

Rethinking Elementary Citizenship Education in the Digital Era: Curriculum Reconstruction for Digital Citizenship Competencies

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Abstract

Children's civic lives are increasingly shaped by digitally mediated learning, communication and participation, yet elementary citizenship education still gives limited attention to the competencies required for responsible online life. Existing research is dispersed across digital literacy and rights, online safety, cyberbullying, family mediation, teacher competence and digital participation, leaving no age-progressive curriculum architecture for elementary citizenship education. This critical literature review examined how that curriculum should be reconstructed. A purposive corpus of 28 core studies published mainly from 2020 to 2025 was analyzed, with nine conceptual and policy sources used for contextual support. A hybrid deductive-inductive coding process produced six analytical categories, while thematic overlap was managed through multiple descriptive codes and one primary category for corpus mapping. The synthesis indicates that digital citizenship is best understood as digital civic competence rather than a set of technical skills or safety rules. Four interdependent competencies are proposed: digital awareness, digital ethics, digital security and digital participation. Each is translated into developmental indicators for lower, middle and upper elementary grades and linked to authentic cases, role-play, guided simulations, reflective inquiry, family activities and performance assessment. The review contributes an integrated framework that connects civic knowledge, skills and dispositions with children's digital experiences. Its implementation requires sustained teacher development, a supportive school digital culture and consistent parent-school partnership.

Keywords: Citizenship Education, Civic Competence, Curriculum Reconstruction, Digital Citizenship, Digital Participation, Elementary Education.

Introduction

Digital technologies have changed where and how children encounter civic life. Families, schools and local communities still matter, but everyday judgments about information, identity, privacy, respect, rights and participation now also take place through learning platforms, games, search engines, social media and algorithmically organized information spaces. Citizenship education can no longer treat these settings as separate from children's civic development. Earlier and more frequent digital access creates genuine opportunities for learning, creativity, collaboration and public expression. It also brings exposure to harmful content, unsafe contact, damaging conduct, commercial manipulation, weak privacy protection and cyberbullying. These risks are multidimensional and are better addressed through coordinated educational responses than through occasional warnings or

stand-alone safety messages (1–4). Elementary citizenship education, including Pendidikan Kewarganegaraan (PKn) in Indonesia, is well positioned to respond because its established purposes already encompass civic knowledge, civic skills, civic dispositions, democratic values, identity and moral responsibility. Those purposes become more meaningful when students investigate sources, deliberate, role-play, simulate decisions, collaborate, reflect and act on authentic issues (5, 6). Digital citizenship must therefore be distinguished from technical digital literacy while remaining connected to digital rights, responsibility, identity and participation (7). The evidence needed for this shift exists, but it remains fragmented. Reviews of cyberbullying and curriculum interventions emphasize prevention, sustained implementation and the limits of knowledge-only programs (8, 9).

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Research on digital parenting highlights communication, shared guidance and parents' own digital competence (10–12). Work on teacher capacity and curricular reform shows that professional learning, leadership, usable resources and school culture determine whether a new curriculum can be sustained (13, 14). These strands are rarely brought together as one elementary citizenship curriculum problem.

Conceptual work has framed digital citizenship across ethics, media and information literacy, participation and engagement and critical resistance (15). Meaningful participation is also shaped by digital cultural and social capital, not simply by access to devices (16). Evidence concerning global competence, Indonesian digital democracy and ethical-political inquiry further connects digital experience with civic identity, public expression and democratic participation (17–19).

Children's online behavior is produced within an interconnected ecology rather than by individual choice alone. Cyberbullying and digital resilience are associated with parent-child interaction, school control, psychosocial well-being, problematic social media use, family rules and broader support systems (20–25). Implementation is equally dependent on teachers' privacy knowledge, relevant professional development, evidence-informed standards, curriculum-linked assessment and learning environments that allow children to make choices and reflect on consequences (26–32).

