Journal of Educational Sciences
Journal homepage: https://jes.ejournal.unri.ac.id/index.php/JES

P-ISSN 2581-1657
E-ISSN 2581-2203

School Principal Leadership Strategies in Enhancing Teacher Profesionalism Through Strengthening Digital Competencies at SMPN 1 and SMPN 3 Tualang

Rini*, Slamet Lestari
Educational Management, Universitas Negeri Yogyakarta, Yogyakarta 55281, Indonesia

ARTICLE INFO

Article history:

Received: 12 Nov 2025
Revised: 24 Nov 2025
Accepted: 07 Dec 2025
Published online: 17 Dec 2025

Keywords:

School Leadership,
Teacher Professionalism,
Digital Competence

** Corresponding author:*

E-mail: rini0016fipp.2024@student.uny.ac.id

Article Doi:

https://doi.org/10.31258/jes.9.6.p.6519-6532

This is an open access article under the CC BY-SA license.

A B S T R A C T

This study aims to 1) analyze the leadership strategies of school principals, 2) the programs designed and implemented by school principals, and 3) the aspects that support and hinder school principals' leadership in improving teacher professionalism through strengthening digital competencies at SMPN 1 and SMPN 3 Tualang. This study uses a qualitative research method. The subjects of this study were principals, teachers, and school operators at SMPN 1 and SMPN 3 Tualang. The results showed that: (1) the principal of SMPN 1 Tualang applied a supportive approach that encouraged collaboration among teachers, while the principal of SMPN 3 Tualang emphasized an administrative approach; (2) the teacher digital competency development program at SMPN 1 Tualang is implemented through training and workshops, while at SMPN 3 Tualang, despite efforts to provide technological assistance, limited facilities and a lack of ongoing technical support limit the effectiveness of technology implementation in learning; and (3) the main challenge at SMPN 1 Tualang is the digital skills gap among teachers, especially senior teachers who feel pressured to master technology, while at SMPN 3 Tualang, an additional challenge is the high administrative burden, which limits teachers' time and energy to participate in training programs.

1. Introduction

Education plays a strategic role in improving the quality of human resources through the systematic development of knowledge, skills, and character. In the digital era, education systems are increasingly required to respond to complex demands driven by rapid advancements in information and communication technology. These developments have transformed not only how knowledge is accessed and disseminated but also how teaching and learning processes are designed and implemented. As central actors in learning, teachers are therefore expected to demonstrate high levels of professionalism, one important indicator of

which is mastery of digital competence integrated into twenty-first-century pedagogical practices (Fraillon et al., 2019; Rahayuningsih, 2022).

Teachers' digital competence extends beyond basic technical proficiency in operating hardware or software. It encompasses pedagogical capabilities related to designing innovative, interactive, and meaningful learning experiences that utilize digital technologies to support student engagement and learning outcomes (Ertmer & Ottenbreit-Leftwich, 2010; Teo, 2013). Digitally competent teachers are able to select appropriate technologies, integrate them into lesson planning, and adapt instructional strategies to diverse learner needs. This expectation aligns with Undang-Undang Republik Indonesia Nomor 14 Tahun 2005 tentang Guru dan Dosen, which defines teacher professionalism through mastery of pedagogical, personal, social, and professional competencies. In contemporary educational contexts, these competencies increasingly require technological integration to ensure that learning remains relevant, effective, and responsive to students' cognitive, social, and emotional development (Sanusi et al., 2021; Fullan, 2023).

Within this framework, the role of the principal becomes critically important. Principals are not only responsible for administrative management but also function as instructional leaders who guide, facilitate, and motivate teachers to continuously develop their professional competencies. Instructional leadership emphasizes improving teaching and learning quality through clear vision, academic supervision, and professional support. Effective principals create supportive school environments by providing ongoing professional development opportunities, ensuring access to adequate technological infrastructure, and encouraging collaboration, reflection, and innovation among teachers (Bush, 2011; Leithwood & Jantzi, 2005; Sumarni et al., 2024). Such leadership is particularly crucial in fostering teachers' confidence and willingness to integrate digital technologies into their instructional practices.

