International Journal of Education, Vocational and Social Science
https://e-journal.citakonsulindo.or.id/index.php/IJEVSS
E-ISSN : 2963 4954
IJEVSS

Digital Technology-Based Transformation Of Instructional Supervision In Islamic Religious Education In The Post-Pandemic Era: Strategies, Challenges, And Implications For Learning Quality

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Abstract

The COVID-19 pandemic has accelerated digital transformation across various aspects of education, including instructional supervision. In the post-pandemic era, the supervision of Islamic Religious Education (PAI) has evolved from conventional classroom observation into technology-assisted supervision that supports monitoring, coaching, evaluation, and continuous improvement of teaching and learning processes. Nevertheless, the implementation of digital-based supervision continues to face several challenges, including limited digital competence among teachers and supervisors, the absence of an integrated digital supervision model, and the underutilization of digital data to improve instructional quality. This study aims to analyze the transformation of technology-based instructional supervision in Islamic Religious Education after the pandemic, identify its implementation strategies, examine the challenges encountered, and explain its implications for improving instructional quality. This study employed a qualitative approach using a library research method by analyzing books, national and international journal articles, government policy documents, and previous relevant studies. The findings indicate that digital technology enhances instructional supervision through the digitalization of supervision instruments, cloud-based learning documentation, synchronous and asynchronous classroom observation, collaborative communication between supervisors and teachers, and data-driven decision-making. The success of digital supervision is strongly influenced by infrastructure readiness, educators' digital competence, school leadership, and institutional policies that support

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digital transformation. This article proposes a ***Conceptual Model of Digital Technology-Based Transformation of Islamic Religious Education Supervision*** *as a strategic framework for developing collaborative, adaptive, sustainable, and quality-oriented instructional supervision.*

Keywords: instructional supervision, Islamic religious education, digital technology, digital transformation, instructional quality.

INTRODUCTION

Advances in information and communication technology have significantly transformed various aspects of educational practice, including teaching and learning activities, academic administration, and educational quality assurance systems **(Bates, 2019).** These developments have encouraged educational institutions to integrate digital technologies into academic activities, making learning processes more flexible, efficient, and responsive to the demands of the digital era. Consequently, digital technology is no longer viewed merely as a supporting tool but has become an essential component in promoting continuous educational quality improvement.

The digital transformation of education accelerated rapidly following the outbreak of the Coronavirus Disease 2019 (COVID-19) pandemic **(Dhawan, 2020).** The implementation of distance learning policies required schools and higher education institutions to utilize various digital platforms as the primary medium for instructional delivery. Learning Management Systems (LMS), video conferencing applications, cloud-based storage, and online communication platforms became indispensable tools for ensuring the continuity of teaching and learning activities during the pandemic.

The utilization of digital technology has continued to expand in the post-pandemic era and has become an integral part of educational systems **(UNESCO, 2023).** Many educational institutions have adopted blended learning and hybrid learning approaches that combine face-to-face instruction with digital learning environments. This transformation demonstrates that digitalization is no longer a temporary response to the pandemic but has become a strategic direction for developing a more adaptive and technology-oriented education system.

These changes have also influenced the implementation of instructional supervision. Conventional classroom observations have gradually evolved into technology-supported supervision that utilizes digital platforms for observation, documentation, communication, and follow-up coaching **(Glickman et al., 2018).** Through digital technologies, supervisors can obtain more comprehensive information from digital learning documents, recorded instructional

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activities, and online learning platforms. As a result, instructional supervision has become more flexible, evidence-based, and continuous.

Within the context of **Islamic Religious Education (IRE/PAI),** instructional supervision plays a strategic role because it aims not only to improve instructional quality but also to strengthen teachers' professional competence in fostering Islamic values among students **(Muhaimin, 2012).** Islamic Religious Education teachers are expected to develop learning experiences that enhance students' cognitive, affective, spiritual, and moral competencies. Therefore, instructional supervision should provide comprehensive professional guidance covering lesson planning, classroom implementation, assessment, reflection, and continuous instructional improvement.

