



Strategic Utilization of Google Sites to Support ICT Learning Management in Madrasah Education

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A B S T R A C T

Information and Communication Technology (ICT) learning requires effective digital media utilization strategies to support flexible and adaptive learning management. However, studies examining strategic use of web-based platforms, particularly Google Sites, in the context of madrasah education remain limited. This study aims to describe the strategy of utilizing Google Sites as a digital learning medium to support ICT learning management at MA Asy Syarif Sidang Koto Laweh. This study employed a descriptive approach involving 15 students as participants. The implementation strategy included needs analysis, design of media structure and interface, organization of learning content such as materials, videos, and PDF documents, and integration of evaluation through Google Forms with automated scoring. Data were collected through observation and student response questionnaires and analyzed descriptively to illustrate both the process and outcomes of the implemented learning strategy. The results indicate that the use of Google Sites as part of a digital learning strategy supports more structured learning management, provides easy access across multiple devices, and enhances student engagement. Students demonstrated positive responses, particularly toward video-based materials and the automated evaluation system, which facilitated the learning process. This study focuses on the implementation of learning strategies rather than effectiveness testing. The findings offer practical contributions for teachers in designing web-based learning strategies and provide academic insights into the development of digital learning management and strategy in madrasah contexts.

Abstrak

Pembelajaran Teknologi Informasi dan Komunikasi (TIK) memerlukan strategi pemanfaatan media digital yang efektif untuk mendukung pengelolaan pembelajaran yang fleksibel dan adaptif. Namun, kajian mengenai strategi penggunaan platform berbasis web, khususnya Google Sites, dalam konteks pembelajaran di madrasah masih terbatas. Penelitian ini bertujuan untuk mendeskripsikan strategi pemanfaatan Google Sites sebagai media pembelajaran digital dalam mendukung pengelolaan pembelajaran TIK di MA Asy Syarif Sidang Koto Laweh. Penelitian ini menggunakan pendekatan deskriptif dengan melibatkan 15 siswa sebagai subjek. Strategi implementasi meliputi analisis kebutuhan pembelajaran, perancangan struktur dan tampilan media, pengorganisasian konten pembelajaran berupa materi, video, dan dokumen PDF, serta integrasi sistem evaluasi melalui Google Form dengan penilaian otomatis. Data dikumpulkan melalui observasi dan angket respons siswa, kemudian dianalisis secara deskriptif untuk menggambarkan proses dan hasil implementasi strategi pembelajaran. Hasil penelitian menunjukkan bahwa pemanfaatan Google Sites sebagai bagian dari strategi pembelajaran digital mampu mendukung pengelolaan pembelajaran yang lebih terstruktur, mudah diakses melalui berbagai perangkat, serta meningkatkan keterlibatan siswa. Respons siswa menunjukkan kecenderungan positif, terutama terhadap penyajian materi berbasis video dan sistem evaluasi otomatis yang memudahkan proses pembelajaran. Penelitian ini berfokus pada aspek implementasi strategi, bukan pengujian efektivitas. Temuan ini memberikan kontribusi praktis bagi guru dalam merancang strategi pembelajaran berbasis web, serta berkontribusi secara akademik dalam pengembangan kajian manajemen dan strategi pembelajaran digital di lingkungan madrasah.

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1. Introduction

The rapid advancement of information and communication technology (ICT) has significantly transformed educational practices worldwide, shifting traditional learning environments toward more flexible and technology-enhanced systems. In the context of the digital era, educational institutions are required not only to adopt digital tools but also to develop effective strategies for integrating technology into learning processes (Bond et al., 2020). This transformation highlights the importance of aligning instructional practices with the demands of 21st-century skills, including critical thinking, collaboration, digital literacy, and self-directed learning (Voogt & Roblin, 2012). Consequently, the role of digital learning strategies has become central in ensuring that technology integration contributes meaningfully to learning outcomes.

From a theoretical perspective, digital learning is not merely about the use of technology but involves strategic planning and management of instructional processes to enhance learning effectiveness. Educational management plays a crucial role in organizing learning resources, designing instructional strategies, and facilitating student engagement through appropriate digital platforms (Alharbi & Drew, 2014). In this regard, web-based learning environments offer opportunities to create structured, interactive, and accessible learning experiences. Platforms such as Google Sites enable educators to design integrated learning spaces that combine multimedia content, navigation systems, and evaluation tools, thereby supporting more systematic learning management (Kimmons, 2015).

