

Digital Literacy Curriculum Models in K-12 Education: A Systematic Review for Indonesia

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INFORMASI ARTIKEL	ABSTRAK
Article History: Received: 06 Mei 2026 Revised: 19 Mei 2026 Accepted: 20 Mei 2026 Published: 29 July 2026 Kata Kunci: Kurikulum Literasi Digital; Pendidikan K-12; Kompetensi Digital; Systematic Literature Review; Kebijakan Pendidikan	Penelitian ini bertujuan memetakan model kurikulum literasi digital dalam pendidikan K-12 serta menganalisis relevansinya bagi adaptasi kebijakan pendidikan di Indonesia. Penelitian ini menggunakan desain Systematic Literature Review dengan mengacu pada PRISMA 2020 dan PRISMA-S. Pencarian literatur dilakukan pada 19 Maret 2026 melalui Scopus, Web of Science, dan Google Scholar melalui Publish or Perish. Artikel yang dikaji dibatasi pada publikasi tahun 2021 sampai 2026, berbahasa Inggris atau Indonesia, membahas literasi digital dalam konteks pendidikan dasar, menengah, atau K-12, serta memiliki keterkaitan dengan kurikulum, model pembelajaran, asesmen, atau kebijakan pendidikan digital. Dari 264 artikel awal, sebanyak 56 artikel memenuhi kriteria inklusi setelah proses penghapusan duplikasi, penyaringan judul dan abstrak, penilaian kelayakan teks penuh, serta telaah kualitas sumber. Data diekstraksi menggunakan matriks yang mencakup identitas artikel, negara, jenjang pendidikan, model integrasi kurikulum, pendekatan pedagogik, bentuk asesmen, tantangan implementasi, dan implikasi kebijakan. Data dianalisis melalui thematic synthesis dan analisis isi komparatif. Hasil kajian menunjukkan bahwa model kurikulum literasi digital global cenderung berkembang dalam empat pola utama, yaitu model berbasis kompetensi digital, model lintas kurikulum, model mata pelajaran khusus komputasi atau teknologi digital, dan model kewargaan digital. Pendekatan pedagogik yang dominan meliputi project-based learning, integrasi STEM, pembelajaran kolaboratif, dan pembelajaran berbasis masalah. Bentuk asesmen yang banyak digunakan mencakup asesmen performatif, rubrik kompetensi, instrumen pengukuran literasi digital, dan evaluasi berbasis proyek. Untuk konteks Indonesia, adaptasi kurikulum literasi digital perlu dilakukan secara bertahap melalui penguatan kompetensi dasar digital, kesiapan guru, integrasi etika dan keamanan digital, serta penyusunan standar asesmen nasional yang kontekstual.
Keywords: Digital Literacy Curriculum; K-12 Education; Digital Competence; Systematic Literature Review; Educational Policy	ABSTRACT This study aims to map digital literacy curriculum models in K-12 education and analyze their relevance for educational policy adaptation in Indonesia. This study employed a Systematic Literature Review design guided by PRISMA 2020 and PRISMA-S. The literature search was conducted on March 19, 2026, through Scopus, Web of Science, and Google Scholar using Publish or Perish. The reviewed articles were limited to publications from 2021 to 2026, written in English or Indonesian, focused on digital literacy in primary, secondary, or K-12 education, and related to curriculum, learning models, assessment, or digital education policy. From 264 initial records, 56 studies met the inclusion criteria after duplicate checking, title and abstract screening, full-text eligibility assessment, and source quality appraisal. Data were extracted using a matrix covering article identity, country, education level, curriculum integration model, pedagogical approach, assessment model, implementation challenges, and policy implications. The data were analyzed through thematic synthesis and comparative content analysis. The findings show that global digital literacy curriculum models tend to develop into four main patterns: digital competence-based curriculum, cross-curricular integration, stand-alone computing or digital technology subjects, and digital citizenship-oriented curriculum. The dominant pedagogical

approaches include project-based learning, STEM integration, collaborative learning, and problem-based learning. The most frequently identified assessment models include performance-based assessment, competency rubrics, digital literacy measurement tools, and project-based evaluation. For Indonesia, digital literacy curriculum adaptation should be implemented gradually by strengthening foundational digital competence, teacher readiness, digital ethics and safety, and contextual national assessment standards.