Previous studies indicate that transformational leadership, constructive academic supervision, and continuous mentoring significantly influence teachers' digital competence and technology-based learning innovation (Ramli & Mohamad, 2023; Juwita et al., 2023; Rasdiana et al., 2024; Andika, 2023). Transformational leaders inspire teachers by articulating a shared vision, providing intellectual stimulation, and offering individualized support, thereby encouraging teachers to experiment with new instructional approaches. Conversely, leadership approaches that emphasize administrative compliance without empowerment often result in symbolic and superficial technology use rather than meaningful pedagogical integration (Schmitz et al., 2023). In such contexts, digital tools may be used merely to fulfill formal requirements rather than to enhance learning quality. These conditions highlight the importance of leadership strategies that prioritize empowerment, trust, and sustained professional growth.

Preliminary findings at SMP Negeri 1 Tualang and SMP Negeri 3 Tualang illustrate contrasting leadership practices and challenges in improving teacher professionalism through digital competence development. At SMP Negeri 3 Tualang, strict administrative supervision tends to create psychological pressure

among teachers, limiting creativity and reducing opportunities for meaningful technology integration in the classroom (Djamarah, 2015; Hidayat & Abdillah, 2019). Teachers may comply with directives but lack intrinsic motivation to explore innovative digital pedagogies. Meanwhile, at SMP Negeri 1 Tualang, the availability of technological facilities is not accompanied by systematic mentoring or structured professional development, resulting in uneven levels of digital competence among teachers (Scherer et al., 2019; Tondeur et al., 2017). Some teachers demonstrate high adaptability, while others struggle to integrate technology effectively due to limited guidance and support.

These conditions underline the need for adaptive, collaborative, and context-sensitive principal leadership strategies that consider school culture, teacher readiness, and available resources. Leadership that balances supervision with mentoring, accountability with trust, and structure with flexibility is essential for strengthening teacher professionalism in the digital era. Accordingly, this study aims to analyze principal leadership strategies, implemented programs, and the supporting and inhibiting factors in improving teacher professionalism through strengthening digital competencies at SMP Negeri 1 Tualang and SMP Negeri 3 Tualang. The findings are expected to contribute to the development of more effective leadership practices that support sustainable digital transformation in secondary education.

2. Methodology

This study employed a qualitative approach using a descriptive phenomenological design to obtain an in-depth understanding of principals' leadership strategies in improving teacher professionalism through the strengthening of digital competence, grounded in participants' experiences, perceptions, and real field conditions; this choice aligns with Moleong (2019), who emphasizes qualitative inquiry as a means to reveal meanings behind behavior and social interaction through rich description, and with Sugiyono (2019), who notes that descriptive qualitative research aims to describe phenomena systematically, factually, and accurately based on empirical evidence. The research was conducted at SMP Negeri 1 Tualang and SMP Negeri 3 Tualang during the odd semester of the 2025/2026 academic year, with sites selected purposively because both schools are undergoing digital education transformation and exhibit different leadership characteristics; activities began with a pre-research stage in March 2025 to map initial issues, followed by preparation and data collection in April 2025, and analysis and report writing from May to October 2025. Data sources included empirical data obtained through direct interaction with key informants (principals, vice principals, teachers actively involved in digital development, and school operators) and documentary data used to strengthen field findings, such as principal work programs, School Work Plans and Budgets (RKAS), digital learning tools, training modules, supervision and evaluation records, and visual documentation of digital competence development activities. Data were collected through semi-structured interviews guided by an interview protocol, non-participatory observations to capture leadership practices and teachers' technology use, and documentation review to

assess alignment between policy and practice while supporting triangulation. Trustworthiness was ensured through credibility, transferability, confirmability, and dependability, implemented via source-technique-time triangulation, member checking, thick description, systematic evidence presentation to reduce bias, and an audit trail documenting the entire research process. Data analysis followed the interactive model of Miles, Huberman, and Saldaña (2014), conducted continuously through data condensation, data display in thematic narratives and matrices, and conclusion drawing with verification through ongoing reflection and triangulation until credible findings were established.

