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Instructional Leadership of School Principals in Enhancing Teachers' Digital Literacy Competencies at Public Junior High Schools in Sungai Batang District

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A B S T R A C T

The novelty of this study lies in its exploration of instructional leadership practices for strengthening digital literacy in schools facing limited ICT infrastructure, unstable internet access, and diverse levels of teacher digital competence. A descriptive qualitative approach was employed using interviews, observations, and document analysis. The study involved 15 informants consisting of 3 principals, 3 vice principals, and 9 teachers selected through purposive sampling based on their direct involvement in instructional leadership practices and digital learning implementation. Data were analyzed using the interactive model of Miles, Huberman, and Saldaña, including data condensation, data display, and conclusion drawing and verification. The findings revealed that principals promoted teachers' digital literacy through digital platform policies, professional training, mentoring, motivation, and instructional supervision. Nevertheless, implementation remained uneven due to varying teacher competencies, basic-level training, limited continuous mentoring, and inadequate ICT facilities. The study concludes that effective instructional leadership in digital transformation requires sustained professional development, peer mentoring, evidence-based supervision, and equitable access to digital resources, thereby extending the understanding of instructional leadership in resource-constrained school contexts.

1. Introduction

Digital transformation has transformed the way schools design learning, manage information, and develop student competencies. In the context of 21st-century education, teachers are no longer simply required to deliver course material, but also to be able to utilize digital media, assess the credibility of online information, communicate ethically through digital platforms, and design learning experiences

that encourage critical, collaborative, and creative thinking. Therefore, digital literacy can no longer be viewed as an additional skill, but rather as part of a teacher's professional competency that determines the quality of learning. Schools need leadership capable of linking policies, resource availability, teacher capacity, and learning practices into a directed improvement process.

The concept of digital literacy has evolved from the technical ability to use digital devices to the broader ability to access, evaluate, manage, create, and communicate information responsibly. Gilster (1997) views digital literacy as the ability to understand and utilize information from various digital sources. Bawden (2008) expands on this concept by emphasizing the skills of critical evaluation, information management, digital communication, and the ethical use of technology. In the educational context, Hague and Payton (2019) emphasized that digital literacy encompasses functional, cognitive, social, and ethical skills. For teachers, digital mastery extends beyond the ability to operate applications; it must be connected to pedagogical decisions, learning interactions, assessments, and the development of a healthy digital culture.

The principal's instructional leadership is crucial because the principal plays a key role in determining the direction, priorities, and climate for teacher professional development. Hallinger and Murphy (2011) explain that instructional leadership encompasses setting school goals, managing learning programs, and developing a supportive academic climate. MacBeath (2010), through the concept of leadership for learning, also emphasizes that instructional leadership is participatory, fostering professional dialogue, sharing leadership, and using evidence as a basis for accountability. Thus, the principal not only performs administrative functions but also serves as a learning leader who mentors teachers, builds a professional community, and ensures that school programs are oriented toward improving the quality of learning.

Previous research has shown that school leadership contributes to technology integration and the enhancement of teachers' digital competencies. Chang (2012) found that principals' technological leadership is related to teachers' technological literacy and teaching effectiveness. AlAjmi (2022) reported that digital leadership helped teachers integrate technology into learning during the COVID-19 pandemic. Berkovich and Hassan (2023) also showed that digital transformational leadership strengthens teacher commitment and school effectiveness in technology-based learning. In the Indonesian context, Prasojo et al. (2019), Mulyani and Handayani (2020), Nurilahi et al. (2022), and Ramadhani and Putra (2023) demonstrated that principals who provide supervision, training, motivation, and technological support can encourage improvements in teachers' digital literacy.

Although previous studies have established the relationship between school leadership and teachers' digital literacy, limited attention has been given to how instructional leadership is enacted in schools with restricted ICT infrastructure, unstable internet connectivity, and varying levels of teacher digital competence. Most existing studies focus on the effectiveness of leadership in supporting technology integration, whereas fewer studies provide an in-depth understanding of

how principals translate instructional leadership into concrete policies, professional support, and capacity-building efforts within resource-constrained school settings. This contextual gap highlights the need for a qualitative investigation that captures leadership practices and challenges in real educational environments. Therefore, this study contributes to the instructional leadership and digital literacy literature by examining how principals promote teachers' digital literacy competencies in schools facing infrastructural and professional development constraints.