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1. Introduction

Digital transformation has changed how knowledge is produced, accessed, evaluated, and used in education. In this context, digital literacy should not be understood only as the technical ability to operate digital devices, but as a structured curricular competence. Major international frameworks position digital competence as a multidimensional ability that encompasses information and data literacy, communication and collaboration, digital content creation, safety, problem-solving, ethical participation, and responsible citizenship in digital environments (OECD, 2023; Vuorikari et al., 2022). This conceptual shift is important for curriculum development because digital literacy must be translated into learning objectives, pedagogical strategies, assessment indicators, and policy support. Recent studies also show that discussions of digital literacy in schools have moved from a narrow technical-skills orientation toward more systematic integration with pedagogy, assessment, and educational policy (Sabyrkhanova et al., 2026; Yim & Su, 2025). Therefore, digital literacy has become a strategic issue in the design of primary and secondary education curricula.

At the international level, several education systems have incorporated digital literacy into their curriculum architecture through various models. The UK Computing Curriculum, for example, places computing as a structured subject across key stages and emphasizes computational thinking, digital creation, and responsible use of technology. Singapore develops computational thinking and coding through school-based programs such as Code for Fun, which introduces primary and secondary students to coding, digital making, and emerging technologies. Estonia positions digital competence as one of the key competences in its national curriculum, while Finland integrates information and communication technology competence as part of broader transversal competences in basic education. These examples show that digital literacy can be developed through different curricular routes, including stand-alone subjects, cross-curricular integration, and competence-based models. The emphasis has also expanded beyond technology use to include computational thinking, digital citizenship, AI literacy, and information evaluation skills. Yim & Su, (2025) show that AI literacy education in primary schools is increasingly viewed as an extension of digital literacy to prepare children for more digitalized learning and working environments. (Sabyrkhanova et al., 2026) also emphasize that digital literacy provides a foundation for developing computational thinking among early childhood and primary school learners. In addition, [Click or tap here to enter text.](#) digital rights, digital citizenship, and comprehensive education. These findings indicate that digital literacy is no longer supplementary but has become a structured curricular competence.

Digital literacy becomes more complex when linked to learning models and assessment because curriculum frameworks cannot operate effectively without pedagogical and evaluative alignment. Competency standards define what students are expected to master, while pedagogical models determine how these competencies are developed through learning activities. Tariq et al. (2025) show that project-based learning, STEM integration, and collaborative learning support the development of computational thinking and problem-solving as parts of digital competence. Assessment then

determines whether these competencies are achieved in measurable and contextually relevant ways. Buchan et al. (2024) highlight the importance of evidence-based digital literacy programs supported by assessment tools for adolescents, while Son & Ha (2025) demonstrate that digital literacy assessment for secondary school students should be aligned with learning objectives. Therefore, digital literacy curriculum development requires alignment among competency formulation, pedagogical design, and assessment practice.

In Indonesia, the integration of digital literacy into primary and secondary education is still developing and lacks fully systematic implementation standards. Aliyyah et al., (2025) show that primary school teachers in Indonesia associate digital literacy with school quality improvement, twenty-first-century skills, and more effective learning. However, the same study also identifies implementation constraints, including limited infrastructure, uneven teacher readiness, weak school-level regulation, and limited integration of digital ethics into classroom practice. (Saputra & Karo Karo, 2025) also show that the policy direction for coding and artificial intelligence education in Indonesia still requires a clearer implementation roadmap, teacher competency framework, data ethics guidelines, and equity strategy for disadvantaged, frontier, and outermost regions. This condition indicates a gap between national policy direction, curriculum readiness, and implementation capacity in schools.

This condition indicates that the central issue is no longer whether digital literacy should be included in school education, but how it should be structured within the curriculum. Digital literacy needs to be organized through clear curriculum frameworks, relevant pedagogical models, appropriate assessment practices, and policy mechanisms that align with schools' readiness. This issue is especially important for Indonesia because curriculum adaptation requires alignment between global digital competence frameworks and local implementation realities, including infrastructure, teacher capacity, school resources, and socio-cultural diversity.

Although research on digital literacy in education has expanded rapidly, the existing literature remains fragmented in at least four ways. First, studies on digital literacy often focus on teacher competence, student competence, or digital learning tools without systematically connecting these findings to curriculum design. Second, studies on assessment tend to examine measurement instruments but rarely explain how assessment aligns with curriculum frameworks and pedagogical models. Third, research on AI literacy, computational thinking, digital citizenship, and media literacy is often discussed as separate domains, although these domains increasingly overlap within digital literacy curricula. Fourth, Indonesian studies mostly address teacher perceptions, training needs, or specific policy issues, while comparative synthesis of global curriculum models and their adaptation in Indonesia remains limited. Therefore, the main gap addressed in this study is the lack of a systematic comparative synthesis connecting digital literacy curriculum frameworks, pedagogical approaches, assessment models, and policy adaptation for K-12 education in Indonesia (Wahzudik et al., 2025).