3. Results and Discussion

Result Research

SMP Negeri 1 Tualang and SMP Negeri 3 Tualang are two leading public junior high schools in Siak Regency, Riau, both holding an A (Excellent/Superior) accreditation and widely recognized for the quality of their educational services. SMP Negeri 1 Tualang is strategically located at Jl. Ki Hajar Dewantara Km. 7, Perawang Barat, Tualang District (NPSN: 10403445), and is often regarded as an educational benchmark in the region; established in 1998, the school previously operated under several names, including SMP Negeri 5 Siak and SLTPN 01 Tualang, before becoming SMP Negeri 1 Tualang, and under the leadership of Hj. Nurjamliah, S.Pd., M.Pd., it emphasizes character building, religious habituation, teacher professionalism, the development of students' potential through effective learning and technology-based innovation, the preservation of arts and Malay culture of Riau, and the cultivation of independence and creativity within the school community. Meanwhile, SMP Negeri 3 Tualang is located at Jl. Datuk Srimaraja Km. 5.5, Perawang, Tualang District (NPSN: 10403472) and is well known for its Adiwiyata and Child-Friendly School programs, reflecting a strong commitment to environmental awareness and student wellbeing; led by Surtini, S.Pd., M.Pd., the school upholds a vision of developing students who are well-charactered, high-achieving, environmentally cultured, and globally minded, supported by learning facilities such as science and ICT laboratories, a school health unit, and art rooms, while actively promoting academic and extracurricular activities including science clubs, scouting, futsal, Islamic activities, dance, painting, wall magazines, and drumband, and earning the nickname "Sang Juara" for its sustained academic and non-academic achievements, including at the national level.

This study used a descriptive research design to portray and explain the actual conditions of SMP Negeri 1 Tualang and SMP Negeri 3 Tualang as they are, based on factual information collected in the field. The research process was carried out by visiting the schools and gathering data primarily through semi-structured interviews, supported by observations of the school environment and a review of relevant documents (e.g., school profiles, program reports, and activity records). Interviewees were selected purposively from school stakeholders who were directly involved in academic and student development activities, such as the principals and several teachers. The interviews followed an interview guide, as presented in Table

1, while additional probing questions were asked to clarify responses and obtain richer descriptions. The collected data were then organized and presented descriptively by grouping similar information into themes such as school identity, vision and mission, flagship programs, facilities, extracurricular activities, achievements, and implementation challenges.

Table 1. Interview Questions

No.	Interview Focus	Interview Questions
1	School Vision and Policy	How does the school's vision guide academic and non-academic programs in daily practice?
2	Leadership Practices	How does the principal implement leadership strategies to improve school quality?
3	Teacher Professionalism	What efforts are made to enhance teacher professionalism and instructional competence?
4	Learning Process	How are effective and innovative learning strategies implemented in the classroom?
5	Student Development	How does the school support students' academic achievement and character development?
6	Extracurricular Programs	What roles do extracurricular activities play in developing students' talents and interests?
7	Environmental and Character Programs	How are Adiwiyata, character education, or religious programs integrated into school activities?
8	Challenges	What challenges does the school face in implementing its programs?
9	Support Systems	What internal and external supports contribute to the success of school programs?
10	Improvement Efforts	What strategies are planned for continuous improvement in the future?

The principal's leadership strategy contributes to improving teacher professionalism through strengthening digital competence

Leadership strategies at SMPN 1 Tualang

Based on interviews, observations, and documentation, leadership strategies at SMPN 1 Tualang focus on a persuasive, supportive, and collaborative approach to strengthening teachers' digital competence and professionalism. Field observations show that many teachers have started using digital media such as projectors, interactive presentations, instructional videos, and online quiz applications, which tends to increase student engagement; however, implementation remains inconsistent because of limited device availability, uneven teacher readiness in operating applications, and frequent disruptions caused by unstable internet connectivity. The evidence also indicates that the principal motivates teachers through encouragement, recognition, role modelling, and structured forums for sharing good practices, while monitoring progress through classroom visits and a mix of direct and indirect supervision, although these efforts are sometimes constrained by administrative workload and limited time. Overall, the strategy has produced observable improvements in lesson planning, classroom delivery, and the

evaluation of digital-based learning, yet its effectiveness is still hampered by infrastructure gaps, variable teacher skills, inconsistent reporting, and uneven participation in evaluation activities. Therefore, sustained mentoring, technical guidance, improved digital facilities and network reliability, and a stronger culture of peer support are required to ensure that learning digitalization becomes more consistent and evenly implemented across all classes.