However, the success of digital literacy development is not solely determined by leadership vision. This success is also influenced by teacher readiness, infrastructure availability, mentoring, a collaborative culture, and the continuity of professional development programs. At SMPN Sungai Batang District, initial observations and Education Report Card data indicate that instructional leadership, teacher reflection, and improvement of learning are in the good category. However, school resources remain inadequate, and ICT utilization is uneven. Some teachers have used Google Classroom, LMS, instant messaging apps, or video conferencing, but their use remains predominantly for delivering materials and collecting assignments. The use of technology for interactive, collaborative, and problem-solving-based learning has not yet developed consistently.

This situation highlights a research gap and practical need. Many studies discuss the relationship between leadership and digital literacy in general, but few have described in depth how instructional leadership is implemented in schools with limited resources, unstable internet access, and diverse teacher competencies. Qualitative understanding is needed to explain how principals translate digital literacy into school policies, guide and motivate teachers, and address enabling and inhibiting factors in the real-life school context. Based on this, this study aims to describe the model and implementation of the principal's instructional leadership, analyze the principal's strategy in guiding and motivating teachers to integrate technology, and identify supporting and inhibiting factors for the effectiveness of instructional leadership in improving teachers' digital literacy competencies at SMPN Sungai Batang District.

2. Methodology

Research Design and Location

This research uses a descriptive qualitative approach because the focus of the study is directed at understanding leadership practices, teacher experiences, and contextual conditions that influence the strengthening of digital literacy in schools. The qualitative approach allows researchers to interpret the meaning of instructional leadership from the perspectives of the principal, vice principal, and teachers. The research was conducted at SMPN Sungai Batang District, Indragiri Hilir Regency, Riau Province. This location was chosen purposively because the school is attempting to integrate information and communication technology into learning but still faces limitations in facilities, internet access, and teacher readiness.

The research focuses on three main aspects: the principal's instructional leadership model and implementation in supporting the strengthening of teachers' digital literacy, the principal's strategies in guiding and motivating teachers to integrate technology, and the supporting and inhibiting factors that influence the effectiveness of instructional leadership. Data sources consist of primary data from interviews and observations, as well as secondary data from school documents, such as the principal's work program, teacher development program, supervision documents, digital literacy activity reports, school policies, and ICT infrastructure data.

The participants consisted of 15 informants, including 3 principals, 3 vice principals, and 9 teachers from public junior high schools in Sungai Batang District. Informants were selected using purposive sampling because they possessed relevant knowledge, experience, and direct involvement in instructional leadership practices and digital literacy development programs. The selection criteria for principals included serving as school leaders for at least two years and actively leading digital literacy initiatives. Vice principals were selected based on their involvement in curriculum management and instructional development, while teachers were required to have at least two years of teaching experience and experience in using digital technology for instructional purposes. Participant recruitment continued until data saturation was achieved. The study involved a diverse group of school stakeholders who possessed relevant experience and responsibilities related to instructional leadership and digital literacy development. A summary of the participants' characteristics, including their positions and roles in the school context, is presented in Table 1.

Table 1. Characteristics of Participants

Characteristics	Description
Position	Principals, Vice Principals, Teachers
Gender	Male and Female
Education Level	Bachelor's and Master's Degrees
Length of Service	Minimum 2 years
Digital Literacy Experience	Participation in ICT or Digital Literacy Training
School Location	Public Junior High Schools in Sungai Batang District

Research Instruments

The researcher served as the primary instrument in collecting, interpreting, and concluding data. Supporting instruments included observation guidelines, semi-structured interview guidelines, and documentation guidelines. The observation guidelines were used to examine the principal's practices in establishing learning focus, supporting technology use, establishing professional dialogue, sharing leadership, and conducting evidence-based evaluations. The interview guidelines were developed based on three research focuses: implementation of instructional leadership, teacher guidance and motivation strategies, and factors supporting and inhibiting digital literacy. The documentation guidelines were used to examine

written and visual evidence related to school policies, teacher training, supervision, availability of ICT resources, and digital learning activities.