The novelty of this article lies in its integrated review of digital literacy as a curriculum model rather than as a stand-alone technological skill. Unlike previous reviews that mainly focus on digital competence, assessment tools, teacher readiness, or technology use, this study synthesizes four interconnected dimensions: curriculum framework, pedagogical model, assessment practice, and policy adaptation. The theoretical contribution of this study is the development of a comparative understanding of how digital literacy is structured as a curricular competence in K-12 education. The practical contribution lies in identifying which global curriculum elements are adaptable to Indonesia and which elements require contextual adjustment due to infrastructure gaps, teacher readiness, socio-cultural diversity, and unequal school resources. This study is guided by three research questions: (1) What digital literacy curriculum models are developed in K-12 education across different countries? (2) What pedagogical and assessment models are most frequently used to support

digital literacy development? (3) How can global digital literacy curriculum models be adapted to the Indonesian education system?

2. Methods

2.1 Research Design

This study employed a Systematic Literature Review design to examine digital literacy curriculum models in K-12 education and their relevance for Indonesia. The SLR design was selected because this study aimed to identify, compare, and synthesize findings from previous studies rather than collect primary data from respondents. The review process was guided by PRISMA 2020 to ensure transparent reporting of study identification, screening, eligibility assessment, and inclusion. The search strategy was also informed by PRISMA-S to strengthen the reporting of databases, search terms, search dates, and record management procedures (Page et al., 2021; Rethlefsen et al., 2021). This study did not test causal hypotheses. Instead, it synthesized empirical and conceptual evidence related to four analytical dimensions: digital literacy curriculum frameworks, pedagogical models, assessment models, and policy implications. These dimensions were derived from major digital competence frameworks and refined through thematic reading of the selected literature.

2.2 Search Strategy

The literature search was conducted on March 19, 2026, following PRISMA 2020 and PRISMA-S recommendations. The search was conducted in Scopus, Web of Science, and Google Scholar. Scopus and Web of Science were used to identify indexed international publications, while Google Scholar was searched using Publish or Perish to retrieve additional relevant records in English or Indonesian that focused on digital literacy in primary, secondary, K-12, or basic education contexts. Boolean operators and phrase searching were used with the following search string:

("digital literacy" OR "digital competence" OR "digital citizenship" OR "computational thinking" OR "AI literacy") AND ("curriculum" OR "school curriculum" OR "curriculum framework" OR "curriculum policy") AND ("primary education" OR "secondary education" OR "K-12" OR "basic education") AND ("learning model" OR "instructional model" OR "pedagogy" OR "assessment" OR "digital assessment"). The publication period was limited to 2021 to 2026 to ensure that the reviewed studies reflected recent developments in digital education, post-pandemic learning transformation, AI literacy, and digital curriculum policy. Articles published in 2026 were included only when they had been officially published online, indexed, or available as complete early-access articles before the search date.

2.3 Inclusion and Exclusion Criteria

The inclusion and exclusion criteria were established before the screening process. Articles were included when they met the following criteria:

Table 1. Inclusion and Exclusion Criteria

Aspect	Inclusion Criteria	Exclusion Criteria
Publication Year	Articles published between 2021 and 2026.	Articles published before 2021 or after 2026.
Research Topic	Discusses digital literacy, curriculum, learning models, assessment, or digital education policy.	Does not discuss digital literacy in the context of school education.
Educational Context	Focuses on primary, secondary, or K-12 education.	Focuses on higher education, industrial training, or non-school contexts.

Type of Publication	Sources include scholarly journals, conference proceedings, or academically credible documents.	Editorials, opinion pieces, news articles, or non-academic documents.
Language	Articles written in Indonesian or English.	Articles written in languages other than Indonesian or English.
Accessibility	Full text or at least the abstract is available.	Full text or abstract is not available.
Data Uniqueness	Non-duplicate articles from the search results.	Duplicate articles retrieved from multiple databases.

