

A Synergy Model of Digital Leadership for Principals and Teachers to Overcome Technopedagogical Competency Disruption in Elementary Schools: A Theoretical Study

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ABSTRACT

This study aims to develop a Digital Leadership Synergy Model that serves as a theoretical framework to address disruptions caused by the technopedagogical competency gap between principals and teachers in elementary schools. Through a theoretical study method involving analysis and synthesis of the latest literature, this study successfully identified the fundamental elements of digital leadership and technopedagogical competency. The results of the study map the profile of technopedagogical competency disruption, including the anatomy of the gap and its impact on the learning ecosystem. Based on these findings, a theoretical model was designed that visualizes the synergistic relationship between the main constructs of principal digital leadership and teacher technopedagogical competency, with collaborative mechanisms as the driving force. This model is also equipped with operationalization strategies, anticipation of challenges, and factors supporting its successful implementation in the context of elementary schools. As an outcome, this study formulates theoretical propositions that can be further tested. Thus, this study contributes a clear and applicable theoretical framework for stakeholders in building synergy to overcome digital competency disruption in elementary school environments.

Keywords: Digital Leadership, Technopedagogical Competence, Synergy, Theoretical Model, Elementary School

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INTRODUCTION

Digital transformation in the education sector has become an inevitable global phenomenon. UNESCO data (2022) shows that more than 85% of countries in the world have integrated digital technology into their national education policies, with investment in *Educational Technology* (EdTech) projected to reach \$404 billion globally by 2025 (HolonIQ, 2023). The acceleration of technology adoption crystallized during the pandemic-, which forced more than 1.6 students worldwide to switch to online learning (World Bank, 2021). This wave of disruption has not only changed the pedagogical paradigm but also demanded a fundamental evolution in educational leadership models at the institutional level.

In response to these challenges, the concept of *digital leadership* has emerged as the main theoretical framework. Initially popularized by Sheninger (2019), digital leadership is defined as the strategic use of technology to improve leadership practices and empower school communities. This theory evolved from the transformational leadership approach, emphasizing leaders' ability to manage the complexity of the digital environment, develop staff capacity, and facilitate a culture of innovation (Richardson & Sterrett, 2020). This grand theory provides an important foundation for understanding how educational leaders can guide their institutions in an era of technological acceleration.

However, the implementation of digital leadership in the field faces complex challenges, especially at the elementary school level. Bush's (2022) research reveals that only 38% of elementary school principals in Southeast Asia feel they have adequate digital readiness to lead this transformation. This challenge is exacerbated by the emergence of a significant competency gap between leaders and teachers. A comparative study by Lee et al. (2023) in 50 elementary schools found that 72% of teachers reported higher levels of digital proficiency than their principals, creating a phenomenon of "*reverse leadership*" in terms of technology.

The specific context of elementary schools adds its own layer of complexity. The characteristics of learning in elementary schools, which emphasize a holistic approach and character development, require the integration of appropriate technology, not just mass adoption (Huang et al., 2022). In addition, high administrative burdens and budget constraints often make it difficult for principals to focus on systematic digital competency development (Wong & Li, 2023). This situation creates a scenario where principals, as formal leaders, lag behind their staff in digital competency.

This competency gap creates disruption in the school ecosystem, which impacts the effectiveness of learning. Research by Chen & Wang (2024) proves that the digital competency gap between principals and teachers is negatively correlated with the successful implementation of digital curricula. Teachers with high digital competency tend to experience frustration when their leaders do not understand the technical challenges they face, while principals feel overwhelmed in providing meaningful supervision (Garcia & Martinez, 2023). As a result, many digital initiatives in elementary schools stop at the experimental stage without sustainable impact.

Based on a mapping of previous research methodologies, qualitative approaches were predominantly used to explore perceptions and experiences of digital leadership (60%), followed by quantitative correlation studies (30%), and mixed-methods (10%) (meta-analysis by Thompson, 2024). However, there is very limited research that develops theoretical models to specifically address competency gaps through a collaborative approach. The majority of studies focus on improving the competencies of individuals, both principals and teachers, separately (Kwon & Park, 2023; Schmidt & Fischer, 2022).

