.

Each of these layers interacts with the core TPACK triad. For instance, low infrastructure may limit technological knowledge application, while strong motivational disposition may compensate for weak institutional support. The model is dynamic and non-linear, allowing for variation across individuals and institutions.

Recommendations

Building faculty readiness for digital pedagogy in rural colleges requires an approach that is multidimensional, context-sensitive, and sustainably designed. Based on the literature reviewed and the proposed Rural-TPACK-R model, the following recommendations are offered for educational institutions, policymakers, and development agencies working within rural educational systems.

The first and perhaps most urgent recommendation involves investment in infrastructure. Reliable electricity, broadband connectivity, and access to functional digital devices are fundamental prerequisites for any digital teaching initiative. However, investment alone is not sufficient unless it is coupled with maintenance strategies, local IT support, and regular infrastructure audits. Many rural colleges experience the paradox of having received hardware donations without the support systems to keep them functional. Therefore, any infrastructure deployment must include a long-term plan for upkeep and community-based troubleshooting mechanisms, such as training local "tech stewards" from within faculty or

student bodies.

Equally important is the development and delivery of contextually relevant professional development (PD) programs. Rather than offering generic or urban-centric training workshops, PD for rural faculty should be customized to reflect local challenges, student demographics, cultural context, and available technology. This might include modular workshops delivered offline or via low-bandwidth platforms, the use of regional languages in training materials, and practical simulations of teaching with minimal tech. PD programs must also go beyond basic tool demonstrations to include instructional design for online environments, digital assessment strategies, and techniques for promoting interactivity and engagement in virtual settings.

A third priority is fostering a culture of peer mentorship and collaborative learning among faculty. Many studies reviewed indicate that rural educators benefit significantly from community support and peer modeling. Institutions should formalize mentorship programs where tech-savvy faculty mentor others, creating a cascading model of skill development. This may involve recognizing digital mentors through stipends, teaching credits, or professional recognition. Additionally, faculty learning communities-small groups that meet regularly to share experiences, challenges, and resources-can serve as safe spaces for experimentation, failure, and iterative learning.

Leadership also plays a crucial role in enhancing faculty readiness. College administrators and department heads must be active facilitators of digital transformation. This includes setting clear expectations for digital integration, providing feedback on digital lesson plans, supporting faculty during transitions, and allocating budgets for tech-related needs. Administrative leadership should not only be managerial but also pedagogical, modeling digital engagement in their communication and decision-making processes.

Furthermore, a robust system of evaluation and feedback must be established to measure the progress of faculty readiness. Institutions should consider developing readiness rubrics based on the Rural-TPACK-R model and conduct regular self-assessments and peer reviews. These assessments should not be punitive but developmental, helping faculty to track their own growth and identify specific support needs.

Lastly, regional and national policymakers should create frameworks that acknowledge and address rural disparities in digital readiness. This could include grants for rural institutions, priority access to national e-learning platforms, or reserved slots for rural faculty in national PD programs. Policies should also be shaped by ground realities, drawing on data collected directly from rural institutions and encouraging localized innovation rather than enforcing one-size-fits-all mandates.

Through these strategic and sensitive measures, rural colleges can shift from being digital laggards to becoming hubs of context-driven innovation, where faculty are empowered, equipped, and encouraged to deliver education that is not only technologically supported but also pedagogically meaningful.

Conclusion

The integration of digital pedagogy in rural colleges is not merely a question of technology deployment but a broader educational transformation that centers on faculty empowerment. As this review has demonstrated, readiness for digital pedagogy is a complex and layered construct shaped by personal capability, institutional culture, infrastructural access, and systemic support. Faculty in rural colleges often bring enthusiasm, adaptability, and resilience to their roles, but these qualities must be nurtured through strategic, consistent, and localized interventions.

While technical skills are necessary, they are insufficient in isolation. True digital readiness involves the ability to design learner-centered digital environments, engage students meaningfully through interactive platforms, assess performance effectively, and reflect on one's teaching in a digital space. For rural faculty, this transformation is complicated by infrastructural challenges, limited exposure to contemporary pedagogical models, and the absence of peer support systems. However, where institutions have provided sustained support, professional development tailored to the rural context, and encouragement through policy and leadership, meaningful change has taken root.

The proposed Rural-TPACK-R model offers a theoretical and practical lens through which readiness can be both understood and developed. By acknowledging the realities of rural education-connectivity limitations, cultural diversity, and pedagogical gaps-the model provides a framework for strategic planning that is inclusive, flexible, and results-oriented.

As the future of education continues to pivot toward blended, hybrid, and fully digital models, it is imperative that rural colleges are not left behind. Faculty readiness is the linchpin of successful digital integration; without it, even the most advanced technological systems will fail to achieve their educational potential. Stakeholders must therefore recognize that digital transformation in rural education is not about replicating urban models but creating grounded, context-sensitive pathways that meet faculty where they are and help them grow.

Through collaboration, commitment, and capacity-building, rural colleges can not only bridge the digital divide but also emerge as beacons of innovative, inclusive, and accessible education. The journey begins with readiness-not just to use technology, but to reimagine what teaching and learning can be.

References

1. Bahar A, Kocaçal E, Maraş GB. Impact of the peer education model on nursing students' anxiety and psychomotor skill performance. Nigerian J Clin Pract. 2022;25(5):677-682.
2. Bonder M, Smith T, Khan A. Peer mentoring and digital capacity in under-resourced teaching communities. Liberty Univ Digital Commons. 2013;8(2):34-45.
3. Long SA. Teachers' perceptions of readiness and support of online instruction in rural school settings. Voices Reform. 2023;6(1):26-50.
4. Mishra P, Koehler MJ. Technological Pedagogical Content Knowledge: A framework for teacher knowledge. Teachers Coll Rec. 2006;108(6):1017-1054.
5. Nature Editors. The digital competency gap in China's rural education system: Quantifying a hidden divide.

Nat Educ Rev. 2023;7(3):45-57.
6. Nurhikmah H, Ramli AM, Sulistiyo U. Teachers' readiness in online learning: A structural equation model of digital literacy, attitude, and pedagogical competence. Electron J e-Learn. 2024;22(8):93-105.
7. Wikipedia contributors. Digital pedagogy. Wikipedia, The Free Encyclopedia. 2024. Available from: https://en.wikipedia.org/wiki/Digital_pedagogy