Articles were excluded if they focused solely on higher education, industrial training, non-school contexts, general technology use lacking curricular relevance, opinion pieces, editorials, news articles, duplicate records, or sources lacking sufficient bibliographic information.

2.4 Study Selection and Quality Appraisal

The initial search identified 264 records, comprising 100 from Google Scholar via Publish or Perish, 99 from Scopus, and 65 from Web of Science. All records were organized using Mendeley Reference Manager to assist duplicate checking and reference management. Duplicate checking was conducted by comparing titles, authors' names, publication years, DOIs, and source titles. After duplicate checking, the records were screened based on titles and abstracts. Articles that did not discuss digital literacy in school curriculum contexts were excluded. Full-text eligibility assessment was then conducted to determine whether each article directly addressed at least one of the four analytical dimensions of this study: curriculum framework, pedagogical model, assessment model, or policy implication.

Quality appraisal was conducted using an adapted checklist comprising four criteria: relevance to the research questions, clarity of the research method or conceptual argument, credibility of the publication source, and contribution to the digital literacy curriculum discussion. Each criterion was assessed qualitatively as adequate or inadequate. Studies were retained when they showed clear relevance to K-12 digital literacy curriculum and contributed to at least one analytical dimension of this review. Studies were excluded if they were insufficiently relevant, had unclear academic status, lacked complete bibliographic information, or had a weak connection to K-12 education. The final review included 56 studies. Because this review was conducted through document analysis, screening decisions were documented in a review matrix to maintain transparency. Ambiguous cases were rechecked against the inclusion and exclusion criteria before final inclusion.

2.5 Data Extraction

Data were extracted using a structured extraction matrix. The matrix included author and year of publication, country or regional context, education level, research design or document type, digital literacy concept or framework, curriculum integration model, pedagogical approach, assessment model, implementation challenges, and policy implications. This extraction process was used to ensure that each selected study was analyzed based on the same categories. The extracted data were then organized to identify similarities, differences, and recurring patterns across studies. This procedure allowed the review to move beyond descriptive summary and produce a comparative synthesis of digital literacy curriculum models in K-12 education.

2.6 Data Analysis

The data were analyzed using thematic synthesis and comparative content analysis. Thematic synthesis was used to identify recurring themes across the selected studies, especially themes related to curriculum models, learning strategies, assessment practices, and implementation barriers.

Comparative content analysis was used to examine how digital literacy curricula were structured across different educational contexts and how these models could be adapted for Indonesia.

The analysis followed three stages. First, each article was coded based on the predefined extraction categories. Second, similar codes were grouped into broader themes, such as competence-based curriculum, cross-curricular integration, digital citizenship, computational thinking, AI literacy, teacher readiness, infrastructure readiness, and digital assessment. Third, the themes were interpreted comparatively by examining their relevance, feasibility, and limitations for the Indonesian education system. The synthesis did not aim to produce statistical generalization. Instead, it aimed to produce an evidence-based conceptual synthesis that explains dominant global models and identifies policy directions for contextual adaptation in Indonesia.

3. Results and Discussion

3.1 Results of Literature Search and Data Retrieval

This section presents the results of the systematic literature search and synthesis of studies on digital literacy curriculum models in K-12 education. The results are organized into three parts: the PRISMA-based study selection process, the temporal distribution of publications, and the interpretation of findings related to curriculum models, pedagogy, assessment, and policy adaptation for Indonesia.

