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A Systematic Literature Review on the Role of Google Sites Digital Platform in Strengthening Learning Evaluation and Reflection

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Abstract

The development of digital technology has initiated significant transformations in educational practices, requiring the adaptation of learning methods in line with the demands of the 21st century. Google Sites has emerged as a digital portfolio platform with the potential to encourage students' metacognitive reflection skills. However, in-depth exploration of its pedagogical use, particularly in the context of Indonesian secondary schools with various infrastructure challenges, is still limited. This study aims to structurally identify the challenges and advantages of Google Sites in enhancing metacognitive thinking and to formulate a conceptual model for facilitating reflective learning. The method used is a Systematic Literature Review (SLR) with the PRISMA protocol, analysing 13 selected articles from the Web of Science, Google Scholar, and Garuda databases. The results of the study show that Google Sites is effective in acting as metacognitive scaffolding, accelerating the feedback cycle for authentic assessment, and expanding the Zone of Proximal Development through transparent collaboration between students, teachers, and parents. Its effectiveness is the result of the dynamic interaction between the context of application, pedagogical design, and infrastructure readiness. The study concludes that Google Sites can be a digital learning model in line with the principles of the Merdeka Curriculum, namely creating a reflective, adaptive, participatory, and sustainable learning ecosystem.

Keywords: Google Sites; Metacognitive Reflection; Digital Portfolio; Authentic Assessment; Systematic Literature Review

Introduction

The development of digital technology has changed the way people use, search for, and manage information in various aspects of life, including in schools. This is because digital technology has developed rapidly during the Fourth Industrial Revolution and Society 5.0 (Pubian and Herpratiwi, 2022). Educational institutions must adapt quickly to remain relevant and capable of producing a generation that is ready to overcome the challenges of the 21st century (Syerlita and Siagian, 2024; Sabaruddin, 2022). Digital technology is increasingly considered an essential element in modern educational institutions.

This is because digital technology provides easy access to knowledge and makes the learning process more participatory, creative, and enjoyable for a generation that has grown up with technology (Anam et al., 2021; Masinambow et al., 2025). These events have triggered the emergence of a new way of thinking about education called Education 4.0. This is a teaching method that utilises technology to strengthen the relationship between humans, data, and the learning process (Sukesti and Sulisworo, 2021). In 21st-century education, the way we learn has changed so much that technology is now an integral part of the learning process, not just a tool. Technology is now necessary for improving real assessment and helping students think about and reflect on their own learning processes (Rismawati and Tyas, 2025).

Google Sites is one of the most well-known platforms for this purpose. It is a web-based service that allows teachers and students to create digital portfolios that can be used to track their learning processes and complete accurate reflection-based evaluations. Several studies have shown the significant advantages of Google Sites. The learning progress visualisation tools on this platform can help students become more aware of their own mindsets (Tran and Truong, 2023). Research in Indonesia shows that Google Sites-based digital portfolios facilitate collaboration between teachers, students, and parents, while also improving students' technological literacy (Nasir et al., 2025; Setianingsih et al., 2024). At the global level, this platform can also increase flexibility and critical thinking through peer feedback features (Nkonki et al., 2023; Kucera et al., 2022). Although these advantages have been proven, there are still significant gaps in research. Explicitly, previous studies have not thoroughly examined the optimal pedagogical methods for utilising Google Sites, particularly in improving continuous metacognitive reflection skills (Silitonga, 2025; Mayasari et al., 2024). Furthermore, the application of Google Sites, particularly in secondary schools (SMP/SMA) in Indonesia, which have minimal digital facilities and infrastructure, remains an under-discussed topic (Prayudi and Anggriani, 2022; Nasir et al., 2025).

Therefore, the position of this study is to bridge this gap by providing an overview of the practical role of Google Sites in the context of Indonesian secondary education. The purpose of this study is to identify in a structured manner the challenges and advantages of using Google Sites in improving students' metacognitive thinking and to formulate a conceptual model that clearly describes how Google Sites facilitates reflective learning in secondary education. Using a systematic literature review (SLR) method, this study will not only identify existing research trends and gaps, but this literature review is also expected to provide theoretical and practical contributions to the optimal use of sustainable, adaptive, and collaborative learning technology, in line with the principles of the Merdeka Curriculum.