Data Collection

Techniques Data were collected through interviews, observation, and documentation. Interviews were conducted with the principal, vice principal, and teachers to obtain information on leadership roles, guidance, motivation, professional development, and barriers to technology integration in learning. Observations were used to examine how digital literacy policies are reflected in learning practices, teacher collaboration, classroom technology use, and the availability of digital resources. Documentation was used to verify interview and observation data through a review of school work plans, training records, supervision documents, learning tools, and an inventory of ICT resources. The use of these three techniques enabled triangulation, allowing for more credible interpretation of the findings.

Data Analysis and Data Validity

Data were analyzed using the interactive model of Miles, Huberman, and Saldaña (2020), which consists of data condensation, data presentation, and drawing and verifying conclusions. Data condensation was performed by selecting, simplifying, coding, and grouping information based on the research focus. Data were presented in the form of descriptive narratives and thematic tables to clearly demonstrate the relationships between leadership practices, strategies, and contextual factors. Conclusions were drawn gradually and verified through comparisons of information between informants and data sources. Data validity was strengthened through source triangulation, technical triangulation, and consistency checking of findings across interviews, observations, and documentation.

3. Results and Discussion

Principal Instructional Leadership Model and Implementation

The research results indicate that the principal's instructional leadership model in strengthening teachers' digital literacy has shifted toward technology-oriented leadership. The principal has established the use of digital platforms as part of the learning policy, encouraged teachers to use Google Classroom, LMS, and other learning applications, and directed the use of technology to support material delivery and assignment management. These practices demonstrate that the principal has strived to make digital literacy part of the learning quality improvement agenda, not simply an additional program. This finding is supported by a principal’s statement:

“We have encouraged teachers to use Google Classroom and other digital platforms in their teaching. Digital literacy is not only an additional program but

has become part of our effort to improve the quality of learning and adapt to current educational developments." (Principal 1).

However, the implementation of this leadership has not been entirely consistent. On the one hand, the principal has provided direction, established communication with teachers, and encouraged the use of technology. On the other hand, implementation in the classroom still depends heavily on the readiness of each teacher. Teachers who are more familiar with using digital devices tend to adopt learning platforms more quickly, while teachers who are less familiar with them still use technology only to a limited extent. This situation suggests that digital policies need to be accompanied by more intensive mentoring so that they do not stop at recommendations or administrative use.

These findings suggest that instructional leadership has moved beyond traditional administrative management toward supporting technology integration in teaching and learning. However, the implementation remains largely functional rather than transformational because technology is primarily used for content delivery, assignment management, and communication purposes. The findings indicate that the success of instructional leadership in the digital era should not be measured solely by the adoption of digital tools, but also by the extent to which technology transforms pedagogical practices, promotes student engagement, and supports meaningful learning experiences. Therefore, strengthening teachers' digital literacy requires not only policy support but also sustained efforts to develop pedagogical competence in technology integration.

These findings align with Hallinger and Murphy (2011), who position the principal as a leader responsible for managing instructional programs and creating a supportive learning climate. However, in the context of digital literacy, instructional leadership is not simply about setting direction; principals also need to ensure teachers have adequate capacity, technical support, and practice opportunities. MacBeath (2010) emphasized the importance of professional dialogue and evidence-based accountability. In this study, dialogue between principals and teachers has begun to develop, but evidence-based evaluation of the impact of technology use still needs to be strengthened.

The findings are also consistent with Nadzifah et al. (2026), who reported that instructional leadership contributes significantly to teachers' pedagogical development through supervision, professional support, and continuous guidance. Likewise, Risnawati and Bustari (2025) emphasized that instructional leadership effectiveness depends on the principal's ability to address professional development challenges and provide sustained support for teachers. Consistent with the perspectives of (Hallinger and Murphy (2011) and MacBeath (2010), the findings indicate that instructional leadership in the digital era involves not only setting educational goals but also supporting teacher capacity development, professional dialogue, and continuous evaluation of technology integration. The main findings related to the instructional leadership model and its implementation are presented in Table 2.

Table 2. Main Findings on the Model and Implementation of Instructional Leadership

Aspect	Research Findings	Meaning of Findings
Policy Direction	The principal encourages the use of digital platforms such as Learning Management Systems (LMS) and Google Classroom.	Digital literacy has begun to be positioned as part of the school's learning improvement agenda.
Implementation Practices	Some teachers use technology for delivering learning materials, assignments, and communication with students.	Technology integration has been initiated, but its use remains largely limited to administrative functions.
Consistency of Implementation	The implementation varies among teachers due to differences in digital competencies.	Policies need to be supported by more systematic training and mentoring programs.
Evaluation	Supervision and feedback have been conducted, but they are not yet fully based on evidence of learning outcomes and instructional impact.	Digital accountability should be strengthened through the use of assessment rubrics and documented classroom practices.