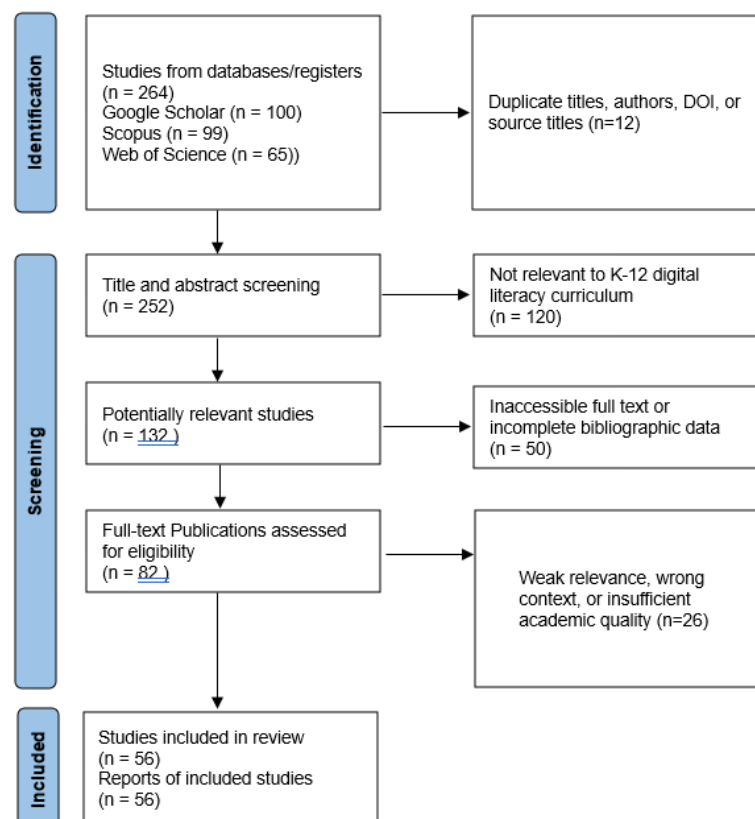


Figure 1. PRISMA Data Screening Results

The study selection process followed the PRISMA 2020 flow to ensure transparency in identifying, screening, and including relevant studies (Rethlefsen & Page, 2022). The initial search identified 264 records from three main sources: Google Scholar through Publish or Perish (100 records), Scopus (99 records), and Web of Science (65 records). After duplicate checking, 12 duplicate records were removed, leaving 252 records for title and abstract screening.

At the title and abstract screening stage, 120 records were excluded because they did not directly address digital literacy in school curriculum contexts, focused on non-school populations, or discussed technology use without clear curricular relevance. This process left 132 reports for retrieval. However, 50 reports could not be retrieved because the full text was inaccessible, the bibliographic information was incomplete, or the source did not provide sufficient academic details. As a result, 82 full-text reports were assessed for eligibility.

Of the 82 full-text reports, 26 were excluded for four main reasons: lack of direct relevance to curriculum models, focus on higher education or non-formal training, absence of discussion of pedagogy or assessment, and insufficient source quality. The final synthesis included 56 studies that met the inclusion criteria and quality appraisal standards. These studies became the basis for identifying digital literacy curriculum models, pedagogical approaches, assessment practices, implementation challenges, and policy adaptation needs for Indonesia.

3.2 Temporal Distribution of Publications

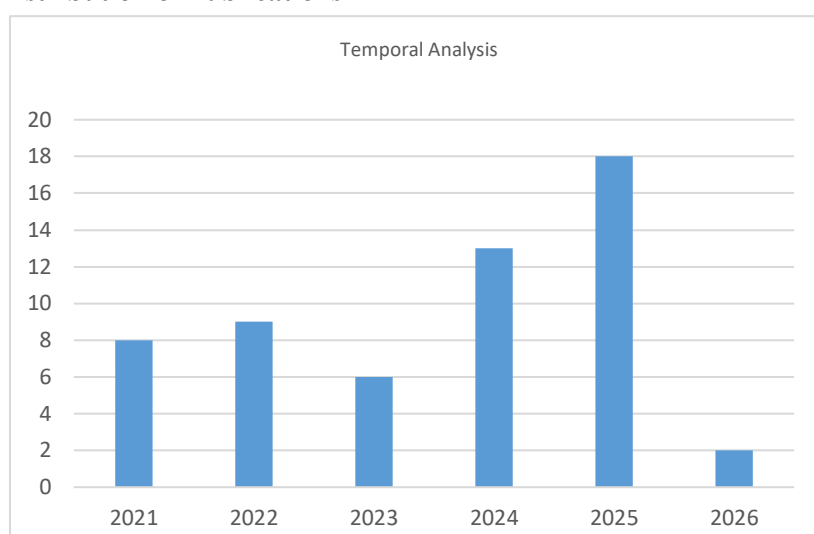


Figure 2. Temporal Analysis

The temporal distribution of the selected studies indicates that scholarly attention to digital literacy curriculum increased significantly in recent years. In 2021, 8 studies were identified; in 2022, 9; and in 2023, 6. A sharper increase occurred in 2024, with 13 studies, and the highest number was in 2025, with 18 studies. Only 2 studies were identified in 2026 because the search was conducted in March 2026, when many publications for that year had not yet been fully indexed.