Leadership Strategies at SMPN 3 Tualang

Based on interviews, observations, and documentation, leadership strategies at SMP Negeri 3 Tualang to improve teachers' digital competence are implemented through a motivational approach, strengthened by the use of internal mentors and routine school forums that encourage teachers to try interactive technology-based learning. Field evidence shows that teachers tend to be more enthusiastic when they receive direct encouragement and practical support, and mentor teachers are able to guide their colleagues more confidently; however, some senior teachers still avoid using technology when supervision is limited, and constraints such as limited resources and unfamiliarity with new applications remain. The strategy has a positive impact on teacher professionalism, especially in planning, implementing, and evaluating learning, as digitally skilled teachers can integrate digital media effectively and use online assessment tools to speed up evaluation, although some teachers revert to conventional methods when technical problems occur. Monitoring and evaluation are carried out through formal classroom supervision and informal communication, which generally support the digitalization program, even though informal checks do not always reveal deeper obstacles comprehensively. Teachers also perceive the principal's role as significant in providing direction and facilitating the use of school facilities such as computer labs and internet access, despite network instability and uneven teacher readiness; internal teacher forums are held regularly, but participation varies and some teachers still need assistance when using new applications. From a technical perspective, the implementation of digitalization is supported by active use of computers and projectors, peer assistance among teachers, and facilitation from the principal, yet it is still vulnerable to internet, electricity, and device limitations. Overall, the principal's strategy combines technical guidance with motivation and appreciation, which increases teachers' confidence and participation, supports continuous learning and internal knowledge sharing, and gradually expands the use of digital technology in learning, although sustained mentoring, improved infrastructure, and more consistent follow-up are still required for more even implementation across teachers.

Programs designed and implemented by the principal for the development of teachers' digital competencies

Program designed at SMPN 1 Tualang

Based on interviews, observations, and documentation, the programs designed at SMP Negeri 1 Tualang to improve teachers' digital competence are implemented through various training activities, workshops, technical guidance, and routine

practice sessions facilitated by the principal and supported by IT staff. Field observations indicate that many teachers have begun to use laptops, projectors, e-learning platforms, and interactive applications to support learning, although levels of mastery and confidence vary, particularly among teachers with limited prior experience. During training activities, some teachers actively practiced and discussed the use of digital applications, while others participated more passively due to limited skills, time constraints, or lack of confidence. Despite technical obstacles such as limited devices, unstable internet connections, and busy teaching schedules, teacher involvement in the digitization program has shown gradual improvement, supported by peer collaboration, mentoring from more digitally skilled teachers, and online tutorial materials provided by the school. The implementation of the program generally aligns with the planned objectives and has contributed positively to teacher professionalism, as reflected in increased confidence, creativity, and the integration of digital media in classroom instruction. However, the effectiveness of the program has not yet been evenly distributed among all teachers, indicating the need for continuous mentoring, more flexible scheduling, and improved facilities to ensure sustained and optimal development of teachers' digital competence.

Programs Designed at SMPN 3 Tualang

Based on interviews, observations, and documentation, the digital competency strengthening programs at SMP Negeri 3 Tualang have been implemented through a variety of trainings and workshops prepared by the school and supported by IT operators/staff, with the principal playing an active facilitating role to ensure teachers continue developing their digital skills. Field evidence shows that most teachers participate enthusiastically, especially when introduced to new learning applications and practical simulations, and several teachers have begun creating digital teaching materials, using interactive media, and utilizing e-learning platforms more confidently. Nevertheless, teachers' comfort and readiness with technology remain uneven, as some teachers who rarely use digital devices still require additional guidance, particularly when working with more complex features such as interactive media creation or integrating multiple applications into e-learning. The implementation of the program generally follows the planned schedule, although adjustments are sometimes necessary due to classroom use, heavy teaching loads, and technical disruptions such as unstable internet connections; in response, the IT team often provides extra assistance to keep activities running. Teacher involvement is also strengthened through mentoring, tutorials, consultation sessions, and peer discussions, which help hesitant teachers gradually adapt while encouraging more skilled teachers to share practical solutions. Overall, the program has positively contributed to teacher professionalism, reflected in more structured lesson planning, improved classroom delivery using digital resources, and increased creativity and innovation in learning. However, the effectiveness of the program is not yet fully uniform across all teachers, as it is still influenced by limited infrastructure, restricted time for independent practice, and the ongoing need for technical support to ensure consistent and sustainable improvements in teachers' digital competence.