Method

This study used the Systematic Literature Review (SLR) method with the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) model. The PRISMA model is a minimum evidence-based process that aims to assist researchers in reporting various systematic literature reviews and meta-analyses that assess benefits. At the identification stage, the researchers obtained 200 articles. The research data sources were obtained through searches of reputable academic databases, namely Web of Science, Google Scholar, and Garuda. After checking, the researchers found duplicate articles, which were then deleted, leaving 120 unique articles to be further screened. In the screening stage, the researchers read the titles and abstracts of the 120 articles to sort them according to the inclusion criteria. The inclusion criteria used were publication between 2021 and 2025, written in Indonesian and English, and having undergone a peer-review process. As a result, 90 articles were found to not meet the inclusion criteria in terms of topic, context (secondary school and students' metacognitive reflection) and irrelevant methods. Next, the 13 articles that passed the screening stage were analysed in their entirety to proceed to the eligibility stage. At the eligibility stage, the researchers found that the 13 articles were included in the systematic review and formed the basis for the analysis and discussion of the findings of this study.

Results and Discussion

A total of 13 articles that met the inclusion criteria were used in this SLR. All articles underwent a review process to obtain important findings regarding the role of the

Google Sites digital platform in strengthening learning evaluation and reflection. The articles were sourced from national and international journals published between 2021 and 2025. The studies varied greatly in their use of research methods, ranging from quantitative (experimental and quasi-experimental), qualitative (case studies and observation), and mixed methods. The results of the review are presented in a table that includes the year of publication, the focus of the study, and the main findings.

Table 1. Review Results

No	Author (Year)	Research Focus	Method	Key Findings
1	Tran and Truong (2023)	Use of Google websites for student self-reflection	Quantitative	Students' metacognitive awareness increased by 32%, and digital journals facilitated their reflection on the learning process.
2	Nasir et al., (2025)	Collaboration between teachers, students, and parents through e-portfolios created using Google Sites	Qualitative	Facilitates participants in communicating about reflective learning and formative evaluation through digital feedback.
3	Setianingsih et al., (2024)	The use of Google Sites for improving digital literacy and learning activities	Experiment	A score of 0.56 on the N-Gain test can increase learning activities by up to 90%. This also helps people become more digitally literate and think more clearly.
4	Silitonga (2025)	Implementation of the P5 Project based on Google Sites in Secondary Schools	Mixed method	Enhancing students' critical thinking skills, self-reflection abilities, and their responsibility towards learning.
5	Kucera et al., (2022)	Utilising Google Sites for online reflection and peer feedback	Case Study	Enhancing collaborative peer reflection and supporting flexible learning anytime and any.
6	Nkonki et al., (2023)	Post-pandemic digital reflection integration through Google Sites	Qualitative	Enhancing collaborative learning adaptation and reflective awareness in a blended learning context.
7	Ayanwale et al., (2024)	Adoption of Google Workspace (including Google Sites) for teaching and	Structural Equation Modelling (SEM)	Google Sites enhances authentic evaluation through collaborative portfolios, real-time feedback increases student participation by

		assessment in higher education in developing countries		up to 28%, although infrastructure issues affect adoption.
8	Prayudi and Anggriani (2022)	The application of Google Sites in educational institutions with infrastructure limitations	Qualitative	Implementation depends on teacher training; technological limitations remain the main obstacle.
9	Asri et al., (2022)	Validity of interactive e-modules based on Google Sites that teach visual-spatial intelligence and reflection on science subjects	Development (Research & Development, ADDIE Model)	With interactive features that support metacognitive awareness in primary schools, the Google Sites e-module is valid and effective for evidence-based reflection; it improves student reasoning by up to 25% through formative evaluation; and portfolios increase ownership of the learning process and enhance students' intrinsic motivation.
10	Garcia (2025)	Digital portfolios as a form of authentic assessment method on Google Sites	Qualitative	Google Sites e-modules are valid and effective for evidence-based reflection, formative evaluation improves student reasoning by up to 25%; and portfolios increase ownership of the learning process and enhance students' intrinsic motivation.
11	Franco García and Pinargote Ortega (2022)	Combining content, collaboration, and gamification with Google Sites	Descriptive Analytical	Google Sites is an excellent learning medium that enables digital thinking, interaction, and evaluation.
12	Khumairoh et al., (2025)	Development and validation of Google Sites-based student worksheets to enhance students'	Research & Development	With 95% validity (highly valid), 96.95% practicality (highly practical), and 63% effectiveness (moderate N-gain), this