Digital technology offers considerable opportunities to enhance the effectiveness of instructional supervision in Islamic Religious Education **(Redecker, 2017).** Supervision instruments can be digitized to facilitate classroom observation, documentation, data management, and follow-up recommendations. Furthermore, digital learning platforms enable supervisors to monitor instructional activities continuously without being limited to scheduled classroom visits. Such digital evidence provides valuable information for designing professional development programs that are better aligned with teachers' actual instructional needs.

The integration of digital technology into instructional practices has also demonstrated positive impacts on academic management. A study conducted at STIT Al-Falah Rimbo Bujang revealed that an integrated web-based e-learning system equipped with webinar features successfully reduced the fragmentation caused by multiple learning platforms, improved coordination between lecturers and students, and enhanced the effectiveness of instructional monitoring **(Ul Akbar et al., 2026).** These findings indicate that integrated digital systems not only facilitate teaching and learning activities but also generate structured academic data that can support more effective instructional supervision.

Despite these advantages, the implementation of digital technology-based instructional supervision continues to face several challenges **(Trust & Whalen, 2020).** Not all teachers possess sufficient digital competence to utilize educational technologies effectively. In addition, many educational institutions still experience limitations in technological infrastructure, lack standardized procedures for digital supervision, and have not fully utilized supervision data as a basis for improving instructional quality. These conditions suggest that the success of digital supervision depends not only on technological availability but also on human resource readiness and institutional commitment.

Previous studies have extensively discussed e-learning, digital competence, and online learning. However, research specifically examining the transformation of digital technology-based

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instructional supervision in Islamic Religious Education during the post-pandemic era remains limited **(Zepeda, 2017).** Most existing studies investigate digital learning and instructional supervision separately, leaving a gap in understanding how digital technology can systematically support instructional supervision while improving the quality of Islamic Religious Education.

Based on these considerations, this article aims to analyze the transformation of digital technology-based instructional supervision in Islamic Religious Education during the post-pandemic era, identify effective implementation strategies, examine the challenges encountered, and explain their implications for improving instructional quality. Furthermore, this study proposes a **Conceptual Model of Digital Technology-Based Transformation of Instructional Supervision in Islamic Religious Education** as a framework for developing collaborative, adaptive, and quality-oriented instructional supervision.

Previous Studies and Research Gap

Previous studies on the utilization of digital technology in education have consistently demonstrated that digital transformation enhances the flexibility, accessibility, and effectiveness of teaching and learning processes. Digital learning provides students with broader access to learning resources, facilitates interaction between teachers and learners, and supports instructional activities that are no longer constrained by time and location **(Dhawan, 2020)** Nevertheless, most existing studies primarily focus on the effectiveness of online learning as a medium for instructional delivery and pay limited attention to the role of digital technology as a tool for instructional supervision.

Studies on teachers' digital competence have also emphasized that the success of digital transformation is largely determined by educators' ability to integrate technology into instructional practices **(Falloon, 2020).** Teachers with higher levels of digital competence tend to be more capable of developing innovative learning media, utilizing digital platforms effectively, and creating interactive learning environments. However, these studies mainly concentrate on teachers' individual competencies and have not comprehensively examined how such competencies can be integrated into a sustainable instructional supervision system.

On the other hand, research on instructional supervision highlights that supervision should not merely function as an evaluative activity but rather as a continuous professional development process aimed at improving instructional quality through reflection, feedback, and ongoing coaching **(Glickman et al., 2018).** The advancement of digital technology has created new opportunities for instructional supervision to move beyond conventional classroom observation by utilizing digital data generated throughout the teaching and learning process. However, studies

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investigating the transformation of digital technology-based instructional supervision, particularly within the context of Islamic Religious Education, remain relatively limited.

A study conducted by **Akbar et al.** demonstrated that the integration of a web-based e-learning system with webinar features successfully improved instructional management by consolidating teaching activities into a single digital platform. This integration enhanced coordination, documentation, and instructional monitoring, thereby generating structured academic data that can potentially support instructional supervision **(Ul Akbar et al., 2026).** Nevertheless, the study primarily focused on the development of an integrated e-learning system and did not specifically examine the utilization of digital technology as a strategic instrument for instructional supervision.

