

# Implementation of Information and Communication Technology- Based Learning at SDIT Darussalam

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## Abstrak

Studi ini bertujuan untuk menggambarkan penerapan manajemen pembelajaran berbasis Teknologi Informasi dan Komunikasi (TIK) di Sekolah Dasar Islam Terpadu (SDIT) Darussalam di Kecamatan Kalidoni, Kota Palembang. Pendekatan kualitatif dengan metode deskriptif digunakan untuk mengeksplorasi bagaimana ICT mendukung proses pengajaran dan pembelajaran. Data dikumpulkan melalui observasi, wawancara, dan dokumentasi yang melibatkan kepala sekolah, guru, dan staf pendidikan. Hasilnya menunjukkan bahwa manajemen pembelajaran berbasis TIK telah diterapkan secara efektif melalui perencanaan sistematis, penggunaan aplikasi digital interaktif, dan evaluasi pembelajaran daring. Keberhasilan penelitian ini terletak pada fokusnya pada penerapan strategi manajemen TIK dalam konteks pendidikan dasar Islam, sebuah topik yang jarang dieksplorasi. Implikasi praktis dari studi ini menekankan pentingnya pelatihan guru yang berkelanjutan dan perbaikan infrastruktur sekolah untuk mendukung praktik pembelajaran digital. Penelitian ini berkontribusi dalam menyediakan model manajemen sekolah untuk mengoptimalkan penggunaan TIK guna meningkatkan kualitas pembelajaran dan efisiensi administratif di tingkat sekolah dasar.

**Kata kunci:** digitalisasi sekolah, kualitas pembelajaran, manajemen pendidikan, pembelajaran berbasis TIK, pelatihan guru.

## Abstract

This study aims to describe the implementation of Information and Communication Technology (ICT)-based learning management at Darussalam Islamic Elementary School (SDIT) in Kalidoni District, Palembang City. A qualitative approach with descriptive methods was used to explore how ICT supports the teaching and learning process. Data were collected through observations, interviews, and documentation involving the principal, teachers, and educational staff. The results indicate that ICT-based learning management has been implemented effectively through systematic planning, the use of interactive digital applications, and online learning evaluation. The novelty of this study lies in its focus on the application of ICT management strategies in the context of Islamic elementary education, a topic rarely explored. The practical implications of this study emphasize the importance of ongoing teacher training and improving school infrastructure to support digital learning practices. This research contributes to providing a school management model for optimizing the use of ICT to improve learning quality and administrative efficiency at the elementary school level.

**Keywords:** School digitalization, learning quality, education management, ICT-based learning, teacher training.

## 1. INTRODUCTION

In the era of digital transformation, Information and Communication Technology (ICT) has become an essential component of educational management and classroom practice. ICT integration enhances instructional efficiency, accessibility, and student engagement when implemented strategically (Bond et al., 2020; Haleem et al., 2022; Schindler et al., 2017;

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Voogt et al., 2018). Beyond teaching, ICT also improves administrative processes, decision-making systems, and institutional performance (Liu et al., 2021; Afshari et al., 2019; Thannimalai & Raman, 2018).

Although numerous studies examine ICT integration in secondary and higher education, limited research explores its implementation in elementary and faith-based schools, where contextual challenges such as infrastructure limitations, teacher digital literacy, and management readiness may differ (Spiteri & Chang Rundgren, 2020; Trust & Whalen, 2020; Howard et al., 2021). Research highlights that teachers' digital competence and beliefs significantly influence classroom technology adoption (Instefjord & Munthe, 2017; Scherer et al., 2019). Moreover, professional development and TPACK-oriented training are crucial for meaningful digital pedagogy (Koehler et al., 2017; Tondeur et al., 2017).

Effective ICT adoption therefore requires not only access to technological tools but also alignment with pedagogical goals, school leadership, and institutional vision (Dexter & Richardson, 2020; Petko et al., 2018; Vongkulluksn et al., 2018). Sustainable digital transformation depends on strategic planning, collaborative culture, and continuous evaluation processes (Howard et al., 2021; Thannimalai & Raman, 2018).

This study addresses this gap by analyzing the implementation of ICT-based learning management at SDIT Darussalam, Palembang. It examines how digital tools are integrated into teaching and school management within a faith-based elementary context. The findings are expected to contribute to educational management literature by offering a contextual model that supports sustainable digital transformation in similar elementary school settings.