This issue is especially pressing in Indonesia, where digital participation is expanding while infrastructure, access, coordination, training, regulatory capacity and digital security remain uneven (33). Research on global citizenship education and developmentally appropriate participation reinforces the educational importance of beginning in the elementary years (34, 35). Persistent cyberbullying and the growing use of digital participation tools also show why the curriculum must address both protection from harm and constructive contribution to public life (36, 37).

At the elementary level, this transition has particular significance because habits of information use, communication and participation are still being formed. Children do not enter digital environments as fully autonomous users; their

judgments develop through guidance from teachers, families, peers, platform design and school rules. Questions about privacy, credibility, empathy and online participation therefore cannot be postponed until adolescence. When these issues are introduced through age-appropriate civic learning, students can connect everyday digital choices with rights, responsibilities and the consequences of their actions for others. This developmental perspective places digital citizenship within the core work of elementary education rather than treating it as an optional technology topic (1, 10, 20, 23).

Curriculum reconstruction is needed at the level of learning progression, not merely content addition. Isolated lessons on passwords, cyberbullying, or misinformation may raise awareness, yet they do not explain how civic knowledge, skills and dispositions should develop across elementary grade bands. A coherent curriculum should clarify which understandings are introduced first, how ethical judgment becomes more independent, when students can evaluate sources and platform influence and how participation moves from guided classroom routines to constructive civic action. It must also connect classroom learning with assessment, teacher preparation, school procedures and family guidance so that students encounter consistent expectations across the settings in which their digital lives unfold (5, 6, 9, 14, 29–32).

Three gaps follow from this literature. First, digital citizenship is often discussed as general digital competence or online safety rather than as a dimension of elementary civic competence. Second, findings about risk, family mediation, teacher readiness, school culture, participation, pedagogy and assessment have not been integrated into a single curriculum logic. Third, existing frameworks rarely specify how competencies should progress from lower to upper elementary grades. The originality of this review lies in connecting those separate evidence bases and translating them into an age-progressive framework for elementary citizenship education.

The study contributes to existing knowledge in four concrete ways. It defines digital citizenship as civic competence enacted in digital settings; derives four curriculum competencies from six analytical evidence categories; specifies developmental indicators across three elementary

grade bands; and links those indicators to pedagogy, assessment, teacher learning, school culture and parent-school partnership. The framework is developed for the Indonesian PKN context while remaining adaptable to other elementary citizenship curricula.

The review was guided by three research questions:

RQ1: What conceptual, risk-related, socio-ecological and implementation evidence supports the integration of digital citizenship into elementary citizenship education?

RQ2: Which digital citizenship competencies should organize an age-progressive elementary curriculum?

RQ3: What pedagogical, assessment and whole-school conditions are required to implement the reconstructed curriculum?

Methodology

Review Design

A critical literature review was used because the purpose was not only to summarize publications but also to examine conceptual boundaries, compare evidence, expose tensions and build a defensible curriculum argument. Literature reviews can provide a transparent basis for theory development when their purpose, selection logic and synthesis procedures are made explicit (38). The review was designed for interpretive theory-building and curriculum reconstruction rather than exhaustive effect estimation. It therefore does not claim the status of a systematic review and

does not use Preferred Reporting Items for Systematic Reviews and Meta-Analyses terminology.

Corpus Formation and Eligibility

The corpus was formed purposively and iteratively around the research questions. Sources were retained when they offered direct conceptual, empirical, intervention, policy, or implementation evidence relevant to elementary digital citizenship. The final analytical corpus contained 28 core studies. Nine additional sources were used to clarify concepts, policy context, or supplementary empirical interpretation, producing 37 substantive sources in the review corpus. Two additional methodological references were used only to support the review design and analytical procedure. Most sources were published from 2020 to 2025. An earlier or non-journal source was retained only when it supplied a continuing conceptual or international policy reference that could not be replaced without weakening the analysis.