As seen in Table 2, instructional leadership has shaped the direction of digital literacy strengthening, but more operational mechanisms are still needed. Principals need to transform policies into minimum standards of practice, for example, requiring teachers to design simple digital activities, use platforms for interactive learning, and reflect on the effectiveness of digital media. Thus, instructional leadership will not only result in compliance with application use but also encourage more meaningful changes in pedagogical practices.

Strategies for Guiding and Motivating Teachers to Integrate Technology

The principal's primary strategy for guiding and motivating teachers is through regular training, mentoring, routine coordination, and motivational reinforcement. The training provided generally relates to the use of Google Classroom, LMS, and digital learning applications. This training helps teachers understand the basic functions of digital platforms and begin using technology in their learning. For teachers who are previously unfamiliar with them, training provides a starting point for developing the courage to try digital tools in the classroom. However, research findings indicate that training tends to be general and insufficiently in-depth on digital pedagogy. This condition was reflected in a teacher's experience:

"The training helped us understand how to use digital applications such as Google Classroom, but we still need more guidance on how to design interactive learning activities and integrate technology effectively into classroom instruction." (Teacher 4)

Many teachers are able to use applications to deliver material or collect assignments, but do not fully understand how to design interactive, collaborative, and problem-solving-based learning with the aid of technology. This situation suggests that teacher digital literacy development needs to move from technical

training to integrative training that combines technology, pedagogy, and content, as described in the TPACK framework by (Mishra & Koehler, 2006).

Mentoring between teachers is also an important strategy. Teachers who are more proficient in using technology act as mentors for other teachers. This strategy helps build teacher confidence because the learning process takes place in a peer-to-peer environment that is more closely aligned with their daily needs. However, mentoring is not evenly distributed due to limited mentors, limited time, and the lack of a consistent schedule. As a result, the development of teachers' digital competencies is not uniform. Teachers who actively seek help tend to progress faster, while those with less confidence remain behind.

Principals also provide motivation through guidance, reinforcement in meetings, and encouragement so that teachers are not afraid to experiment with technology. This motivation is important because some barriers to digital literacy are not only technical but also psychological, such as fear of making mistakes, lack of self-confidence, and the perception that technology makes work more difficult. In this regard, principals function as both motivators and facilitators of change. This finding is in line with Fullan (2021) who emphasized that educational leaders must be able to drive change through motivation, collaboration, and a culture of continuous learning. The findings reveal that principals employ various strategies to support teachers' digital literacy development, including training, mentoring, supervision, and motivational support. The importance of supervision and leadership support identified in this study is in line with Afwanudin et al. (2026), who demonstrated that academic supervision and principal leadership positively influence teacher performance. This finding reinforces the view that instructional supervision should function not only as a monitoring mechanism but also as a strategy for professional growth and capacity building. These strategies aim to address both technical and psychological barriers to technology integration in teaching and learning. The main teacher guidance and motivation strategies identified in this study are presented in Table 3.

Table 3. Teacher Guidance and Motivation Strategies

Strategy	Form of Implementation	Areas for Improvement
Digital training	Training on the use of Google Classroom, LMS platforms, and educational applications.	Should be extended to digital pedagogy training based on classroom practices.
Peer mentoring	More technologically proficient teachers assist their colleagues in using digital platforms.	Requires a regular schedule, designated mentors, and clearly defined competency targets.
Regular coordination	School discussions on technology use and challenges in the learning process.	Should produce documented follow-up action plans.
Supervision and feedback	The principal observes technology integration and provides guidance to teachers.	Requires ICT integration rubrics to ensure more objective evaluation.
Principal motivation	Encouragement for teachers to experiment with and confidently adopt technology in teaching.	Should be complemented by recognition or rewards for exemplary teaching practices.

Table 3 shows that the school's strategy already includes training, mentoring, supervision, and motivation. However, this strategy needs to be strengthened with a tiered design. The first stage can focus on mastering basic applications, the second on designing digital learning, and the third on evaluating the impact of technology on student interactions and learning outcomes. With a tiered strategy, teachers not only become familiar with digital tools but also able to select technology that aligns with learning objectives.