Based on these previous studies, it can be concluded that research on digital learning, teachers' digital competence, and e-learning systems has developed considerably in recent years. However, studies integrating these three dimensions within the framework of instructional supervision in Islamic Religious Education during the post-pandemic era remain scarce **(Zepeda, 2017)** Most previous studies have discussed digital learning and instructional supervision separately, leaving a gap in understanding how digital technology can support supervision from planning, classroom observation, and feedback to continuous professional development.

Therefore, this article seeks to address this gap by proposing a **Conceptual Framework for the Digital Technology-Based Transformation of Instructional Supervision in Islamic Religious Education**. Unlike previous studies that examine digital learning or instructional supervision independently, this article integrates digital technology, instructional supervision, and learning quality improvement into a comprehensive conceptual framework. The proposed model is expected to serve as a practical reference for school principals, supervisors, and teachers in developing instructional supervision that is collaborative, adaptive, data-driven, and oriented toward continuous quality improvement.

Table 1. Research Gap Analysis

Author(s)	Research Focus	Main Findings	Research Limitations	Position of the Present Study
Dhawan (2020)	Online learning during the COVID-19 pandemic	Online learning became an effective solution for maintaining the continuity of	Focused primarily on online learning and did not examine the utilization of digital	This study extends the role of digital technology beyond instructional delivery by

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Author(s)	Research Focus	Main Findings	Research Limitations	Position of the Present Study
		educational activities during the pandemic.	technology for instructional supervision.	proposing its use as a tool for instructional supervision in Islamic Religious Education.
Redecker (2017)	Teachers' digital competence (DigCompEdu Framework)	Digital competence is a key determinant of successful educational transformation.	Focused on teachers' digital competence without discussing digital-based instructional supervision.	This study integrates teachers' digital competence into the implementation of digital technology-based instructional supervision.
Falloon (2020)	Digital competence framework for teachers	Teachers' digital competence significantly influences the effectiveness of technology integration in teaching and learning.	Did not explore the relationship between teachers' digital competence and instructional supervision.	This study positions digital competence as one of the essential prerequisites for effective digital instructional supervision.
Glickman et al. (2018)	Instructional supervision	Instructional supervision is a professional development process designed to improve instructional quality.	The proposed supervision model is primarily based on conventional supervisory practices and has not fully incorporated digital transformation in	This study develops a digital technology-based instructional supervision model that is more adaptive to current educational developments.

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Author(s)	Research Focus	Main Findings	Research Limitations	Position of the Present Study
			the post-pandemic era.	
Zepeda (2017)	Instructional supervision	Effective supervision is achieved through classroom observation, constructive feedback, and continuous teacher development.	Did not discuss the utilization of digital platforms to support instructional supervision.	This study integrates classroom observation, feedback, and professional development into a digital supervision framework.
Akbar et al. (2026)	Development of an integrated web-based e-learning system with webinar features	An integrated e-learning system improved instructional management, documentation, and academic monitoring.	Focused on the development of an e-learning system without examining its application to instructional supervision in Islamic Religious Education.	This study utilizes integrated digital learning systems as a source of supervision data for improving the quality of Islamic Religious Education.

RESEARCH METHOD

This study employed a **qualitative approach** using the **library research** method. This approach was selected because the study focused on analyzing concepts, theories, previous research findings, and scholarly publications related to the transformation of digital technology-based instructional supervision in Islamic Religious Education (IRE) in the post-pandemic era. Through library research, the authors synthesized various scientific findings to obtain a comprehensive understanding of implementation strategies, challenges, and the implications of digital instructional supervision for improving the quality of Islamic Religious Education **(Zepeda, 2017).**

The library research method was considered appropriate for this study because its primary objective was not to collect empirical field data or test hypotheses, but rather to critically analyze,

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compare, and synthesize existing theories, scholarly publications, and previous research findings related to digital technology-based instructional supervision in Islamic Religious Education. This approach enabled the authors to identify research gaps, integrate diverse perspectives, and formulate a conceptual model that reflects current educational developments in the post-pandemic era.