The eligibility criteria are summarized in Table 1. The first two rows delimit the topical and temporal boundaries of the corpus, while the remaining rows specify educational relevance, evidence value and curriculum contribution. These criteria allowed evidence from adjacent age groups or settings to be retained only when its relevance to elementary curriculum reconstruction was explicit. They also provided a consistent basis for excluding technically oriented, weakly documented, duplicate, or insufficiently relevant material.

Table 1: Eligibility Criteria for the Critical Literature Review

Criterion	Included	Excluded
Topic	Digital citizenship, civic education, digital literacy and rights, cyberbullying, online safety, family mediation, teacher competence, digital governance, curriculum reform and active civic learning.	Sources unrelated to education, citizenship, children or youth, digital competence, or curriculum implementation.
Publication period	Primarily 2020-2025; earlier or undated institutional sources retained only when conceptually or politically necessary.	Older sources without continuing theoretical, policy, or analytical value.
Educational relevance	Elementary, K-12, teacher education, youth, family, school and policy contexts with a defensible implication for elementary curriculum reconstruction.	Purely technical or non-educational studies without a clear curricular implication.
Evidence value	Peer-reviewed studies, reviews, intervention evaluations, conceptual analyses and authoritative institutional sources with identifiable evidence or a clear theoretical contribution.	Unsupported commentary, duplicate evidence, unclear provenance, or insufficient connection to the research questions.
Curriculum contribution	Evidence concerning learning outcomes, developmental progression, pedagogy, assessment, teacher capacity, family-school collaboration, school policy, or civic participation.	Sources that mention technology without explaining implications for learning, citizenship, or educational practice.

Development of the Coding Categories

The coding frame was developed through a hybrid deductive-inductive process. An initial set of domains was derived from the research questions and the eligibility criteria: meaning and boundaries, digital risk, social support, implementation, participation and learning design. During repeated reading, these domains were refined into six analytical categories: conceptual foundations of digital citizenship; online risks and cyberbullying; family mediation and digital resilience; teacher competence and school culture; democratic participation and digital governance; and active civic learning and assessment. The categories were retained when they were conceptually distinct, represented evidence across more than one source and generated a specific implication for elementary curriculum reconstruction. The iterative comparison of codes and candidate categories was guided by transparent thematic analysis principles, including conceptual coherence, internal consistency and explicit documentation of analytical decisions (39).

Each source was examined through a common coding record covering publication type, population or setting, study design, central claim, reported limitation, conceptual contribution, curriculum relevance, primary analytical category and secondary thematic codes. Evidence involving adolescents, university students, pre-service teachers, or broad K-12 settings was marked as contextual or transferable evidence. It was not treated as direct evidence about elementary pupils.

Handling Overlapping Evidence

Thematic overlap was expected because a single source could address, for example, both cyberbullying and family mediation or both teacher competence and school culture. Multiple descriptive codes were therefore permitted at the

first coding stage. For the corpus map in Table 2, each source was assigned one primary category according to its dominant analytical contribution, while secondary codes were retained in the comparison notes and used in cross-category synthesis. This rule keeps the category counts transparent without erasing substantive connections. No duplicate reports of the same study were retained in the corpus. Where similar claims appeared across different sources, they were treated as convergent evidence rather than counted as separate categories.

Critical Synthesis

The synthesis proceeded in three stages. First, the central claims, contexts, methods, findings and limitations of each source were extracted. Second, evidence within and across the six categories was compared to identify convergence, tension, missing connections and limits of transfer to elementary education. Third, the recurring curriculum implications were translated into four competencies and then aligned with developmental progression, pedagogy, assessment, teacher learning, family-school partnership and school policy. This sequence made it possible to move from a diverse evidence base to a coherent curriculum framework while keeping the inferential steps explicit.

Results

Profile of the Analytical Corpus

The 28 core studies were distributed across six primary analytical categories. The remaining nine references supplied conceptual, policy, or contextual support. Table 2 reports mutually exclusive primary assignments; thematic overlaps were retained as secondary codes and informed the synthesis described in the following subsections.