		collaborative skills in science learning at secondary schools		demonstrates the ability to enhance collaboration through interactive features. It also supports authentic assessment through visible group contributions.
13	Mantasiah (2025)	Development of a CIRC ( ) model based on Google Sites to enhance text-based composition skills among secondary school students in rural areas	Research & Development (ADDIE) with a quasi-experimental design	There was a significant improvement in writing performance ($p < 0.001$, Cohen's $d < 1.12$), and metacognition improved through self-reflection, collaboration through peer criticism, and real evaluation on the digital platform.

Based on a review of 13 selected articles, this study concludes that the role of Google Sites has changed from its initial function as a digital content storage to a cognitive and social platform that plays a significant role in strengthening evaluation and reflection practices in learning. The synthesis of the study results shows three interconnected dimensions of interaction. This indicates that the effectiveness of this platform cannot be separated from the dynamics of interaction between the context of application, pedagogical design, and the readiness of supporting infrastructure. The findings are presented as follows:

1. Dimension of Individual Reflection Google Sites Becomes Metacognitive Scaffolding

Findings consistently confirm the role of Google Sites as a tool supporting Self-Regulated Learning (SRL), particularly in the reflection and self-evaluation phases. Quantitative evidence shows a significant increase in metacognitive awareness Tran and Truong (2023) and learning activities (Setianingsih et al., 2024). Mechanism analysis reveals that this is made possible by the platform's ability to objectify the thinking process. The visual-spatial features Asri et al., (2022) and non-linear structure of the site allow students to reconstruct and review their learning traces, making reflection a visible, measurable, and manageable process. However, comparative analysis reveals important contextual variations. In project-based learning Silitonga (2025) reflection is driven by accountability for the final product, while in the post-pandemic context Nkonki et al., (2023) reflection is more adaptive to changes in the learning environment. This pattern shows that Google Sites functions optimally not as a passive tool, but when integrated into instructional designs that intentionally build cycles of self-evaluation, as seen in research with R&D and experimental approaches.

2. Accelerating Feedback for Authentic Assessment in Teacher-Student Interactions

The literature indicates a paradigm shift in assessment from assessment of learning towards assessment for and as learning. Google Sites facilitates this shift by providing a channel for continuous, process-based formative feedback. Studies by Ayanwale et al., (2024) and Garcia (2025) highlight that integration with Google Workspace enables real-time feedback, which theoretically accelerates the closing of

students' knowledge gaps. Here, infrastructure and digital literacy gaps emerge as key differentiating factors. In resource-rich environments Mantasiah (2025) interactions within the platform develop into critical dialogues that significantly impact learning outcomes. Conversely, in contexts with limited infrastructure and teacher readiness Prayudi and Anggriani (2022) Google Sites tends to be used unidirectionally and fails to realise its potential as an authentic assessment tool. These findings confirm that the effectiveness of the platform as an interactive medium is highly dependent on ecosystem factors that go beyond mere technical features.

3. Expanding the Zone of Proximal Development (ZPD) Through Social Ecosystem Transparency

This dimension distinguishes Google Sites from closed Learning Management Systems (LMS), namely its ability to create transparency that expands the learning community. Vygotsky's Social Constructivism theory finds its realisation in two ways:

a. Peer Interaction

Digital portfolio transparency reduces social anxiety in peer assessment (Kucera et al., 2022). Collaborative models such as CIRC Mantasiah (2025) show that the process of mutual criticism on the platform not only improves results but also deepens students' understanding of quality criteria.

b. Parent Involvement

The study by Nasir et al., (2025) identifies the transformative role of platforms in engaging parents. Real-time access to children's progress changes the dynamics of school-family relationships, transforming parents' roles from passive observers to informed supporting partners, thereby creating a more cohesive educational ecosystem.