A critical research gap has been identified in the absence of a synergistic model that can theoretically bridge the disruption of technopedagogical competencies between leaders and teachers. Previous studies, such as those conducted by Nguyen (2023), only identified the problem without offering a structured solution framework, while the research by Rodriguez et al. (2022) was limited to technical training without a collaborative approach. Therefore, it is necessary to develop a theoretical model that can map the synergy mechanisms between the digital leadership of school principals and the technopedagogical competencies of teachers.

The urgency of this research lies in the urgent need for theoretical solutions that can be implemented to prevent wasteful investment in technology in elementary schools. Data from the OECD (2023) shows that 65% of technology investments in elementary schools do not achieve optimal results due to a lack of alignment between leadership and implementation at the teacher level. This study proposes a solution through the development of a Digital Leadership Synergy Model specifically designed for the elementary school context, with a focus on creating mutually reinforcing collaborative mechanisms.

Specifically, this study aims to develop a theoretical model of digital leadership synergy that can bridge the technopedagogical competency gap between principals and teachers in elementary schools. Through a comprehensive and systematic theoretical review approach, this study will synthesize various existing theoretical frameworks to construct an innovative conceptual model. The expected theoretical contribution is to enrich the literature on digital educational leadership by introducing a synergistic perspective that has been neglected thus far.

The practical benefit of this research is the availability of a theoretical framework that can be adapted by education leaders and policymakers in designing more effective capacity building programs. By understanding the mechanisms of proportional synergy, elementary schools can optimize existing resources to create a truly digitally integrated learning environment, where leadership and technopedagogical implementation go hand in hand towards improving the overall quality of education.

METHOD

This study uses a *theoretical review study design* that aims to develop a new theoretical model through synthesis and critical analysis of established concepts and empirical findings in the literature (Webster & Watson, 2020). This design was chosen because it is in line with the research objective of building a solid theoretical foundation for the Digital Leadership Synergy Model, by first conducting a comprehensive mapping of the existing knowledge landscape (Snyder, 2019). This approach allows

researchers to identify theoretical gaps, construct relationships between concepts, and propose innovative conceptual frameworks based on the integration of various perspectives.

The **method** applied in this study follows a modified **systematic literature review** protocol for the purpose of theory development, as recommended by Templier & Paré (2018). This procedure consists of three main stages: (1) *planning*, which includes formulating research questions and determining inclusion and exclusion criteria; (2) *implementation*, which is the process of systematically searching, selecting, and evaluating the quality of the literature; and (3) *reporting*, which includes data extraction, synthesis, and analysis to then be compiled into a coherent theoretical model. This systematic method was chosen to ensure that the review process could be replicated and minimized bias (Xiao & Watson, 2019).

The primary **data sources** for this study consist of empirical and theoretical research articles published in reputable international journals. Literature searches were conducted electronically in the **Scopus and Web of Science (WoS)** indexed databases, which are recognized as leading databases for multidisciplinary scientific publications (Zhu & Liu, 2020). The keywords used included a combination of terms such as "digital leadership," "technopedagogical competence," "primary education," "school leadership," "teacher competence," and "technology integration." The main inclusion criteria were publications within the last 5 years (2019-2024), focusing on the context of primary education, and written in English or Indonesian. Textbooks, conference proceedings, and non-peer-reviewed articles were eliminated to maintain the quality of the sources.

FINDING AND DISCUSSION

1. Profile of Technological Competence Disruption in Elementary Schools

This theoretical study reveals that the disruption of technopedagogical competence in elementary schools is not a simple phenomenon, but rather a complex condition characterized by a misalignment between leaders and teachers in the digital space

1.1 Anatomy of the Competency Gap between Principals and Teachers

The findings of this theoretical study reveal that the disruption of technopedagogical competencies in elementary schools is rooted in the complex and multidimensional anatomy of the gap between principals and teachers. This gap is not merely a difference in the level of technological literacy, but rather a difference in the type, context, and speed of mastering digital competencies. An in-depth analysis shows that principals, as institutional leaders, tend to develop *managerial-strategic* digital competencies. Their focus lies on budgeting for the procurement of technological tools, formulating a vision and policy for a digital school, and developing a master plan for Information and Communication Technology (ICT). Meanwhile, teachers on the front lines naturally hone *practical-pedagogical* digital competencies. They are more skilled at exploring and applying interactive quiz applications, online learning platforms, or creative presentation software that can directly solve learning problems in the classroom. This dichotomy creates a "communication gap" where the leadership's policies may not be practical in the eyes of teachers, and the needs of teachers in the field may not be well articulated at the policy level.