## **2. METHOD**

### ***Research Design***

This study employed a qualitative research design to explore and understand institutional practices and educational processes at SDIT Darussalam, located in Kalidoni District, Palembang. A qualitative approach was selected because it enables researchers to investigate social phenomena in natural settings and interpret meanings constructed by participants (Creswell & Poth, 2018; Denzin & Lincoln, 2018). Qualitative inquiry is particularly appropriate for studies focusing on processes, experiences, and contextual understanding rather than statistical generalization (Merriam & Tisdell, 2016; Tracy, 2020). Furthermore, qualitative research allows for in-depth exploration of complex institutional dynamics and leadership practices within real educational environments (Yin, 2018; Braun & Clarke, 2021).

### ***Research Site and Participants***

The research was conducted at SDIT Darussalam, Kalidoni District, Palembang. The participants consisted of one principal, six teachers, and two administrative staff members. Participants were selected using purposive sampling to ensure that individuals had direct experience and relevant roles in school management and academic implementation. Purposive sampling is widely recommended in qualitative studies to obtain rich, information-dense cases (Palinkas et al., 2015; Campbell et al., 2020). This strategy enhances the depth and credibility of findings by focusing on knowledgeable informants (Tracy, 2020).

## ***Data Collection Techniques***

Data were collected through multiple techniques to ensure credibility and triangulation (Denzin & Lincoln, 2018; Flick, 2018).

### ***Observation***

Observation was conducted to examine school activities, instructional practices, administrative processes, and stakeholder interaction patterns. Observational methods allow researchers to capture authentic behaviors and contextual realities in natural settings (Creswell & Poth, 2018; Yin, 2018). Field notes were systematically recorded to document recurring patterns and emerging themes (Flick, 2018).

### ***Interviews***

Semi-structured interviews were conducted with the principal, teachers, and administrative staff to gather in-depth insights into institutional policies and ICT implementation practices. Semi-structured interviews provide flexibility while maintaining alignment with research objectives (Kallio et al., 2016). This approach supports rich narrative data and allows participants to elaborate on their experiences (Tracy, 2020; Braun & Clarke, 2021).

### ***Documentation***

Documentation was collected to validate and support observational and interview findings, including lesson plans, school reports, and institutional records. Document analysis strengthens credibility by enabling data triangulation and contextual verification (Bowen, 2017; Flick, 2018).

## ***Data Analysis***

Data were analyzed using the interactive model proposed by Miles et al. (2018), which consists of three interconnected components: data reduction, data display, and conclusion drawing/verification. This model is widely applied in qualitative educational research due to its systematic and iterative nature (Yin, 2018).

### ***1. Data Reduction***

Data reduction involves selecting, focusing, simplifying, and transforming raw data obtained from observations, interviews, and documents (Nurma et al., 2026). This step ensures that analysis remains aligned with research objectives and conceptual focus (Miles et al., 2018; Tracy, 2020).

### ***2. Data Display***

Following reduction, data were organized into descriptive narratives, matrices, and thematic categorizations to facilitate interpretation. Data display enhances analytical clarity and supports pattern recognition across sources (Miles et al., 2018; Braun & Clarke, 2021).

### ***3. Conclusion Drawing and Verification***

The final stage involved interpreting findings and drawing conclusions while continuously verifying patterns across data sources. Ongoing verification strengthens trustworthiness and reduces bias (Miles et al., 2018; Denzin & Lincoln, 2018). Credibility was further enhanced through triangulation across observation, interviews, and documentation (Flick, 2018).

### 3. RESULT AND DISCUSSION

#### *Results*

##### *ICT Adoption and Implementation*

Based on interviews with the principal, vice principals (curriculum and student affairs), a teacher content creator, parents, and Grade 6 students, ICT-based learning management at SDIT Darussalam has been implemented in a relatively structured manner. In 2025, the school serves 563 students. Teachers use presentation media and LMS platforms similar to Google Classroom for assignments, communication, and assessment. Grade 6 students reported regular use of ICT for tasks and exercises.

This structured adoption reflects broader trends indicating that LMS platforms facilitate communication, formative assessment, and flexible access to learning materials (Almaiah et al., 2020; García-Morales et al., 2021). The use of digital platforms also aligns with research highlighting that ICT integration enhances student engagement and learning interaction when embedded in daily instructional routines (Bond et al., 2020; Schindler et al., 2017; Voogt et al., 2018).