Despite these potentials, the implementation of digital learning strategies in ICT education still faces several practical challenges. Many schools continue to rely on conventional teaching methods, with limited use of interactive and web-based learning media. This condition often results in low student engagement and insufficient opportunities for active learning, particularly in ICT subjects that require hands-on and exploratory experiences (Henderson et al., 2017). In madrasah contexts, these challenges are further influenced by variations in technological infrastructure, teacher readiness, and access to digital resources, which affect the effectiveness of learning management.

Previous studies have explored the use of digital platforms in education, particularly learning management systems (LMS) and collaborative tools. For instance, research by Trust and Pektas (2018) highlights the role of web-based platforms in enhancing student engagement and collaborative learning. Similarly, a study by Wang et al. (2019) demonstrates that digital learning environments integrating multimedia content can improve students' motivation and understanding. However, most existing studies focus on widely used platforms such as Google Classroom or Moodle, while the use of Google Sites as an integrated web-based learning platform remains underexplored. Furthermore, prior research tends to emphasize effectiveness outcomes rather than examining how such platforms are strategically implemented to support learning management.

This gap indicates a need for research that focuses on the strategic utilization of web-based platforms, particularly Google Sites, in managing ICT learning processes. Specifically, there is limited empirical evidence on how Google Sites can be used to organize instructional content, facilitate student interaction, and support evaluation in a structured learning environment within madrasah education. Understanding this aspect is essential, as effective learning management requires not only appropriate tools but also well-designed strategies that align with students' learning needs and institutional contexts.

Based on these considerations, this study aims to describe the strategic utilization of Google Sites in supporting ICT learning management at MA Asy Syarif Sidang Koto Laweh. This study contributes practically by providing a structured approach for teachers in designing web-based learning strategies, and academically by enriching the discourse on digital learning management and strategy, particularly in the context of Islamic secondary education.

2. Method

This study employed a qualitative case study approach to explore the strategic utilization of Google Sites in supporting ICT learning management at MA Asy Syarif Sidang Koto Laweh. A case study design was selected as it allows for an in-depth investigation of a contemporary phenomenon within its real-life context, particularly when the boundaries between the phenomenon and context are not clearly evident (Yin, 2018). This approach is appropriate for examining how digital learning strategies are implemented in authentic classroom settings without manipulating variables.

The study was conducted at MA Asy Syarif Sidang Koto Laweh, involving ICT teachers and eleventh-grade students as the primary participants. Data were collected through classroom observations, in-depth interviews, and documentation. Observations focused on the implementation of digital learning strategies, including content organization, integration of multimedia resources, student interaction patterns, and evaluation processes using Google Forms. Interviews were conducted to explore teachers' instructional strategies and students' learning experiences when using Google Sites as a digital learning platform. Documentation included lesson plans, learning materials, and digital artifacts generated during the learning process.

The researcher served as the primary instrument, supported by observation guidelines, interview protocols, and documentation checklists to ensure systematic and consistent data collection. This is consistent with qualitative research principles, where the researcher plays a central role in interpreting meaning and understanding participants' experiences (Creswell & Poth, 2018).

Data analysis followed the interactive model of Miles, Huberman, and Saldaña (2014), which consists of data reduction, data display, and conclusion drawing. In addition, thematic analysis was applied to identify patterns related to learning management strategies and digital media utilization. Thematic analysis enables researchers to systematically identify, analyze, and report patterns within qualitative data (Braun & Clarke, 2006).

To ensure the credibility and trustworthiness of the findings, data validation was conducted through source triangulation and technique triangulation, by comparing findings obtained from observations, interviews, and documentation. Triangulation is widely recognized as an effective strategy to enhance the validity of qualitative research findings (Nowell et al., 2017). Through this methodological approach, the study provides a comprehensive understanding of the implementation strategies and challenges of using Google Sites in ICT learning management.

3. Result and Discussion

Result

Learning Management Planning and Organization

The findings indicate that the implementation of Google Sites was initiated by the teacher's need to provide a more structured and integrated learning system. Initial observations revealed that ICT teachers experienced difficulties in organizing learning materials, videos, and assessments across multiple platforms. As a result, Google Sites was

selected as a platform capable of integrating these components into a single, accessible system.

The organization of learning content within Google Sites was structured into several main menus, including learning objectives, instructional materials, video content, PDF resources, and evaluation. Students were able to navigate these menus easily, indicating that the platform supports organized learning management. The presence of learning objectives at the beginning of the platform provided a clear direction for students before accessing the content.

Figure 1 illustrates the homepage of Google Sites, which serves as the central navigation interface for accessing all learning components.



Figure 1. Google Sites homepage as a structured learning navigation interface

Implementation of Google Sites in Learning Activities

During the implementation phase, students actively engaged with the platform by accessing materials, watching videos, and completing learning tasks. Observational data indicate that students followed the structured learning sequence provided within Google Sites.