Supporting and Hindering Aspects of the Implementation of Principal Leadership Strategies in Strengthening Teachers' Digital Competence

Supporting and hindering aspects at SMPN 1 Tualang

Based on interviews, observations, and documentation, the supporting and hindering aspects of the digitalization strategy at SMP Negeri 1 Tualang reflect a balance between strong internal readiness and persistent technical constraints. Key supporting factors include the principal's leadership in directing and facilitating digital initiatives, teachers' motivation to adapt to technology (particularly among highly motivated and digitally familiar teachers), and the availability of infrastructure such as computers, projectors, computer labs, and internet access that is already utilized effectively in several rooms, although not yet evenly across all classrooms. A collaborative school culture also strengthens implementation, as teachers frequently share experiences, assist colleagues during training and classroom practice, and create a supportive environment that encourages experimentation with new applications. However, major barriers remain, including limited devices relative to the number of teachers, unstable internet connections that often disrupt e-learning activities and online presentations, limited time for teachers to prepare digital materials due to heavy teaching and administrative workloads, and psychological factors such as low confidence among some teachers when using unfamiliar applications without direct guidance. To address these challenges, the school applies practical mitigation efforts such as additional training and mentoring, scheduling and shared use of devices, intensive technical assistance from IT staff, peer support among teachers, and temporary alternatives like hotspots when network disruptions occur. Overall, while these efforts have been effective in gradually improving teachers' digital skills and sustaining program participation, further improvements in infrastructure, network reliability, and continuous hands-on support are still needed to ensure more consistent and equitable implementation of digital learning across the school.

Supporting and Hindering Factors at SMPN 3 Tualang

Based on interviews, observations, and documentation, the supporting and hindering aspects of the digitalization strategy at SMP Negeri 3 Tualang show that the program is strengthened by strong leadership support and teacher enthusiasm, but still constrained by uneven infrastructure and differences in digital readiness. Supporting factors include the principal's encouragement that increases teacher motivation, teachers' willingness to participate in digitization activities, and the use of available facilities such as computers, laptops, and internet access in several parts of the school, which helps teachers practice and apply digital tools in learning. A collaborative atmosphere also supports implementation, as teachers share experiences, exchange practical tips, and assist one another during training, including participation outside teaching hours when needed. However, key barriers remain, particularly limited devices, uneven or unstable internet coverage, and limited teacher time due to teaching responsibilities, which can reduce the consistency of technology use in classrooms. In addition, variations in teacher skills are evident, where younger teachers tend to adapt faster while some senior teachers

require more intensive guidance and confidence-building support. To address these challenges, the school applies gradual training, additional mentoring sessions, technical assistance, and resource management such as rotating device usage schedules to ensure all teachers have opportunities to practice. Overall, these combined efforts are effective in helping teachers adapt and strengthening participation in the digitization program, although continuous support and improvements in equipment and connectivity are still needed to achieve more consistent and equitable digital learning implementation across the school.

Discussion and Findings

Principal Leadership Strategies Contribute to Improving Teacher Professionalism through Strengthening Digital Competence

Based on the results of interviews, observations, and documentation at SMPN 1 Tualang and SMPN 3 Tualang, the principal's transformational leadership strategy in strengthening teachers' digital competencies focuses on providing motivation, continuous mentoring, and providing digital facilities, even though they are still limited. The main challenges arise from uneven teacher skills, limited digital facilities, internet network constraints, and heavy teacher workloads. At SMPN 1 Tualang, the principal emphasizes a persuasive and supportive approach by encouraging teachers to participate in training, building a culture of sharing among teachers, and conducting direct and indirect monitoring. These efforts have proven to improve teachers' skills in developing digital lesson plans, using interactive media, and conducting application-based evaluations. These findings are in line with the research by Schmitz et al., (2025), which confirms that supportive leadership can increase teachers' confidence in adapting to learning technology.

Meanwhile, at SMPN 3 Tualang, the leadership strategy is more focused on a motivational approach by providing concrete examples of the benefits of technology, providing digital modules, and assigning teachers as mentors for their peers. However, obstacles are still evident, especially among senior teachers who are less familiar with digital devices and limited infrastructure. This is in line with the findings of, which state that the success of digitization in secondary schools is greatly influenced by the readiness of teachers and the role of the principal as a facilitator in building a collaborative culture.