However, the intensity of ICT use varies by subject. English and Science demonstrate higher integration, while Arts and Physical Education apply ICT more limitedly. This variation supports findings that subject characteristics, curriculum demands, and teacher digital competence significantly influence ICT adoption (Scherer et al., 2019; Tondeur et al., 2017; Howard et al., 2021). Teachers' pedagogical beliefs and confidence also shape technology usage patterns across disciplines (Ertmer & Ottenbreit-Leftwich, 2016; Instefjord & Munthe, 2017).

##### *Leadership and Management Support*

School leadership plays a significant role in supporting ICT integration. The principal establishes policies such as weekly ICT schedules and provides limited but strategic budget allocations for devices and internet access. The Vice Principal for Curriculum monitors digital learning implementation and encourages teacher participation in ICT-based activities. These findings align with studies emphasizing that leadership vision, instructional supervision, and strategic planning are central to sustainable ICT implementation (Dexter & Richardson, 2020; Liu et al., 2021; Thannimalai & Raman, 2018). Digital transformation in schools requires leaders who promote collaborative cultures, provide structured guidance, and ensure alignment between technology and pedagogical objectives (Afshari et al., 2019; Petko et al., 2018). Without strong leadership commitment, ICT initiatives often become fragmented and inconsistent (Tondeur et al., 2017).

##### *Supporting and Inhibiting Factors*

Supporting factors identified in this study include:

1. Strong leadership commitment,
2. Teacher initiative in developing digital materials,
3. Structured ICT scheduling,
4. Training opportunities.

These factors correspond with research emphasizing leadership capacity, professional development, and institutional readiness as key enablers of digital transformation (Spiteri & Chang Rundgren, 2020; Howard et al., 2021; Redecker, 2017). Continuous professional development enhances teachers' digital competence and pedagogical integration (Koehler et al., 2017; Falloon, 2020).

Inhibiting factors include:

1. Limited infrastructure and unstable internet connectivity,
2. Differences in teacher digital competence,
3. Limited parental digital literacy.

Infrastructure gaps and unequal access remain common barriers in ICT implementation, particularly in developing contexts (Haleem et al., 2022; Almaiah et al., 2020). Additionally, disparities in teacher competence can create uneven digital practices across classrooms (Scherer et al., 2019; Instefjord & Munthe, 2017). Parental digital literacy also influences students' ability to engage in technology-supported learning at home (García-Morales et al., 2021).

### ***Discussion***

The findings indicate that ICT-based learning management at SDIT Darussalam is progressing but not yet fully optimized. Consistent with Schindler et al. (2017) and Bond et al. (2020), technology enhances engagement when supported by sound pedagogy and structured implementation. However, as highlighted in previous research, technology alone does not automatically improve learning outcomes without pedagogical alignment, teacher competence, and systemic support (Scherer et al., 2019; Ertmer & Ottenbreit-Leftwich, 2016).

Leadership-driven policies and monitoring mechanisms in this school demonstrate alignment with digital leadership frameworks (Dexter & Richardson, 2020; Liu et al., 2021). Nevertheless, infrastructure constraints and unequal digital competence remain challenges to sustainability (Haleem et al., 2022; Falloon, 2020).

Therefore, strengthening continuous professional development, improving infrastructure, and fostering collaborative digital culture are essential to ensure long-term effectiveness and equitable ICT integration (Howard et al., 2021; Redecker, 2017). Sustainable ICT-based learning management requires not only technological readiness but also institutional coherence, leadership vision, and community engagement.

## **4. CONCLUSION**

In conclusion, the implementation of ICT-based learning management at SDIT Darussalam has shown significant progress, supported by strong school leadership and committed teachers. The integration of ICT has contributed positively to enhancing student motivation and participation, particularly when digital learning materials are interactive and aligned with sound pedagogical principles. Leadership support in the form of clear policies, continuous training, and adequate budget allocation has played a vital role in sustaining the program. Nevertheless, several challenges still need to be addressed, including limited infrastructure, disparities in teachers' digital competencies, and unequal student access to technology at home. Therefore, to ensure sustainable and effective ICT-based learning management, it is essential to strengthen the alignment between technological readiness, pedagogical competence, and institutional leadership. Continuous improvement in these areas will support the realization of quality and inclusive digital education.

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