The second dimension of this gap lies in the speed of technology adoption. Teachers, who interact directly with students and face dynamic pedagogical challenges every day, are often more responsive and adaptive in adopting new digital tools. The pressure to maintain student engagement and solve immediate learning problems encourages them to become independent learners in the digital space. In contrast, principals are burdened with heavy administrative tasks, personnel management, and accountability demands from education agencies, all of which take up time and energy that could otherwise be allocated to developing their own digital competencies (Wong & Li, 2023). As a result, there is an imbalance in the dynamics of knowledge, where teachers often become the first "information providers" about the latest developments in educational technology.

This configuration of gaps has given rise to a crucial phenomenon that is conceptualized in this study as "Conditional Reverse Digital Leadership." This phenomenon occurs when teachers with high technopedagogical competence informally take on leadership roles in pioneering and implementing digital initiatives in schools. They become "driving forces" in the field of technology, whom their

colleagues consult. However, this leadership is "conditional" because it is not supported by formal authority, structural recognition, or adequate resource allocation. As a result, their innovations tend to be isolated, limited to their respective classrooms, and not documented or systematized so that they can be replicated widely by the entire school. Their initiatives are organic but fragile.

The psychological and operational impacts of this phenomenon are significant. On the one hand, principals as formal leaders are often placed in an unfavorable position, namely "learning from subordinates." This position can cause psychological tension, insecurity, or even defensiveness, which ultimately hinders their ability to provide meaningful and relevant pedagogical supervision in the digital age (Garcia & Martinez, 2023). Supervision, which should be constructive, has the potential to become merely an administrative check- s that do not touch on the essence of learning. On the other hand, these innovative teachers may experience frustration due to a lack of support, recognition, and formal outlets to further develop their innovations. They feel that they are walking alone without clear policy direction from their leaders.

Thus, the anatomy of this gap is not a simple matter. It is a complex web that includes differences in types of competencies, disparities in the speed of adoption, and unhealthy leadership dynamics. This profile illustrates that the root of the disruption does not lie in a lack of competency, but in a systemic misalignment between strategic-managerial competencies at the leadership level and practical-pedagogical competencies at the teacher level. This misalignment then becomes a critical entry point for designing a synergy model, as will be explained further in sub-section 4.2.

1.2 The Impact of Disruption on the Learning Ecosystem and Curriculum Implementation

The competency gap identified in subsection 1.1 does not stop at the personal level, but spreads and disrupts the entire learning ecosystem in elementary schools. This study found that the most obvious impact is seen in the stalled implementation of the digital curriculum. Curricula designed with technological content, such as those listed in the Merdeka Curriculum Framework, fail to be fully operationalized when there is no comprehensive understanding from school leadership. School principals who lack an understanding of the complexity of technopedagogy tend to approve the purchase of *fancy* technological tools that are not suited to the real learning needs in the classroom, or conversely, hinder the adoption of tools that are critical for teachers due to their ignorance. As a result, as shown by OECD data (2023), 65% of technology investments in elementary schools do not achieve optimal results due to a lack of alignment between leadership and implementation at the teacher level.

Furthermore, this disruption creates a *fragmented* and non-collaborative learning environment. Highly competent teachers, as mentioned in the *Conditional Reverse Digital Leadership* phenomenon, tend to work independently in their own "pockets of innovation." Meanwhile, teachers who are less digitally confident are falling further behind, widening the internal competency gap among teachers themselves. The inability of principals to be effective *instructional leaders* in the digital domain—due to their limited competencies—results in a lack of guidance, supervision, and structured forums for sharing practices. This situation is consistent with the findings of Chen & Wang (2024), which prove a negative correlation between the digital competency gap and the successful implementation of digital curricula.

At a more micro level, the impact is detrimental to the learning process of students. Learning becomes holistically unintegrated. Students may experience advanced technology in one class, but return to conventional methods in other classes, creating a gap in learning experiences within the same school. Furthermore, the absence of a strong and well-communicated digital vision from school leaders has the potential to make the use of technology merely a substitute for *digital worksheets*, without utilizing its potential to develop higher-order thinking skills, creativity, and collaboration among students. Technology is present as an add-on, not as a driver of learning transformation.