The data used in this study consisted of **secondary data** obtained from various scholarly sources relevant to the research topic. These sources included books discussing instructional supervision, digital transformation in education, teachers' digital competence, Islamic Religious Education, national and international journal articles, reports published by international organizations, and government policy documents related to educational supervision and instructional practices. All references were selected based on their relevance to the research objectives, academic credibility, and contribution to the development of the conceptual framework **(UNESCO, 2023)**

Data collection was conducted through **document analysis** by identifying, reviewing, classifying, and organizing literature relevant to the research focus. The selected references were evaluated according to their thematic relevance, year of publication, scholarly contribution, and relationship to instructional supervision, digital technology, and Islamic Religious Education. This procedure ensured that the analyzed literature was consistent with the objectives of the study and provided a comprehensive understanding of the phenomenon under investigation.

The collected data were analyzed using a **qualitative content analysis** approach. The analytical process involved identifying relevant literature, selecting significant findings, comparing previous studies, synthesizing theoretical perspectives, and formulating a conceptual framework. This systematic analysis enabled the authors to identify similarities, differences, and research gaps among previous studies, which subsequently became the basis for developing the conceptual model proposed in this article **(Glickman et al., 2018)**

To ensure the trustworthiness of the findings, this study employed **source triangulation** by comparing theories, empirical findings, and policy documents related to instructional supervision and digital transformation in education. This strategy was intended to enhance the credibility of the analysis while minimizing subjective interpretation. The synthesized findings were then organized into a conceptual framework illustrating the transformation of digital technology-based instructional supervision in Islamic Religious Education as an effort to improve learning quality in the post-pandemic era.

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RESULTS AND DISCUSSION

Transformation of Instructional Supervision in Islamic Religious Education in the Post-Pandemic Era

The COVID-19 pandemic has become a turning point in the transformation of educational systems worldwide, including in Indonesia. The transition from face-to-face instruction to digital learning has influenced various aspects of educational practice, including the implementation of instructional supervision. Supervision, which was previously conducted primarily through direct classroom observation, has gradually evolved into a technology-supported process utilizing digital platforms for communication, documentation, monitoring, and evaluation **(UNESCO, 2023).** This transformation indicates that instructional supervision has shifted beyond changes in delivery methods toward a new paradigm of continuous professional support for teachers.

Before the pandemic, instructional supervision was generally carried out through scheduled classroom visits, lesson plan reviews, classroom observations, and direct feedback sessions between supervisors and teachers **(Glickman et al., 2018).** Although this approach enabled supervisors to observe classroom practices directly, its implementation was highly dependent on supervisors' availability, teachers' schedules, and the specific classroom situation during the observation. Consequently, the information obtained often reflected only a single teaching session rather than providing a comprehensive picture of teachers' instructional practices

During the pandemic, instructional supervision had to adapt to the widespread implementation of online learning. Supervisors increasingly relied on digital technologies such as video conferencing platforms, Learning Management Systems (LMS), cloud-based storage, and online communication applications to monitor teaching and learning activities **(Dhawan, 2020).** These technological adaptations ensured that supervision could continue despite restrictions on face-to-face interaction. More importantly, digital platforms generated various forms of instructional data that expanded supervisors' access to evidence of teaching practices beyond conventional classroom observations.

In the post-pandemic era, many digital supervision practices introduced during the health crisis have become integral components of educational management. Teachers now submit lesson plans, instructional materials, assessments, and teaching documentation through digital platforms, enabling supervisors to review instructional practices more efficiently and continuously **(Redecker, 2017).** This development has transformed instructional supervision into a more systematic, evidence-based, and flexible process that supports continuous professional development.

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Within the context of **Islamic Religious Education (IRE/PAI),** this transformation extends beyond the adoption of digital technologies. Instructional supervision continues to serve its primary purpose of enhancing teachers' pedagogical, professional, social, and personal competencies while ensuring that Islamic values are effectively integrated into classroom instruction. Therefore, digital technology should be viewed as an enabling instrument that strengthens the effectiveness of instructional supervision rather than replacing the essential professional interaction between supervisors and teachers **(Muhaimin, 2012).**

The transformation of instructional supervision in Islamic Religious Education ultimately reflects a shift from an administrative and inspection-oriented approach toward a collaborative, reflective, and data-informed professional development process. Supervisors are no longer expected to function solely as evaluators but also as mentors and professional partners who continuously assist teachers in improving instructional quality. This transformation provides a strong foundation for implementing digital technology-based instructional supervision, which is discussed further in the following section.