In addition, conditions in both schools show that digital infrastructure factors such as internet networks and devices are key to the success of digitization strategies. Recurring technical obstacles have made implementation inconsistent. This supports the findings of Kultsum (2025), which emphasize the importance of infrastructure readiness as an absolute requirement for optimizing digital-based learning. On the other hand, the enthusiasm of young teachers and the role of internal learning communities have proven to accelerate adaptation, in line with the findings Castano et al., (2025) that a culture of sharing among teachers can strengthen motivation while reducing resistance. In conclusion, the transformational leadership strategies at SMPN 1 Tualang and SMPN 3 Tualang have shown positive results in strengthening teachers' digital competencies through

motivation, mentoring, and the provision of simple facilities. SMPN 1 Tualang excels in monitoring and strengthening the culture of sharing, while SMPN 3 Tualang is stronger in the use of internal mentors and motivational approaches. However, the effectiveness of both is still limited by limited resources, network constraints, and uneven teacher readiness.

Programs Designed and Implemented by Principals for Digital Competency Development

Based on interviews, observations, and documentation at SMPN 1 Tualang and SMPN 3 Tualang, the principal's transformational leadership strategy in improving teacher professionalism through strengthening digital competency appears to focus on providing motivation, mentoring, and supporting facilities, although these are still limited. The main challenges arise from the heavy administrative burden on teachers, uneven digital skills, limited digital facilities, and unstable internet networks. At SMPN 1 Tualang, the principal emphasizes a supportive leadership approach with direct and indirect monitoring, encouragement to attend training, and strengthening the culture of sharing among teachers. These efforts have proven to improve teachers' skills in developing digital teaching tools, using interactive media, and conducting application-based evaluations. These findings align with the research, which confirms that supportive leadership can boost teachers' confidence in integrating learning technology.

Meanwhile, at SMPN 3 Tualang, the dominant obstacles are limited motivation, especially among senior teachers, and limited digital facilities. The principal strives to foster enthusiasm by demonstrating the benefits of technology, providing digital modules, and assigning teachers as peer mentors. However, participation is not yet evenly distributed, and there are still teachers who view the digitization program as an additional burden. This is in line with the findings of Schmitz et al., (2025), who state that educational transformation is often hampered by teachers' perceptions of innovation, where additional activities are considered a burden.

In addition, limitations in infrastructure, such as unstable internet connections and inadequate digital devices in both schools, are another hindering factor. This condition is in line with the research by Kultsum (2025), which highlights the importance of digital infrastructure in supporting technology-based learning. In conclusion, the transformational leadership strategies at SMPN 1 Tualang and SMPN 3 Tualang have shown positive results in improving teacher professionalism through motivation, mentoring, and the provision of simple facilities. However, its effectiveness is still limited by teachers' workloads, infrastructure constraints, and uneven motivation. SMPN 1 Tualang is more prominent in strengthening teacher participation through facilitation and a culture of sharing, while SMPN 3 Tualang still needs to strengthen its collective culture and teachers' positive perceptions of the digitization program.

Supporting and Hindering Aspects of the Implementation of Principal Leadership Strategies in Strengthening Digital Competence

Based on interviews, observations, and documentation at SMPN 1 Tualang and SMPN 3 Tualang, the principal's transformational leadership strategy in improving teacher professionalism through strengthening digital competencies appears to focus on providing motivation, technical assistance, and supporting facilities, although these are still limited. The main challenges arise from limited digital devices, unstable internet networks, heavy administrative burdens, and uneven teacher skills.

At SMPN 1 Tualang, the principal emphasizes a persuasive and supportive approach by conducting direct and indirect monitoring, encouraging teachers to participate in training, and strengthening a culture of sharing among teachers. These efforts have proven to encourage previously passive teachers to become more active, particularly in the development of digital teaching tools and the use of interactive media. These findings align with the research by Schmitz et al., (2025) titled (Supportive Leadership in Enhancing Teachers' Confidence in Utilizing Learning Technology), which confirms that supportive leadership can enhance teachers' confidence in utilizing learning technology. Meanwhile, at SMPN 3 Tualang, the dominant obstacles were found among senior teachers who still struggled to adapt to digital tools and faced limitations in infrastructure. The principal strives to foster enthusiasm by setting an example, providing digital modules, and assigning teachers as peer mentors. This strategy is in line with the findings of, which state that the role of the principal as a facilitator and role model is crucial to the success of teachers' digital adaptation. Additionally, infrastructure limitations such as uneven internet connectivity and device availability pose another obstacle, as highlighted by Kultsum (2025), which emphasizes the importance of digital infrastructure support in optimizing digitalization programs. On the other hand, the enthusiasm of young teachers and the culture of sharing in learning communities support the adaptation process, as indicated in the research Castano (2025), which states that collaboration among teachers can accelerate the mastery of digital technology.