Students interacted with various types of learning content, including text-based materials, images, videos, and PDF documents. Multimedia integration allowed students to access instructional explanations and learning resources in different formats. In addition, PDF materials were used by students as supplementary resources for reviewing content and supporting independent learning activities.

To summarize the observational findings, **Table 1** presents the key results related to the implementation of Google Sites in classroom learning activities.

Table 1. Observational Findings on Google Sites Implementation

Observed Aspect	Field Findings
Platform Structure	Clear navigation; students easily access menus (Objectives, Materials, Videos, PDF, Evaluation)
Accessibility	Accessible via smartphones and laptops; low bandwidth required
Student Engagement	Students actively accessed materials and followed learning sequences
Video Integration	Used to support understanding of technical processes

Observed Aspect	Field Findings
PDF Usage	Used for reviewing materials and note-taking
Evaluation Process	Google Forms used for assessment with automatic scoring
Practical Activities	Instructions supported hands-on learning
Teacher Role	Facilitated structured content organization

In addition to observational data, interview findings further describe how both teachers and students interacted with the platform.

Table 2. Interview Findings from Teachers and Students

Interview Source	Key Findings
ICT Teacher	Google Sites integrates learning materials into one platform
Visual Learners	Prefer illustrated and structured materials
Auditory/Audiovisual Learners	Benefit from video explanations
Read-Write Learners	Use PDF materials for independent study
Kinesthetic Learners	Follow instructions before practical activities
Teacher Challenges	Initial difficulty in platform development
Student Challenges	Occasional internet limitations
Student Perception	Learning becomes more structured and accessible

Evaluation and Challenges in Implementation

The evaluation process was conducted using Google Forms integrated within Google Sites. Students were able to complete assessments directly through the platform and receive immediate scores after submission. Teachers accessed summary data, including student responses and performance patterns, through the same system.

Figure 2 shows the mobile interface used by students to access evaluation features through Google Sites.



Figure 2. Mobile interface for evaluation using Google Forms

The findings also show that Google Sites can be accessed through multiple devices, including smartphones, laptops, and school computers. Students accessed the platform both during and outside classroom sessions. Although some students reported limitations related to internet connectivity, most were able to access the platform due to its relatively low bandwidth requirements.

Several challenges were identified during implementation. Teachers reported that the initial development of Google Sites required time and basic technical understanding. Students mentioned occasional internet connectivity issues. Despite these challenges, the platform continued to be used throughout the learning process.

Discussion

Strategic Planning in Digital Learning Management

The findings reveal that the use of Google Sites was initiated as a response to the need for a more structured and integrated learning system. This aligns with the concept of digital learning strategy, which emphasizes the importance of aligning technological tools with instructional goals and learner needs (Bond et al., 2020). The teacher's decision to adopt Google Sites reflects a strategic planning process in which digital platforms are selected based on their ability to support instructional organization and accessibility.

From an educational management perspective, planning is a critical phase that determines how learning resources are structured and delivered (Alharbi & Drew, 2014). The integration of multiple learning components—such as materials, videos, and assessments—into a single platform indicates that Google Sites functions not only as a medium but also as a strategic tool for organizing learning processes. This supports the notion that effective digital learning requires not only technology adoption but also intentional instructional design (Kimmons, 2015).

Organizing Learning Content and Supporting Learning Management

The structured organization of learning content through menus such as objectives, materials, videos, and evaluation demonstrates the role of Google Sites in supporting learning management. The presence of clearly defined learning objectives at the beginning of the platform helps guide students' learning pathways, which is consistent with instructional design principles emphasizing goal-oriented learning (Voogt & Roblin, 2012).

The multimodal presentation of content (text, images, and PDF resources) also reflects the principles of differentiated instruction, where learning materials are adapted to accommodate diverse student needs (Tomlinson, 2014). This finding is supported by research indicating that multimedia learning environments enhance comprehension by presenting information in multiple formats (Mayer, 2014).

Furthermore, the organization of content within a single web-based platform reduces fragmentation in learning resources, which has been identified as a common issue in digital learning environments (Henderson et al., 2017). By centralizing learning materials, Google Sites supports more efficient learning management and improves students' ability to navigate instructional content.

Implementation Strategy and Student Engagement

The implementation of Google Sites demonstrates increased student engagement through structured access to learning materials and interactive content. The use of

embedded videos plays a significant role in enhancing students' understanding of technical concepts, particularly in ICT learning contexts. This is consistent with findings that video-based instruction improves comprehension and supports procedural learning (Zhang et al., 2006).