Supporting and Inhibiting Factors Influencing the Effectiveness of Instructional Leadership on Teacher Digital Literacy

The effectiveness of instructional leadership in improving teacher digital literacy is influenced by internal and external factors. Supporting internal factors include the principal's commitment, teachers' willingness to learn, a collaborative culture, and the presence of teachers capable of being technology advocates. The principal's commitment is evident through policies, direction, and support for training. Meanwhile, a collaborative culture helps teachers share experiences and overcome technical difficulties. This factor is crucial because digital transformation cannot occur through instruction alone but requires the involvement of the entire school community.

Supporting external factors include government policies, community support, and opportunities for collaboration with external parties. Policies that encourage the use of technology in learning provide legitimacy for schools to develop digital literacy programs. Community and external support also assist schools in providing facilities, although this support is not evenly distributed. In the context of schools with limited resources, external collaboration is crucial to strengthen facilities, connectivity, and practical training for teachers. On the other hand, the main obstacles identified were limited ICT infrastructure, an insufficient number of devices, some devices being suboptimal, and unstable internet connections. As one teacher explained:

"Internet connectivity is still unstable in several situations, and not all classrooms have adequate facilities. Sometimes we have to use personal devices or return to conventional teaching methods when technical problems occur." (Teacher 7)

These challenges are comparable to those reported by Azizah et al. (2026), who found that limited digital infrastructure and technological support remain significant barriers to the implementation of digital-based educational improvement initiatives. This indicates that leadership effectiveness in digital transformation is closely linked to the availability of adequate technological resources. These obstacles often make digital learning situational. Teachers sometimes have to use personal devices or revert to conventional methods when internet access is disrupted. Other obstacles include uneven distribution of teachers' digital competencies, in-depth training, and limited time for mentoring.

These conditions indicate that learning leadership must be supported by strong resource management. These findings support the view of Leithwood et al. (2019)

that successful school leadership is determined not only by the leader's vision but also by the ability to build organizational capacity. In strengthening digital literacy, organizational capacity includes teacher readiness, a collaborative culture, facilities, technical support systems, and evaluation. If any of these components is weak, digital literacy implementation tends to be uneven. Therefore, principals need to position digital literacy as a school improvement agenda integrated with budget planning, supervision, and teacher professional development. The data indicate that strengthening teachers' digital literacy is shaped by a complex interaction of leadership, organizational, technical, and professional factors. While several conditions support the successful implementation of digital literacy initiatives, a number of challenges continue to limit their effectiveness. A summary of the supporting and inhibiting factors identified in this study is presented in Table 4.

Table 4. Supporting and Inhibiting Factors in Strengthening Teachers' Digital Literacy

Category	Factor	Impact on Implementation
Internal supporting factors	Principal commitment, teachers' willingness to learn, and collaboration among teachers.	Encourage teachers to experiment with technology and support one another in instructional practices.
External supporting factors	Government policies, community support, and opportunities for collaboration.	Provide legitimacy and additional resources for digital literacy programs.
Technical barriers	Limited devices, unstable internet connectivity, and unequal access to facilities.	Cause inconsistencies in digital learning implementation and make it dependent on classroom conditions.
Competency-related barriers	Teachers' digital competencies vary, and training remains at a basic level.	Technology integration has not yet progressed toward interactive and collaborative learning practices.
Managerial barriers	Mentoring is not evenly distributed, and evaluation is not yet data-driven.	Teachers' professional development is difficult to monitor systematically.

Table 4 shows that strengthening digital literacy is a process influenced by the interaction between leadership, teacher capacity, and resource availability. The principal already plays a strategic role as a director, motivator, facilitator, and supervisor. However, the effectiveness of this role will increase if the school has a teacher digital competency map, a clear mentoring schedule, easily accessible technical support, and an evaluation system that can demonstrate changes in learning practices.

Synthesis of Findings and Implications

Overall, this study indicates that the instructional leadership of the principal at SMPN Sungai Batang District has contributed to the initial stages of strengthening teacher digital literacy. The principal has played the role of policymaker, motivator, training facilitator, collaboration coordinator, and learning supervisor. However, successful digital transformation cannot be achieved through general direction

alone. A more sustainable system is needed to move teachers from basic technology use to technology integration that improves the quality of learning.