The increase in 2024 and 2025 suggests that digital literacy became more prominent after the acceleration of digital transformation in education during and after the COVID-19 pandemic. Schools in many countries began to move beyond emergency online learning and started to integrate digital competence into curriculum planning, learning design, and assessment systems. The rapid development of generative artificial intelligence also contributed to this increase. Digital literacy is no longer limited to information search or device operation. It now includes AI literacy, computational thinking, data ethics, privacy awareness, and responsible participation in digital environments.

For Indonesia, this temporal pattern is relevant because discussions of digital literacy are increasingly connected to coding, artificial intelligence, computational thinking, data ethics, and digital citizenship in primary and secondary education. This development shows that digital literacy curriculum adaptation is no longer a peripheral issue, but part of the broader agenda of curriculum renewal and digital competence development in Indonesian education.

3.3 Discussion and Interpretation of the Findings

a. The Alignment of Global Digital Literacy Curriculum Models with the Conditions of Indonesian Education

The implementation of global digital literacy curriculum models in the Indonesian educational context cannot be understood as a direct transfer of curriculum content from one education system to another. Global models generally assume the availability of adequate infrastructure, stable internet connectivity, sufficient digital devices, trained teachers, and institutional support for technology-based learning. In contrast, the Indonesian context still faces uneven infrastructure and unequal access to technology across regions. Research shows that disparities between urban and rural areas in access to devices and reliable internet connectivity remain among the most significant barriers to implementing digital curricula (Gadrdan et al., 2023). This condition becomes more complex because many global digital literacy models depend on advanced applications, stable platforms, and continuous access to digital resources, which are not equally available in Indonesian schools, particularly in remote areas (Bansal & Misra, 2021).

Teacher readiness also determines whether global curriculum models can be adapted effectively. Global models often require teachers to design digital learning activities, guide students in using technology critically, and assess digital competence through authentic tasks. However, evidence from school contexts indicates that teachers may still have difficulty using technology meaningfully in instructional practice (Dashtestani & Hojatpanah, 2022). In Indonesia, this issue is also reflected in the limited sustainability of teacher training and the uneven integration of digital literacy into classroom practice. (Suwanto et al., 2022) emphasize that digital literacy practices in elementary schools require stronger teacher support, continuous training, and more contextual implementation strategies. This means that teacher readiness should become a central criterion in adapting global models, not merely a supporting factor.

The alignment between global curriculum models and Indonesian needs also depends on the level of digital competence to prioritize. Many global models emphasize higher-order digital skills, including coding, data analysis, and complex technology-based problem solving. These skills are important, but Indonesia still needs to strengthen foundational digital literacy in many school contexts. Skills such as using basic productivity applications, evaluating online information, using the internet for academic purposes, and applying responsible social media behavior remain highly relevant for Indonesian students (Gadrdan et al., 2023; Imhanyehor, 2021). Therefore, curriculum adaptation should not begin with a direct emphasis on advanced digital skills alone. It should begin with basic digital competence and then gradually progress to more complex competencies. (Suwanto et al., 2022) also suggest that digital literacy curricula should strengthen basic skills before moving toward advanced digital competencies.

Based on this comparison, the most appropriate adaptation model for Indonesia is a staged and contextual curriculum model. In schools with limited infrastructure, digital literacy can first be integrated through basic information literacy, safe internet use, responsible communication, and simple digital tasks. In schools with better infrastructure and teacher readiness, digital literacy can be expanded into project-based learning, computational thinking, digital content creation, and more complex digital assessment. This staged adaptation is more realistic than applying a uniform global model across all schools. It also reduces the risk of widening educational inequality because schools can implement digital literacy according to their readiness level while still moving toward common national competence standards.

b. The Importance of Emphasizing Digital Safety and Ethics Competencies in the Curriculum

Effective implementation of digital literacy in Indonesia requires a balance between technical competence and ethical awareness. Digital literacy should not only train students to operate devices,

use applications, or access digital platforms. It should also guide students in understanding digital risks, protecting personal data, communicating responsibly, and making ethical decisions in digital environments. Existing findings indicate that although awareness of data security and digital ethics is growing, the Indonesian curriculum still places insufficient emphasis on these areas (Saifuddin & Putra, 2024). Similarly, Chan (2024) and Imhanyehor (2021) show that curricula that focus too strongly on technical skills may neglect the development of responsible digital character.