Transformational leadership at SMPN 1 Tualang and SMPN 3 Tualang shows a positive direction in strengthening teachers' digital competencies through motivation, facilitation, and a culture of collaboration. In terms of findings from the two schools, the results of the study show that a supportive, collaborative, and administrative culture of sharing needs to be further explained in the context of each school. At SMPN 1 Tualang, the principal has successfully built a positive culture of sharing among teachers, with an approach that supports collaboration and open communication. This has contributed to an improvement in teachers' digital skills. Conversely, at SMPN 3 Tualang, despite efforts to encourage collaboration, some teachers, especially senior ones, felt that this digitization program was an additional burden. Therefore, it is necessary to clarify how the principal overcomes these challenges and how they strengthen a culture of sharing that can motivate teachers to integrate technology into learning.

Regarding digital competency support, this study found that to improve teachers' digital competencies, a supportive, collaborative, and well-administered approach is needed. Principals play an important role in providing moral and technical

support to teachers, both through motivational and through training programs that suit teachers' needs. In addition, a collaborative culture among teachers, which can encourage the sharing of knowledge and experiences in the use of technology, has been proven to accelerate the process of adaptation to digital-based learning. However, the success of strengthening digital competence also depends on adequate administrative factors, such as data management and systematic evaluation of digital-based learning. Principals need to ensure that all administrative aspects run smoothly to support the use of technology in schools.

Finally, the findings on the novelty of this research emphasize the importance of consistent mentoring, facilitation, and strengthening a culture of sharing among teachers to accelerate adaptation to technology. One of the novelties of this study is how principals can strengthen a culture of sharing and improve teachers' digital skills through internal mentors and ongoing mentoring. Principals who act as facilitators and role models in the use of technology will strengthen teachers' motivation to integrate technology into learning.

4. Conclusion

Based on the results of the study, it can be concluded that the principals of SMPN 1 and SMPN 3 Tualang play a crucial and strategic role in enhancing teacher professionalism, particularly through the strengthening of digital competencies in response to the demands of educational transformation. The findings show that leadership strategies greatly influence the success of this effort, where the principal of SMPN 1 Tualang adopts a more supportive and collaborative approach that fosters a culture of sharing, open communication, and mutual learning among teachers, thereby creating a conducive climate for the growth of digital competencies. In contrast, the principal of SMPN 3 Tualang tends to apply a more administrative and procedural style, which, although accompanied by initiatives such as the provision of technological assistance, has not yet been able to optimally stimulate collaborative learning and innovation in the use of digital technology in the classroom. Programs such as training and workshops initiated by the principals in both schools have contributed positively to improving teachers' skills in utilizing digital tools for learning, yet their impact remains constrained by limited facilities, insufficient infrastructure, and the lack of continuous mentoring and technical support, so that the integration of technology into daily teaching practices is still not optimal. The study also reveals that the implementation of digital competency development programs faces significant challenges, including gaps in digital literacy between senior and younger teachers, heavy administrative workloads, and inadequate technological infrastructure, although these obstacles are partially offset by strong collegial support, the enthusiasm of young teachers, and the willingness of some school leaders to facilitate innovation. Overall, the study concludes that the improvement of teacher professionalism through digital competency development is highly dependent on adaptive, facilitative, and collaborative principal leadership, the continuity and sustainability of capacity-building programs, and the strengthening of infrastructure and school-level support systems so that all teachers, regardless of generation, are able to grow and adapt to the digital era.

References

Andika, R. (2023). Principal leadership and teacher professional development in technology-based learning. *Journal of Educational Leadership and Policy*, 15(2), 145–160.

Bush, T. (2011). *Theories of educational leadership and management* (4th ed.). London, UK: Sage Publications.

Castaño Muñoz, J., Vuorikari, R., & Punie, Y. (2023). Teacher collaboration and students' digital competence – evidence from the SELFIE tool. *European Journal of Teacher Education*, 46(3), 476-497. https://doi.org/10.1080/02619768.2021.1938535

Djamarah, S. B. (2015). *Psikologi belajar*. Jakarta, Indonesia: Rineka Cipta.