The practical implication of these findings is the need for a more integrated instructional leadership cycle. This cycle can begin with mapping teacher needs, setting digital literacy targets, implementing tiered training, peer mentoring, evidence-based supervision, and follow-up evaluation. In this way, principals can ensure that digital literacy programs don't stop at short-term training but become part of the school's learning culture. Furthermore, support from the education office and external partners is needed to strengthen the distribution of facilities, internet networks, and applicable and contextual training.

Theoretically, this study confirms the relevance of instructional leadership in the context of school digital transformation. The main issue is not merely the availability of technology, but how technology is used to improve the learning process. Therefore, instructional leadership needs to be expanded into leadership that combines pedagogical vision, teacher professional development, resource management, collaboration, and evidence-based evaluation. The findings extend instructional leadership theory by demonstrating that leadership effectiveness in digital transformation depends not only on vision and supervision but also on continuous mentoring, collaborative learning cultures, and equitable access to digital resources. The present findings also support recent evidence suggesting that teacher digital literacy is shaped by the interaction between leadership, school culture, professional development opportunities, and technology integration practices (Abdullah et al., 2026). Therefore, efforts to improve teachers' digital literacy should be viewed as an organizational transformation process rather than merely an individual competency development initiative. In this regard, principals serve as a critical link between digital policy and the realities of classroom practice. Based on these findings, several strategic implications can be drawn for strengthening instructional leadership in the context of digital transformation. The results suggest that effective leadership extends beyond technology adoption to encompass pedagogical vision, teacher capacity building, resource management, collaboration, and evidence-based evaluation. The strategic implications derived from the findings are presented in Table 5.

Table 5. Strategic Implications of the Research Findings

Finding	Implications for School Leadership	Recommended Follow-Up Actions
Digital policies have been established, but implementation remains uneven.	Principals need to translate policy into consistent classroom practices.	Develop minimum standards for digital learning across subject areas.
Teachers require more in-depth pedagogical support.	Professional development should move beyond technical application training toward digital pedagogy.	Organize TPACK workshops, peer observation activities, and simplified lesson study programs.

Finding	Implications for School Leadership	Recommended Follow-Up Actions
Infrastructure and internet access limit the consistency of practice.	Resource management should be considered an integral part of instructional leadership.	Prioritize internet stability, device maintenance, and equitable access to digital resources.
Collaboration enhances teachers' confidence in using technology.	Shared leadership can accelerate the equitable development of digital competencies.	Establish teacher-led digital communities of practice facilitated by mentor teachers or instructional leaders.
Evaluation is not yet fully evidence-based.	Principals need reliable data to guide continuous improvement efforts.	Utilize supervision rubrics and digital learning practice portfolios to monitor progress and inform decision-making.

Table 5 summarizes the strategic implications that schools can use to strengthen teachers' digital literacy. The core of these findings is the need for continuity between policies, training, mentoring, facilities, and evaluation. If these five elements operate separately, strengthening digital literacy will depend on individual teacher initiative. Conversely, if these elements are managed as a learning leadership cycle, digital literacy can develop into a school's professional culture.

4. Conclusion

This study concludes that the principal's instructional leadership plays a crucial role in enhancing teachers' digital literacy competencies at public junior high schools in Sungai Batang District. The findings indicate that principals have promoted digital literacy through digital platform policies, professional guidance, training programs, mentoring, motivation, and instructional supervision. These leadership practices have encouraged the initial integration of digital technology into teaching and learning activities. However, the effectiveness of implementation remains constrained by disparities in teachers' digital competencies, limited continuous mentoring, basic-level training programs, inadequate ICT facilities, and unstable internet connectivity.

The study highlights the need for sustained professional development, structured peer mentoring, evidence-based supervision, and equitable access to digital resources to strengthen teachers' digital literacy. Theoretically, this study contributes to the instructional leadership literature by demonstrating that the successful development of teachers' digital literacy in resource-constrained schools depends not only on leadership vision and policy direction but also on continuous professional support, collaborative learning cultures, and organizational capacity building. These findings extend the application of instructional leadership theory within the context of digital transformation in schools, particularly in environments facing infrastructural and technological limitations. Future research may examine measurable digital mentoring models and their impact on instructional quality and student learning outcomes.

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