4. Convergence of Evidence and Contextual Differences in Critical Synthesis

This review reveals that the impact of Google Sites extends beyond its technical functions, positioning it as a transformative catalyst in the culture of evaluation and reflection. Its effectiveness is a dynamic product of the interaction between three domains: Theory (Psychology), Design (Pedagogy), and Conditions (Praxis).

a. Convergence of Evidence and Divergence of Context

1) Valid evidence convergence was found across various methodologies. Measurable (quantitative) metacognitive improvement went hand in hand with descriptions of depth of reflection (qualitative). However, behind this consensus, there was critical divergence moderated by context. Positive impacts are consistently observed in environments with established infrastructure and teacher literacy (Mantasiah, 2025). Conversely, in limited contexts Prayudi and Anggriani (2022) platforms risk reinforcing inequalities. This pattern shows that technology functions as an amplifier, accelerating and magnifying good pedagogical practices while reinforcing existing systemic barriers.
2) This synthesis not only confirms learning theories but also clarifies their underlying mechanisms. In SRL (Zimmerman) Google Sites, it concretises the self-reflection phase by providing a permanent and reviewable record of cognitive traces. In the Feedback Loop (Hattie & Timperley), the platform shortens the feedback cycle from days to real-time. In Vygotsky's ZPD Google Sites, it expands the traditional ZPD by involving peers and parents as more knowledgeable others in an expanded learning community.

b. Clarification of Mediating Mechanisms

This synthesis confirms learning theories and clarifies their mediating mechanisms:

a) In SRL (Zimmerman): Google Sites concretises the self-reflection phase by providing a permanent and reviewable record of cognitive traces.
b) In Feedback Loop (Hattie & Timperley): The platform shortens the feedback cycle from days to real-time.
c) In Vygotsky's ZPD: Google Sites expands the traditional ZPD by involving peers and parents as more knowledgeable others in an expanded learning community.

5. Implications Of the Findings

Based on the above synthesis, clear implications emerge for practice and research:

a. Practical Implications

1) Holistic Approach: Successful implementation requires a trilogy:
   Pedagogical training for teachers to design authentic reflective tasks.
   a) Adequate infrastructure support.
   b) School policies that support transparency and collaboration.
2) A Tiered Adoption Model For resource-constrained contexts, adoption can begin as:
   a) Interactive repository, later developed into a process assessment tool.
   b) As a community learning portfolio centre.

b. Future Research Agenda:

1) Contextual Comparative Study: Research is needed that explicitly compares the effectiveness of Google Sites in various geographical, socio-economic, and educational contexts (primary school, secondary school, high school, university).
2) Exploration of Moderator Variables: Further research needs to examine the influence of variables such as:
   a) Students' cognitive styles.
   b) Subject characteristics.
   c) Technopedagogical leadership in schools.
3) Longitudinal Study: To understand the long-term impact, long-term research is needed to examine the contribution of digital portfolios to:
   a) The development of independent learning.
   b) Students' growth mindset.

Conclusion

The study findings show that the use of Google Sites is highly effective in improving metacognitive and reflective learning in secondary schools. This platform not only documents the learning process but also helps students learn to control themselves and become smarter through well-organised digital e-portfolios. This method is used by Google Sites to encourage students to assess, consider and manage their learning independently. The result is more relevant learning that focuses on self-development. In addition, the analysis findings show that Google Sites, through a continuous and open digital feedback system, plays a major role in improving cooperation between teachers, students, and parents. This platform enables a transparent and participatory assessment process thanks to authentic assessments. Therefore, Google Sites can serve as a digital learning model that aligns with the principles of the Merdeka Curriculum because it encourages everyone to actively participate in building a reflective, adaptive, and sustainable learning ecosystem.

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