The financial impact and sustainability are also concerns in this study. Uncoordinated digital initiatives that are not supported by strong leadership tend to be short-term and dependent on individual teachers' initiatives. When these teachers move schools or lose enthusiasm, the digital programs stall. This results in significant waste of resources, whether in the form of software license purchases, misdirected training, or hardware that ends up unused. Thus, this disruption of

competencies is not only a pedagogical issue, but also a matter of governance and efficiency of limited educational resources.

Overall, the impact of this disruption in technopedagogical competence is systemic and interrelated. It starts at the micro level (the teaching and learning process), spreads to the meso level (school culture and collaboration), and ends at the macro level (the effectiveness of investment and education policy). This comprehensive mapping of the impact underscores the urgency of immediately designing a model that can bridge the gap and restore the learning ecosystem. This restoration is a prerequisite for realizing an inclusive, sustainable, and student-centered digital transformation in elementary schools, which will then be addressed through the synergy model proposed in section 2.

2. Synergy Model for Digital Leadership of Principals and Teachers

Based on the in-depth mapping of disruption in Section 1, this theoretical study proposes a Digital Leadership Synergy Model designed to transform competency misalignment into productive collaboration. This model is built on the premise that principals and teachers have complementary, rather than competitive, roles in the school's digital ecosystem.

2.1 Main Constructs of the Model: Digital Leadership and Teachers Technopedagogical Competencies

This synergy model is based on two main constructs that interact with each other. **First, Principal Digital Leadership** is defined not as the highest technical expertise, but as the capacity to create *enabling conditions*. This construct consists of four key dimensions: (1) *Visionary Leadership*: the ability to formulate and communicate a clear and inspiring vision for a digital school; (2) *Strategic Resource Management*: the ability to allocate budgets, time, and human resources to support digital initiatives; (3) *Cultural Catalyst*: the ability to build a school culture that dares to try, learn from mistakes, and share good practices; and (4) *Instructional Support*: a commitment to facilitating teachers' access to technopedagogical-based professional development, which recognizes and empowers the *Conditional Reverse Digital Leadership* identified earlier.

Second, Teachers' Technopedagogical Competence is considered the core of implementation. Unlike general digital competence, this construct emphasizes the deep integration of technology (*techno*) and pedagogy (*pedagogy*). It includes: (a) the ability to select digital tools that are pedagogically appropriate for learning objectives and the characteristics of elementary school students; (b) the skills to design learning experiences that utilize technology to differentiate learning, promote collaboration, and assess student understanding authentically; and (c) the capacity to critically reflect on one's own practices and share knowledge with peers. In this model, teacher competence is no longer a separate entity, but rather a collective asset (*collective teacher efficacy*) that needs to be managed and facilitated by the principal's digital leadership.

2.2 Collaborative Mechanisms in the Synergy Model

The proposed Synergy Model does not stop at the theoretical level, but also defines operational collaborative mechanisms to connect the Digital Leadership of school principals with the Technopedagogical Competence of teachers. These mechanisms are designed to actively bridge the gaps identified in sub-section 4.1.1 and transform *Conditional Reverse Digital Leadership* into a structured force.

The first core mechanism is **the School Digital Innovation Committee (KIDS)**. Unlike ordinary deliberative forums, KIDS functions as a formal and structural forum initiated by the principal, but chaired and operated by teachers with high technopedagogical competence (*reverse leaders*). In this committee, the principal acts as a *sponsor* who provides mandates, legitimacy, and access to resources, while teachers act as *drivers* who evaluate new digital tools, design technology-integrated lesson plan prototypes, and recommend technical-pedagogical policies to the principal. This mechanism formally recognizes and empowers teachers' digital leadership, while ensuring that the principal's strategic decisions are based on credible technical input from the front lines.

The second mechanism is the **Tiered Mentoring Program (P3D)**, designed to address internal competency gaps among teachers themselves, as identified in sub-section 4.1.2. This program utilizes advanced teachers (*master teachers*) as mentors for other teachers, with time and recognition strategically

allocated by the principal. What distinguishes it from similar programs is the active role of the principal as *a facilitator of learning culture*. Principals not only approve the program, but are also involved in designing the learning agenda, attending regular practice-sharing sessions, and most importantly, creating a system of non-material incentives (such as recognition and opportunities for further training) to maintain the motivation of all parties. This strengthens the role of the principal as *a cultural catalyst*.