Ertmer, P. A., & Ottenbreit-Leftwich, A. T. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. *Journal of Research on Technology in Education*, 42(3), 255–284. https://doi.org/10.1080/15391523.2010.10782551

Fraillon, J., Ainley, J., Schulz, W., Friedman, T., & Duckworth, D. (2019). *Preparing for life in a digital world: IEA International Computer and Information Literacy Study 2018 international report*. Cham, Switzerland: Springer. https://doi.org/10.1007/978-3-030-38781-5

Fullan, M. (2023). *Leading in a culture of change* (2nd ed.). San Francisco, CA: Jossey-Bass.

Hidayat, R., & Abdillah. (2019). *Ilmu pendidikan: Konsep, teori, dan aplikasinya*. Medan, Indonesia: Lembaga Peduli Pengembangan Pendidikan Indonesia.

Juwita, R., Prasetyo, Z. K., & Wibowo, M. E. (2023). Academic supervision and digital innovation in teaching practices. *International Journal of Instruction*, 16(1), 233–248. https://doi.org/10.29333/iji.2023.16113a

Kultsum, U. (2025). Analysis of school readiness in implementing digital learning: Case study in Ciputat, South Tangerang. *Jurnal ASIK: Jurnal Administrasi, Bisnis, Ilmu Manajemen & Kependidikan*, 3(2). https://doi.org/10.59639/asik.v3i2.100

Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers. (2005). Jakarta, Indonesia.

Leithwood, K., & Jantzi, D. (2005). Transformational leadership. In B. Davies (Ed.), *The essentials of school leadership* (pp. 31–43). London, UK: Sage Publications.

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). SAGE.

Moleong, L. J. (2019). *Metodologi penelitian kualitatif* (Edisi revisi). Remaja Rosdakarya.

Rahayuningsih, F. (2022). Digital competence of teachers in 21st-century learning. *Jurnal Pendidikan Indonesia*, 11(2), 198–210.

Ramli, F. N. A., & Mohamad Arsad, N. (2023). Stem teacher digital literacy: Relationship between digital literacy and technology integration in teaching and learning post Covid-19. *Journal of Nusantara Studies*, 8(2), 316–333. https://doi.org/10.24200/jonus.vol8iss2pp316-333

Rasdiana, Wiyono, B. B., Imron, A., Rahma, L., Arifah, N., Azhari, R., Elfira, Sibula, I., & Maharmawan, M. A. (2024). Elevating teachers' professional

digital competence: Synergies of principals' instructional e-supervision, technology leadership and digital culture for educational excellence in digital-savvy era. *Education Sciences*, 14(3), 266. https://doi.org/10.3390/educsci14030266

Sanusi, A., Rahman, A., & Kurniawan, D. (2021). Integrating technology into teacher professional competencies. *Journal of Educational Technology Development*, 9(2), 87–99.

Scherer, R., Tondeur, J., Siddiq, F., & Baran, E. (2019). The importance of attitudes toward technology for pre-service teachers' technological, pedagogical, and content knowledge. *Computers in Education*, 135, 59–69. https://doi.org/10.1016/j.compedu.2019.02.016

Schmitz, M., van Ackeren, I., & Brauckmann, S. (2023). School leadership and digital transformation: Between compliance and innovation. *Educational Management Administration & Leadership*, 51(4), 567–585. https://doi.org/10.1177/17411432221089412

Sumarni, S., Hidayah, N., & Prabowo, A. (2024). Instructional leadership and teacher digital professionalism. *Jurnal Manajemen Pendidikan*, 16(1), 1–15.

Sugiyono. (2019). *Metode penelitian kualitatif*. Alfabeta.

Teo, T. (2013). Modeling technology acceptance in education: A study of pre-service teachers. *Computers & Education*, 52(2), 302–312. https://doi.org/10.1016/j.compedu.2008.08.006

Tondeur, J., Scherer, R., Siddiq, F., & Baran, E. (2017). Preparing pre-service teachers for integrating technology in education. *Educational Technology Research and Development*, 65(3), 555–575. https://doi.org/10.1007/s11423-016-9481-2

Undang-Undang Republik Indonesia Nomor 14 Tahun 2005 tentang Guru dan Dosen. (2005). Jakarta: Sekretariat Negara Republik Indonesia

How to cite this article:

Rini., & Lestari, S. (2025). School Principal Leadership Strategies in Enhancing Teacher Profesionalism Through Strengthening Digital Competencies at SMPN 1 and SMPN 3 Tualang. *Journal of Educational Sciences*, *9(6)*, 6519-6532.