Table 2: Thematic Composition of the 28-source Analytical Corpus

Primary Category	Evidence Synthesized	Curriculum Implication	Core References
Conceptual foundations	Digital citizenship intersects with literacy, rights, participation, identity, information quality and digital cultural-social capital, but is not reducible to device use or safety rules.	Define digital citizenship as civic competence enacted in digital settings.	(7, 15, 16, 19)
Online risks and cyberbullying	Content, contact, conduct, contract and cyberbullying risks require more than knowledge-only interventions.	Integrate prevention, empathy, privacy, reporting, conflict resolution and self-efficacy.	(1-4, 9)
Family mediation and resilience	Safe and resilient practice develops through relationships among children, families, schools and wider social environments.	Build shared guidance, family reflection and age-appropriate digital-use agreements.	(10-12, 23, 24)
Teacher and school capacity	Privacy knowledge, leadership, professional development, usable resources and school culture shape implementation.	Provide curriculum-aligned guidance and sustained school-level support.	(13, 14, 26, 27, 30)
Participation and governance	Digital media can expand civic expression and public engagement while access, accountability and governance gaps remain.	Prepare students for informed expression, verification, collaboration and the common good.	(18, 33, 34, 37)
Active learning and assessment	Civic and digital competence requires contextualized practice, reflection, valid measurement and child-centered learning.	Use cases, role-play, simulation, games, projects, reflection and performance assessment.	(5, 6, 29, 31, 32)

Digital Citizenship was Positioned as Digital Civic Competence

A clear boundary emerged between digital literacy, digital rights and digital citizenship. Digital literacy concerns access, evaluation, production and communication, while digital rights concern privacy, agency, protection and collective entitlement. Digital citizenship brings these elements into the civic domain by connecting them with responsibility, identity, participation and democratic life (7, 15). This boundary rules out a curriculum limited to technical proficiency or occasional safety reminders.

Digital civic competence was consequently defined as the capacity to understand digital conditions, make ethical judgments, protect oneself and others, communicate responsibly and participate in shared digital environments. Equal access to devices did not guarantee equal capacity because guidance, confidence, social networks, cultural resources and opportunities for productive use were unevenly distributed (16). The curriculum implication is a combined concern for competence, inclusion and the social conditions under which children learn digital practices.

Digital Risks Required Preventive Curriculum Integration

Online risk was organized around content, contact, conduct and contract dimensions. Harmful content calls for critical judgment; unsafe contact calls for risk recognition and trusted-adult support; harmful conduct calls for empathy and accountability; and contract risk calls for awareness of privacy, data use, advertising and commercial influence (1). These are civic learning problems because they require judgment about rights, relationships, responsibility and the effects of action on others.

Cyberbullying was consistently associated with interacting school, family, behavioral and psychosocial conditions (2, 20–22, 36). Preventive learning must therefore go beyond definitions. Students need guided practice in recognizing harm, refusing perpetration, acting as supportive bystanders, preserving evidence, reporting incidents, seeking adult help and participating in restorative responses. Knowledge and self-efficacy can improve after digital citizenship instruction, but behavior does not change consistently when classroom learning is disconnected from school procedures, family communication, counseling and peer norms (4, 8, 9).

Digital Citizenship Operated as a Socio-Ecological Competence

Digital resilience among children was developed across individual, home, school, community and societal levels rather than through personal responsibility alone (23). Active discussion, privacy guidance, shared rules, parental risk perception and parents' own digital skills shaped children's practices (10, 11, 24). Family mediation was also affected by conflict, inconsistent modeling, uneven technical knowledge, screen-use pressures and gendered divisions of care (12, 25). The resulting curriculum requirement is a structured parent-school partnership. Common learning goals, shared language, home reflection tasks, family guidance modules and clear reporting routes can connect classroom learning with everyday digital life. Such a partnership should support children's growing autonomy and judgment rather than depend only on restriction or surveillance.