Digital safety and ethics are important because students' digital activities now include learning, communication, entertainment, social interaction, and participation in online communities. These activities create risks related to cyberbullying, privacy violations, misinformation, identity misuse, irresponsible content production, and unsafe online behavior. Studies by Sorokolit et al. (2024) and Yasa et al. (2024) show that although there have been efforts to integrate digital ethics into education, implementation remains limited and inconsistent. This indicates that digital safety and ethics need to be integrated into the structured curriculum, not delivered as incidental messages only when problems occur.

The issue of data privacy also needs stronger attention in digital literacy curriculum. Students need to understand how personal data can be collected, shared, misused, and exposed in digital platforms. (Bansal & Misra, 2021) highlight that limited understanding of digital ethics and personal data protection may leave students unprepared to respond to cyber threats and privacy problems. This means that digital safety should be translated into concrete learning outcomes, such as recognizing unsafe links, protecting passwords, managing privacy settings, avoiding oversharing, and understanding the consequences of digital footprints.

Digital ethics also becomes more important with the rise of artificial intelligence and automated digital systems. Students need to understand not only how to use digital tools, but also how to evaluate the ethical consequences of using them. This includes awareness of plagiarism, misinformation, biased content, and irresponsible use of AI-generated materials. (Chan, 2024; Dashtestani & Hojatpanah, 2022; Fitriani et al., 2025) argue that successful digital literacy in education requires a balance between technical competence and ethical reinforcement. Without this balance, students may become skilled users of technology but remain vulnerable to harmful, unsafe, or irresponsible digital practices.

Therefore, digital safety and ethics should become core elements of the Indonesian digital literacy curriculum. These elements should be connected with digital citizenship, character education, media literacy, and school rules on digital behavior. (Audrin & Audrin, 2022; Azzahra & Amanta, 2021; Gadrnan et al., 2023) emphasize that digital literacy curricula that ignore ethical and safety dimensions will create a serious gap in students' readiness to face digital challenges. A stronger curriculum should therefore integrate technical skills, digital ethics, digital safety, privacy awareness, and responsible participation into a single coherent framework.

c. The Role of Media Literacy in the Digital Literacy Curriculum: A Solution or an Additional Burden?

The integration of media literacy into the digital literacy curriculum offers both opportunities and challenges. On the one hand, media literacy can become a solution because students need the ability to evaluate information, recognize misinformation, analyze online content, and respond critically to digital media. Studies by Amalia (2024) and Karousiou (2025) show that media literacy plays an important role in helping students assess the content they access through digital platforms. This function is highly relevant because students are not only users of technology, but also consumers and producers of digital information.

Media literacy strengthens digital literacy because technical skills alone are not sufficient. Students may know how to access information, but they may not know how to evaluate its credibility. They may be active on social media, but they may not be able to distinguish between factual information, opinion, manipulation, and misinformation. (Rejeki et al., 2022; Suwanto et al., 2022) indicate that media literacy can support critical thinking and help students understand digital information more responsibly. In this sense, media literacy should not be treated as a separate agenda, but as part of the broader competence needed in digital learning.

However, media literacy can also become an additional burden if it is inserted into the curriculum without a clear integration strategy. The Indonesian curriculum already includes many learning outcomes, limited instructional time, and varying levels of teacher readiness. If media literacy is added as another separate topic, teachers may experience curriculum overload. This risk is stronger when digital literacy is already associated with technical skills, coding, digital tools, online learning, and assessment demands. Research by Alfian et al. (2025), Audrin & Audrin (2022), and Saifuddin & Putra (2024) indicates that many digital literacy practices still place greater emphasis on practical use of digital devices than on critical media evaluation. This shows that media literacy can be marginalized when curriculum priorities are not clearly organized. The critical issue is not whether media literacy should be included, but how it should be positioned. If media literacy is taught as an isolated topic, it may add pressure to teachers and students. If it is integrated into existing subjects, it can support learning without excessively increasing the curriculum load. For example, media literacy can be connected to language learning through source evaluation, to social studies through misinformation analysis, and to citizenship education through discussion of responsible digital participation. (Chan, 2024; Chung & Yoo, 2021; Soufghalem, 2024; Yasa et al., 2024) argue that media literacy enriches digital literacy by helping students understand the context and meaning of information they access.