Digital Technology as an Instrument for Instructional Supervision

The advancement of digital technology has fundamentally transformed the way supervisors obtain information regarding teachers' instructional practices. While instructional supervision previously relied primarily on direct classroom observations, current teaching and learning activities are extensively documented in digital formats, enabling supervisors to access and analyze instructional data more comprehensively **(Bates, 2019).** This transformation positions digital technology not merely as a supporting tool for instruction but also as a strategic instrument for implementing more objective, systematic, and sustainable instructional supervision. The availability of digital learning records provides supervisors with richer evidence than conventional classroom observations conducted at a single point in time.

One of the most significant technological instruments supporting instructional supervision is the **Learning Management System (LMS)**. Through an LMS, supervisors can review lesson plans, learning materials, students' participation, assessment results, and interactions between teachers and students **(Redecker, 2017).** These digital records enable supervisors to evaluate instructional quality more systematically while facilitating evidence-based decision-making. In addition, the documentation stored within the LMS serves as valuable material for reflective discussions between supervisors and teachers aimed at improving instructional practices.

Cloud-based storage services, such as Google Drive, Microsoft OneDrive, and similar digital repositories, further enhance the efficiency of instructional supervision by allowing teachers to

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upload lesson plans, teaching materials, assessment instruments, instructional journals, and other supporting documents into a centralized digital repository **(Falloon, 2020).** This approach simplifies document management, reduces administrative workload, and ensures that supervision records are securely stored and easily accessible for future evaluation. Consequently, instructional supervision becomes more efficient and better organized than traditional paper-based supervision..

Video conferencing platforms, including Zoom, Google Meet, and webinar applications, have also expanded the possibilities for conducting instructional supervision remotely. These platforms enable supervisors to observe classroom instruction synchronously without requiring physical presence in the classroom **(Trust & Whalen, 2020)** . uch flexibility allows supervisors to examine instructional strategies, classroom interactions, teaching media, and classroom management practices while overcoming geographical and scheduling constraints. As a result, digital supervision offers greater opportunities for continuous observation compared with conventional supervisory approaches.

The effectiveness of integrated digital technology in supporting instructional management has also been demonstrated in previous studies. Research conducted by **Akbar et al.** revealed that an integrated web-based e-learning system equipped with webinar features successfully consolidated various academic activities into a single platform, thereby improving documentation, monitoring, attendance management, assessment, and communication between lecturers and students **(Ul Akbar et al., 2026).** These findings indicate that integrated digital systems generate structured academic data that can also serve as reliable sources of evidence for instructional supervision and continuous quality improvement..

Nevertheless, digital technology should not be regarded as a substitute for the role of instructional supervisors. Rather, technology functions as an enabling instrument that facilitates data collection, communication, documentation, and monitoring, while supervisors remain responsible for interpreting instructional evidence, providing constructive feedback, and guiding teachers' professional growth. Therefore, the effectiveness of digital technology-based instructional supervision depends not only on technological availability but also on supervisors' professional competence in utilizing digital information to support sustainable instructional improvement **(Glickman et al., 2018).**

Based on the synthesis of previous studies, digital technology contributes substantially to instructional supervision by improving access to instructional data, strengthening documentation systems, facilitating communication, and supporting continuous professional development. Consequently, instructional supervision should no longer be perceived as a periodic inspection but

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rather as an ongoing professional development process supported by integrated digital technologies. These findings provide the foundation for discussing implementation strategies for digital technology-based instructional supervision in the following section.

Strategies for Implementing Digital Technology-Based Instructional Supervision

The successful implementation of digital technology-based instructional supervision depends not only on the availability of technological infrastructure but also on the effectiveness of the strategies adopted by educational institutions. Advanced digital technologies alone cannot improve instructional supervision unless they are integrated into a systematic, well-planned, and sustainable supervisory process **(Zepeda, 2017).** Therefore, educational institutions need to develop implementation strategies that align technological utilization with the primary objective of instructional supervision, namely improving teachers' professional competence and enhancing instructional quality.