In addition, the availability of diverse learning resources supports different learning preferences, including visual, auditory, and reading-oriented learners. Research by Moreno and Mayer (2007) suggests that combining verbal and visual information can enhance cognitive processing and facilitate deeper understanding.

The integration of guided practical activities within the platform also indicates that digital tools can complement hands-on learning experiences rather than replace them. This aligns with blended learning models, where digital and face-to-face instruction are combined to enhance learning outcomes (Graham, 2013).

Evaluation Strategy and Feedback Mechanism

The integration of Google Forms for evaluation reflects an important aspect of digital learning management, namely the use of technology to support assessment and feedback processes. The immediate feedback provided by automated scoring systems has been shown to enhance student motivation and engagement (Shute, 2008).

Moreover, the availability of response data and performance summaries allows teachers to monitor student progress and identify areas that require further instruction. This supports the concept of data-driven decision-making in education, where instructional strategies are adjusted based on student performance data (Ifenthaler & Yau, 2020).

The findings also indicate that digital assessment tools can improve efficiency in managing evaluation processes, reducing teachers' workload while maintaining accuracy in assessment. This highlights the role of technology in supporting both instructional and managerial aspects of teaching.

Accessibility and Flexibility in Digital Learning

One of the key advantages of Google Sites identified in this study is its accessibility across multiple devices, including smartphones and laptops. This flexibility supports the concept of ubiquitous learning, where students can access learning materials anytime and anywhere (Burbules, 2012).

The relatively low bandwidth requirement of Google Sites also addresses common barriers in digital learning, particularly in contexts with limited internet infrastructure. Previous studies have emphasized that accessibility is a crucial factor in the successful implementation of digital learning platforms (Dahlstrom et al., 2014).

By enabling continuous access to learning materials, Google Sites supports self-directed learning and allows students to revisit content at their own pace. This contributes to the development of learner autonomy, which is a key component of 21st-century learning (Zimmerman, 2002).

Challenges in Implementation

Despite its advantages, the implementation of Google Sites also presents several challenges, particularly during the initial development stage. Teachers reported difficulties in designing and organizing the platform, which indicates the need for digital competence and training.

This finding is consistent with research highlighting that teacher readiness is a critical factor in the successful integration of technology in education (Tondeur et al., 2017). Without sufficient training and support, teachers may face barriers in effectively utilizing digital tools.

In addition, limitations related to internet connectivity were reported by students. Although these challenges did not significantly hinder the overall learning process, they highlight the importance of infrastructure in supporting digital learning environments.

Implications for Educational Management and Strategy

The findings of this study demonstrate that Google Sites can function as a strategic tool for managing digital learning in ICT education. Its ability to integrate various learning components into a single platform supports effective instructional planning, organization, implementation, and evaluation.

From a management perspective, the use of Google Sites contributes to more efficient resource management and reduces the complexity of delivering digital learning materials. It also supports student-centered learning by providing flexible access to content and enabling independent learning.

These findings reinforce the idea that digital learning platforms should be viewed not merely as technological tools but as strategic instruments for improving learning management and instructional effectiveness.

4. Conclusion

This study concludes that the utilization of Google Sites supports ICT learning management by providing a structured and integrated digital learning environment. The platform enables the organization of instructional components—such as learning objectives, materials, multimedia content, and evaluation—into a single system that facilitates student access and participation in learning activities.

The findings indicate that the integration of text, images, video content, and PDF resources within Google Sites allows students to engage with learning materials in multiple formats. In addition, the use of automated evaluation through Google Forms provides immediate feedback, which supports student engagement and allows teachers to monitor learning progress more efficiently.

From an educational management perspective, Google Sites functions as a strategic tool that supports the planning, organization, implementation, and evaluation of learning activities. Its flexibility in content management enables teachers to update materials and adapt instructional strategies based on classroom needs.

This study contributes practically by providing an example of how web-based platforms can be utilized to support digital learning management. Academically, it contributes to the understanding of how digital tools can be strategically integrated into instructional processes, particularly in ICT education within madrasah contexts.

Future research is recommended to examine the effectiveness of such platforms using quantitative or mixed-method approaches, as well as to explore their application across different subjects and educational settings.

Declarations

Author Contribution Statement

Rahma Alia contributed to the conception and design of the study and drafted the initial manuscript; Firdaus Annas conducted the data analysis and refined the research methodology and Erniwati contributed as the data source. All authors collaboratively reviewed, revised, and finalized the manuscript for submission, and have read and approved the final version of the manuscript.

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Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Declaration of Interests Statement

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

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