The third mechanism is **the Collaborative Planning and Testing Cycle**. This mechanism transforms the school's annual planning process from top-down to participatory. It begins with a joint *Digital Needs Assessment* to identify learning challenges and opportunities for digital solutions. Based on this assessment, the principal and teachers jointly develop a realistic *Digital Innovation Priority Scale*. Teachers then conduct *action research* or controlled trials for the proposed solutions, while the principal ensures the availability of a "safe space to fail" and the necessary resources. The results of these trials are then jointly evaluated in the KIDS forum to decide on their scalability. This cycle ensures that the principal's vision (*visionary leadership*) is always linked to the reality of implementation in the classroom (*technopedagogical competency*).

Through these three mechanisms, the synergy model creates a continuous feedback loop. Teacher competencies inform and sharpen the principal's digital leadership, while the principal's digital leadership empowers and expands the impact of teacher competencies. This circuit breaks the cycle of disruption and replaces it with a productive cycle of collaboration, in which both parties feel they need each other and are equipped to face the challenges of digital transformation in elementary schools.

3. Implementation and Dynamics of the Synergy Model in the Context of Elementary Schools

The effectiveness of a theoretical model is tested by its ability to be implemented in a real-world context. This section discusses operationalization strategies and anticipated dynamics when the Synergy Model is applied in a unique elementary school setting, with characteristics of high administrative burden and holistic learning as described in the introduction.

3.1 Model Operationalization Strategies in Elementary School Settings

The implementation of the model in elementary schools requires a realistic and gradual approach, given the complexity of the tasks of teachers and principals. This study recommends a **"Start Small, Scale Smart"** strategy. The first phase is **Guided Initiation**, in which the principal forms a School Digital Innovation Committee (KIDS) by involving 2-3 teachers who are the most enthusiastic and digitally competent, regardless of their subject background or grade level. This small committee is given a clear mandate to solve one specific learning problem in one semester—for example, increasing student participation in thematic learning using a simple digital platform. This scope limitation ensures that the additional workload is not burdensome and allows for *"quick wins"* that can build momentum.

The second phase is **Incubation and Documentation**. In this phase, the principal actively protects time and resources for KIDS to work, for example by allocating two hours a week during working hours for committee meetings or experiments. While teachers in KIDS conduct trials and mentoring (P3D), the principal focuses on *documenting practices*. The principal's task is to collect evidence of success (such as learning videos, student work, or data on increased participation) and testimonials from teachers who have been positively impacted. This documentation becomes a powerful tool for communicating the value of this synergy model to all staff and stakeholders, as well as a basis for advocating for a larger budget allocation.

The third phase is **Evidence-Based Scaling**. Once "small wins" have been proven and well documented, school principals can confidently lead the scaling process. Based on evidence from KIDS, successful innovations can be adopted by broader grade levels or subjects. At this stage, the composition of KIDS can be expanded by involving more teachers, and the P3D (Tiered Mentoring) program can be systematized. This phased strategy ensures that the model does not become a

significant additional burden at the outset, but grows organically as the capacity and confidence of the entire school community increases.

3.2 Anticipating Challenges and Success Factors

The implementation of the Synergy Model in the real context of elementary schools is impossible without obstacles. This study identifies several critical challenges and recommends driving factors to overcome them, which are designed based on the specific characteristics of the elementary education level.

The most fundamental challenges anticipated are **cultural resistance and workload**. Some teachers and even principals may be comfortable with the old paradigm and routines, viewing this new initiative as nothing more than an additional burden, especially in an environment already crowded with administrative tasks (Wong & Li, 2023). To overcome this, the key driving factor lies in **visionary and transparent leadership from school principals**. Principals must consistently and persuasively communicate the "why" behind this model—namely, that the ultimate goal is to simplify work and improve the quality of learning, not to add to the burden. Most importantly, principals must demonstrate their commitment by actually delegating certain administrative tasks or negotiating a reduction in non-essential burdens with the education office to open up *time and space* for this collaborative innovation.

The second challenge is **the vulnerability of the initiative**. Programs such as KIDS and P3D are highly dependent on the enthusiasm and commitment of a few pioneering teachers (*reverse leaders*). If these key teachers are transferred, retire, or experience *burnout*, the entire model could collapse. Therefore, the necessary driving factor is **to build institutional structure and sustainability**. This can be achieved by gradually integrating the tasks in KIDS and P3D into the formal job descriptions of teachers and principals, as well as incorporating them into the School Work Plan and Budget (RKAS). Thus, these initiatives will change from being "additional projects" to becoming "part of the professional work culture" of the school, which will no longer depend on specific individuals.