The first strategy involves the digitalization of supervision planning. At this stage, supervision programs, schedules, observation instruments, and evaluation indicators are prepared and managed digitally, allowing supervisors and teachers to access relevant information more efficiently. Digital planning also improves transparency because teachers are informed about supervision objectives, procedures, and assessment criteria before the supervision process begins **(Redecker, 2017).** As a result, instructional supervision becomes more structured and encourages teachers to actively participate in professional development activities.

The second strategy focuses on the digitalization of instructional documents. Instead of submitting printed lesson plans and supporting documents, teachers store instructional materials, teaching modules, assessment instruments, learning media, and teaching journals in digital repositories that can be accessed by supervisors. This approach enables supervisors to review instructional preparation more flexibly while reducing administrative burdens and improving documentation management. Furthermore, digital documentation provides a reliable source of evidence for evaluating teachers' instructional performance over time.

Another essential strategy is the implementation of digital classroom observation. Besides conventional classroom visits, supervisors can utilize video conferencing platforms, recorded instructional sessions, or digital learning platforms to observe classroom practices **(Trust & Whalen, 2020).** This approach offers greater flexibility by allowing supervisors to conduct repeated observations across different learning sessions, thereby providing a more comprehensive understanding of teachers' instructional performance rather than relying on observations from a single classroom meeting.

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The next strategy emphasizes the utilization of digital learning data for monitoring and evaluation. Information generated through Learning Management Systems, digital repositories, and other educational platforms provides valuable evidence regarding student participation, instructional activities, assessment implementation, and learning outcomes. These data enable supervisors to formulate more objective recommendations because supervisory decisions are supported by documented evidence rather than relying solely on subjective observations **(Glickman et al., 2018).**

Equally important is the establishment of continuous communication and constructive feedback between supervisors and teachers. Unlike conventional supervision, where professional interaction often ends after classroom observation, digital communication platforms facilitate continuous consultation, reflection, mentoring, and collaborative problem-solving. This ongoing interaction encourages teachers to improve instructional practices continuously while strengthening a culture of professional learning within educational institutions.

Finally, the outcomes of instructional supervision should be utilized as a foundation for educational decision-making and continuous quality improvement. Supervision findings can be analyzed to identify teachers' professional development needs, evaluate curriculum implementation, and design targeted training programs. Consequently, digital technology-based instructional supervision should not be regarded merely as an administrative activity but rather as an integral component of educational quality assurance and institutional development **(Sallis, 2014).**

Based on the synthesis of previous studies, effective implementation of digital technology-based instructional supervision requires the integration of technological resources, competent human resources, and institutional commitment to developing a sustainable supervisory culture. Such integration enables instructional supervision to become more efficient, transparent, accountable, and responsive to educational change. Nevertheless, despite these potential benefits, several challenges continue to hinder the effective implementation of digital instructional supervision. These challenges are discussed in the following section.

Challenges in the Implementation of Digital Technology-Based Instructional Supervision

The transformation of instructional supervision through digital technology has created new opportunities for improving teachers' professional development and instructional quality. Nevertheless, its implementation continues to encounter several challenges that need to be addressed to ensure the effectiveness and sustainability of digital instructional supervision

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(UNESCO, 2023). These challenges extend beyond technological issues and involve human resources, organizational culture, institutional policies, and long-term system management.

One of the major challenges is the disparity in digital competence among teachers and supervisors. While some educators are highly proficient in utilizing digital technologies for instructional purposes, others still experience difficulties in operating digital platforms and managing electronic learning resources. This variation in digital competence often results in inconsistent implementation of digital instructional supervision across educational institutions **(Falloon, 2020).** Therefore, continuous professional development in digital literacy is essential to ensure that all stakeholders are adequately prepared to participate in digital supervision practices.