Therefore, media literacy should be positioned as a supporting dimension within the digital literacy curriculum. It should not replace technical competence, but it should balance technical competence with critical interpretation. For Indonesia, this approach is more feasible because media literacy can be integrated into existing subjects and learning activities. In this way, media literacy becomes a solution to misinformation and weak critical evaluation, while the risk of it becoming an additional curricular burden can be reduced through careful integration.

d. Policy Directions for Digital Literacy

Based on the findings of this review, Indonesia's digital literacy policy should be designed as a staged roadmap rather than a single, uniform policy. The first priority is to address unequal infrastructure and unequal access to technology. Digital literacy curriculum cannot be implemented effectively if schools lack at least basic access to devices, internet connectivity, and digital learning facilities. Evidence from previous studies shows that without sufficient infrastructure, curricula based on advanced technology may worsen existing inequalities (Bansal & Misra, 2021; Choudhary, 2024; Gadrnan et al., 2023; Sorokolit et al., 2024). Therefore, short-term policy should focus on mapping school readiness, identifying infrastructure gaps, and setting minimum digital learning facilities for schools in different regions.

The second priority is strengthening teacher readiness. A digital literacy curriculum will not work if teachers are only expected to use technology without sufficient pedagogical support. Teacher training should not focus only on the technical operation of digital tools. It should also include digital pedagogy, digital ethics, media literacy, digital assessment, and classroom-based implementation. Dashtestani & Hojatpanah (2022); Marín & Castaneda (2023) show that teachers need stronger support to integrate digital literacy into teaching and learning. Therefore, medium-term policy should provide continuous teacher professional development, practical teaching modules, assessment rubrics, and mentoring systems.

The third priority is curriculum adaptation. Indonesia needs a digital literacy curriculum that is aligned with local needs and school readiness. Policy should not only adopt global models, but also adjust them to the Indonesian context. At the foundational level, schools should strengthen basic digital skills, responsible internet use, information evaluation, digital safety, and ethical communication. At a more advanced level, schools with adequate resources can develop coding, data literacy, computational thinking, and digital content creation skills. This layered approach allows schools to move progressively without forcing the same level of implementation on all schools. The fourth priority is monitoring and evaluation. Digital literacy policy should not only measure the number of devices distributed or training sessions conducted. It should measure whether students develop digital competence, whether teachers implement digital learning meaningfully, and whether schools can sustain digital literacy practices. Monitoring should also examine whether digital literacy policy reduces or widens inequality between schools. Without monitoring and evaluation, digital literacy policy risks becoming infrastructure-oriented rather than competence-oriented.

In the long term, Indonesia needs an integrated national framework for a digital literacy curriculum. This framework should connect infrastructure policy, teacher training, curriculum standards, assessment models, digital ethics, media literacy, and stakeholder collaboration. Government, schools, teachers, parents, local communities, and technology partners need to work within a shared implementation roadmap. The goal is not merely to introduce technology into schools, but to develop students who are digitally competent, critical, ethical, and prepared to participate responsibly in digital society.

4. Conclusion

This systematic literature review shows that digital literacy curricula in primary and secondary education have evolved beyond mere device use. It now includes information evaluation, digital content creation, computational thinking, digital citizenship, digital safety, ethics, and responsible participation in digital environments. The reviewed studies indicate that global digital literacy curriculum models commonly take the form of competence-based frameworks, cross-curricular integration, stand-alone digital or computing subjects, and digital citizenship-oriented approaches.

For Indonesia, these models cannot be adopted directly without considering infrastructure inequality, teacher readiness, school resources, and socio-cultural diversity. The main contribution of this study lies in its integrated synthesis of curriculum framework, pedagogy, assessment, and policy adaptation. The findings suggest that Indonesia needs a staged adaptation model. Foundational digital literacy, digital safety, ethical participation, and information evaluation should be the initial priority, while coding, AI literacy, computational thinking, and data literacy can be developed gradually based on school readiness. This study also implies that digital literacy policy should move beyond access to devices. Policy should include teacher professional development, contextual assessment tools, curriculum integration, infrastructure support, and monitoring systems. The study is limited by its publication period, database coverage, and use of thematic synthesis rather than meta-analysis. Future research should examine the implementation of digital literacy curricula in Indonesian schools, particularly across urban, rural, and remote contexts, and develop assessment instruments that align with the Indonesian education system.

Acknowledgements

The authors would like to express their sincere gratitude to Universitas Negeri Semarang, particularly the Faculty of Education and Psychology, for the academic support provided throughout this research. Special appreciation is also extended to the Master's Program in Curriculum Development for creating an academic environment that supported the completion of this study. The authors further wish to express their deepest thanks to the lecturers who provided guidance, insight,

and constructive feedback throughout the research process. Their support has been invaluable to the completion of this article.

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