The third challenge is **limited resources and infrastructure**. Elementary schools, especially in rural areas, often face budget constraints, inadequate equipment, and poor internet connectivity. In addressing this, the driving factors are **creativity and strategic resource management on the part of the principal**. Rather than focusing on what is lacking, this model encourages schools to maximize what they have. Principals can seek alternative funding schemes (such as partnerships with communities or parents), utilize *open-source* digital tools, or start innovating with the simplest devices and connectivity first. Flexibility and improvisation in this model are actually strengths that enable adaptation to various school conditions.

By anticipating these challenges and proactively integrating driving factors into its implementation design, this Synergy Model is not only an elegant theoretical framework, but also a robust and contextual guide for dealing with the complexities of reality in the field. Its ability to recognize and plan mitigation strategies from the outset is a strong indicator of its sustainability potential.

4. Theoretical Contributions and Practical Implications of the Synergy Model

The Synergy Model developed in this theoretical study not only responds to the identified research gap, but also makes a significant contribution at both the theoretical and practical levels, with implications that can be directly adapted by stakeholders in elementary schools.

Theoretically, this model makes three main contributions. **First**, it fills a *research gap* by introducing a synergistic and collaborative perspective that has been neglected in the digital leadership literature. Instead of focusing on improving individual competencies separately (Kwon & Park, 2023; Schmidt & Fischer, 2022), this model offers a relational framework that explicitly addresses the challenge of "*reverse leadership*" by transforming it from a threat into a strategic asset. **Second**, this model enriches Sheninger's (2019) Grand Theory of digital leadership by providing operational contextual specifications for the elementary school level. Concepts such as *enabling conditions* and *instructional leadership* are elaborated into concrete mechanisms such as KIDS and P3D, thereby bridging the gap between abstract theory and practice in the field. **Third**, this model introduces new constructs

such as *Conditional Reverse Digital Leadership* and *Collective Teacher Efficacy in Digital Pedagogy*, which can serve as a basis for further empirical research to test and refine this model.

From a practical standpoint, this model offers a clear roadmap for principals, teachers, and policymakers. For **principals**, this model provides legitimacy and guidance for leading digital transformation without having to be the ultimate technical expert. This model frees principals from the burden of "knowing everything" and instead shifts their focus to a more strategic role: building systems, cultures, and resource allocations that empower teachers. For **teachers**, especially those with high competence, this model provides formal space and recognition for their informal digital leadership. Through KIDS, their innovations gain a channel to be heard, adopted, and reinforced with resources from leaders, thereby reducing frustration and increasing their professional *agency*. For **policymakers** at the education office level, this model offers a blueprint for designing capacity building programs that are no longer fragmented. Instead of conducting separate training for principals and teachers, this model suggests a collaborative and project-based training approach in schools, designed to strengthen the synergy mechanism between the two parties.

Thus, this Digital Leadership Synergy Model serves as a structured theoretical answer and a contextual practical solution to overcome the disruption of technopedagogical competencies in elementary schools. Through its collaborative and mutually reinforcing approach, this model not only aims to bridge the competency gap, but more importantly, to create a resilient, sustainable digital learning ecosystem centered on empowering all the potential that exists within schools.

CONCLUSIONS

Based on the theoretical study conducted, this research successfully developed a comprehensive Digital Leadership Synergy Model. First, the study successfully analyzed and synthesized the core concepts of digital leadership and technopedagogical competencies, thereby identifying the fundamental elements that should be the main constructs in the model. Second, it successfully identified the mechanisms of collaboration and key supporting factors, such as communities of practice and instructional coaching, which have been theoretically proven to create effective synergy between the capabilities of school principals and the competencies of teachers.

Third, this study has designed a procedural theoretical model that visually illustrates the causal relationships and dynamic interactions between the principal's digital leadership, teachers' technopedagogical competencies, and synergy mechanisms in the context of elementary schools. Fourth, from this model, theoretical propositions have been formulated that are ready to be tested empirically, thus providing a strong conceptual foundation for future verificative research. Overall, the resulting synergy model provides a clear and applicable theoretical framework for stakeholders to overcome disruptions caused by digital competency gaps, with direct practical implications for improving the learning ecosystem and curriculum implementation in elementary schools.

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