Another significant challenge relates to the availability of technological infrastructure. Effective digital instructional supervision requires reliable internet connectivity, appropriate hardware, and integrated digital platforms capable of supporting supervision activities. However, many educational institutions, particularly those located in rural or underserved areas, continue to experience limitations in technological infrastructure. Consequently, supervision is often conducted using fragmented digital applications, making it difficult to establish an integrated supervision system that supports comprehensive documentation and data management **(OECD, 2021).**

Organizational culture also plays a crucial role in determining the success of digital instructional supervision. The transition from conventional supervision to technology-supported supervision requires changes in teachers' and supervisors' perceptions of the supervision process. In some institutions, supervision is still viewed primarily as an administrative evaluation rather than a collaborative process for professional growth. Without a supportive organizational culture that promotes openness, collaboration, and continuous improvement, digital technologies alone are unlikely to produce meaningful changes in instructional supervision **(Glickman et al., 2018).**

In addition, concerns regarding data security and privacy have become increasingly important as instructional supervision relies more heavily on digital technologies. Supervision records contain confidential information related to lesson planning, classroom observations, teacher performance, and student learning activities. Therefore, educational institutions should establish clear policies regarding data management, user access, and digital security to ensure that supervision data are protected and utilized responsibly throughout the supervision process..

Leadership commitment represents another critical factor influencing the successful implementation of digital instructional supervision. School principals and instructional supervisors are expected to provide strategic direction, allocate resources, facilitate professional development, and encourage innovation in supervisory practices. Without strong institutional

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leadership, the implementation of digital instructional supervision is likely to remain fragmented and unsustainable **(Zepeda, 2017).** Effective leadership is therefore essential for ensuring that digital technologies are utilized not merely to improve administrative efficiency but also to enhance instructional quality.

Overall, the successful implementation of digital technology-based instructional supervision requires a balanced integration of technological readiness, digital competence, organizational culture, institutional support, and strategic leadership. Addressing these challenges will enable educational institutions to establish a sustainable supervision system that supports teachers' professional development and contributes to continuous instructional quality improvement. These potential impacts are further discussed in the following section.

Implications for Learning Quality

The implementation of digital technology-based instructional supervision has significant implications for improving the quality of learning in Islamic Religious Education. The integration of digital technologies into supervisory practices enables supervision to become more systematic, evidence-based, and sustainable, allowing supervisors to obtain comprehensive information regarding instructional planning, classroom implementation, assessment, and follow-up activities **(Sallis, 2014).** Consequently, instructional supervision evolves beyond administrative compliance and becomes an essential component of continuous educational quality improvement.

For teachers of Islamic Religious Education, digital instructional supervision promotes continuous professional growth by encouraging the effective use of digital learning resources, innovative teaching strategies, and reflective instructional practices. Regular feedback supported by digital evidence enables teachers to identify their strengths and areas for improvement more efficiently. As a result, teachers become more capable of designing learner-centered instruction that integrates pedagogical effectiveness with Islamic values and character development **(Glickman et al., 2018)**

At the institutional level, digital instructional supervision provides educational leaders with reliable data to support evidence-based decision-making. Supervision findings can be utilized to identify teachers' professional development needs, evaluate curriculum implementation, and formulate targeted improvement programs. In addition, the availability of integrated supervision data strengthens internal quality assurance systems by ensuring that educational policies and improvement initiatives are developed based on objective evidence rather than subjective judgments **(Fullan, 2016)**

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Overall, the synthesis of previous studies indicates that digital technology-based instructional supervision contributes not only to improving teachers' professional competence but also to strengthening institutional quality culture and enhancing learning outcomes. Therefore, instructional supervision should be regarded as a strategic component of educational transformation that supports continuous quality improvement in Islamic Religious Education. The integration of digital technology, professional supervision, and quality assurance ultimately provides the foundation for the conceptual model proposed in this study.

Model Konseptual Transformasi Supervisi Pembelajaran PAI Berbasis Teknologi Digital

Based on the synthesis of previous studies, this research proposes a **Conceptual Model of the Digital Technology-Based Transformation of Instructional Supervision in Islamic Religious Education**. The proposed model was developed by integrating perspectives on digital transformation, instructional supervision, teachers' professional development, and educational quality improvement into a unified conceptual framework. Unlike previous studies that primarily discuss digital learning or instructional supervision separately, this model emphasizes the integration of digital technology into every stage of instructional supervision as a continuous quality improvement process **(Glickman et al., 2018)**

The conceptual model positions **digital transformation** as the primary driving force for modernizing instructional supervision. Rapid technological advancement has encouraged educational institutions to redesign conventional supervision into a more flexible, evidence-based, and technology-supported process. In this model, digital technology is not viewed merely as an instructional medium but as an enabling system that facilitates supervision planning, documentation, classroom observation, communication, monitoring, feedback, and professional development.

The second component of the model is **digital technology**, which functions as the operational foundation of instructional supervision. Various digital platforms, including Learning Management Systems (LMS), cloud-based repositories, video conferencing applications, digital assessment tools, and online communication platforms, generate comprehensive instructional data that support evidence-based supervision. These technologies enable supervisors to access instructional evidence more efficiently while improving the transparency, accountability, and continuity of the supervision process.

The third component consists of the **instructional supervision cycle**, which represents the core of the proposed conceptual framework. The cycle includes six interconnected stages: supervision planning, digitalization of instructional documents, classroom observation,

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monitoring and evaluation, feedback and reflection, and follow-up professional development. Unlike conventional supervision, these stages operate as a continuous cycle in which the outcomes of one supervision process become the starting point for the next cycle. This continuous improvement approach ensures that instructional supervision serves not merely as an evaluation mechanism but as an ongoing professional development process.

The implementation of this conceptual model is expected to strengthen teachers' professional competence in planning, implementing, and evaluating Islamic Religious Education. Continuous supervision supported by digital technologies encourages reflective teaching practices, facilitates collaborative communication between supervisors and teachers, and promotes data-informed instructional improvement. As teachers' professional competence improves, the quality of classroom instruction is expected to increase accordingly, ultimately contributing to improved student learning outcomes and stronger educational quality.

At the institutional level, the proposed conceptual model also reinforces internal quality assurance by integrating supervision data into educational planning and decision-making. Digital supervision records provide educational leaders with reliable information for identifying professional development needs, evaluating instructional effectiveness, and designing sustainable quality improvement programs. Consequently, instructional supervision evolves from an administrative obligation into a strategic management instrument that supports institutional development.

Figure 1 illustrates the proposed conceptual framework developed in this study. The framework demonstrates that digital transformation serves as the foundation for integrating digital technologies into every stage of instructional supervision. The continuous interaction among digital technology, instructional supervision, teachers' professional competence, and learning quality forms a sustainable improvement cycle that supports educational transformation in the post-pandemic era. Accordingly, the principal contribution of this study lies in the development of an integrated conceptual model that connects digital transformation, instructional supervision, and learning quality within a single framework specifically designed for Islamic Religious Education.

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E-ISSN : 2963 4954
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Figure 1. Conceptual Model of the Digital Technology-Based Transformation of Instructional Supervision in Islamic Religious Education



Source: Developed by the authors based on the synthesis of previous studies (2026).

CONCLUSION

This study demonstrates that the transformation of instructional supervision in Islamic Religious Education has evolved significantly in the post-pandemic era through the integration of digital technologies into supervisory practices. Digital technology has transformed instructional supervision from a predominantly administrative activity into a more systematic, collaborative, evidence-based, and continuous professional development process. The integration of digital platforms enables supervisors to conduct supervision more efficiently while supporting teachers in improving instructional practices and professional competence.

The findings also indicate that the successful implementation of digital technology-based instructional supervision depends on several interrelated factors, including teachers' and supervisors' digital competence, technological infrastructure, institutional policies, leadership commitment, and organizational culture. These factors collectively determine the effectiveness of digital supervision in supporting instructional improvement and strengthening educational quality assurance. Therefore, educational institutions should adopt a comprehensive approach that integrates technological innovation with sustainable professional development and institutional support.

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The principal contribution of this study is the development of a **Conceptual Model of the Digital Technology-Based Transformation of Instructional Supervision in Islamic Religious Education**. The proposed model integrates digital technology, instructional supervision, teachers' professional competence, and learning quality into a unified framework of continuous quality improvement. Unlike previous studies that examined these components separately, this conceptual model provides a holistic perspective that may serve as a practical reference for implementing digital instructional supervision in schools and other educational institutions.

This study has several practical implications for educational leaders, supervisors, and teachers seeking to strengthen instructional quality through digital transformation. Future research is recommended to validate the proposed conceptual model through empirical studies involving different educational settings and levels. Such investigations will provide stronger empirical evidence regarding the effectiveness of the model while supporting its refinement and broader implementation in the continuous improvement of Islamic Religious Education.

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