Implementation Depended on Teachers, School Culture and Meaningful Participation

Teacher competence, leadership, professional learning and school digital culture were repeatedly identified as implementation conditions. Privacy knowledge cannot be assumed, even among future teachers and professional development is more likely to influence practice when it is relevant, sustained, feasible and supported by the institution (13, 14, 26, 27, 30). Technology standards are useful only when they are translated into concrete learning experiences and evidence of student learning (28).

The corpus also connected digital citizenship with participation rather than protection alone. Digital media and participation tools can expand

expression, collaboration and citizen-government interaction, although unequal access, incomplete feedback and weak accountability can limit these possibilities (18, 33, 37). Developmentally appropriate civic participation can begin with shared class agreements, respectful discussion, collaborative problem-solving, information verification and digital projects addressing a school or community need (34, 35).

Four Competencies Formed the Reconstructed Curriculum Framework

Four competencies recurred when the six evidence categories were translated into curriculum terms. Digital awareness concerns the ability to understand digital footprints, media influence, information quality, inequality and the consequences of online action. Digital ethics concerns empathy, respect, responsibility, fairness and civility. Digital security concerns privacy, personal data, safe communication, risk recognition and help-seeking. Digital participation concerns collaboration, informed expression, responsible sharing and contribution to the common good. The competencies are interdependent: awareness supports judgment, ethics guides conduct, security makes participation safer and participation gives civic purpose to the other three.

Table 3 translates the four competencies into a practical curriculum framework. Each row defines the competency's civic meaning and specifies indicators for lower, middle and upper elementary grades. The progression moves from recognition and guided action toward independent evaluation, ethical judgment and constructive participation. The final column identifies the evidence used to support each competency and its developmental indicators.

Table 3: Proposed Framework for Elementary Digital Citizenship Competencies

Core competence	Civic meaning	Age-progressive indicators	Supporting references
Digital awareness	Understanding digital life, information, footprints, media influence and inequality.	Lower: recognize that online actions can be seen by others and distinguish simple trustworthy and untrustworthy situations. Middle: identify digital footprints, persuasive messages and basic credibility indicators. Upper: compare sources and analyze the consequences of posting, sharing, unequal access and algorithmic influence.	(7, 15, 16, 29)
Digital ethics	Practicing empathy, respect, responsibility, fairness and civility in digital interaction.	Lower: use polite language, ask permission and avoid causing harm. Middle: identify cyberbullying, show online empathy and explain user and bystander responsibilities. Upper: evaluate ethical dilemmas, respond to conflict through dialogue and reporting and participate in restorative action.	(2-4, 8, 9, 20-22)
Digital security	Protecting privacy, personal data, communication and well-being.	Lower: identify private information and seek help from a trusted adult. Middle: apply simple password and privacy rules, recognize unsafe contact and report harmful content. Upper: evaluate scams, phishing, risky requests, data misuse and weak privacy practices.	(1, 10-12, 23, 24, 26)
Digital participation	Using digital tools for learning, collaboration, democratic voice and the common good.	Lower: join guided class activities and follow shared rules. Middle: collaborate on digital projects, share responsibly and contribute to class decisions. Upper: verify information, communicate reasoned views, create civic digital projects and address school or community issues constructively.	(5, 6, 18, 31-35, 37)

Discussion

From A Safety Topic to a Curriculum Architecture

The findings shift the curriculum question from whether digital citizenship should be added to how civic purposes should be expressed in digital settings. A stand-alone safety unit can teach useful rules, but it cannot by itself connect privacy, information quality, identity, ethical conduct, participation and the common good. The proposed architecture makes those connections visible by organizing learning around four competencies that can be revisited with increasing complexity across grade levels.

This interpretation also preserves the identity of citizenship education. Digital awareness extends civic knowledge by helping children understand how information systems and digital actions shape public life. Digital ethics and security connect civic dispositions with care, responsibility, rights and protection. Digital participation extends civic skills into reasoned expression, collaboration and contribution. Technology is therefore treated as a context of citizenship, not as the curriculum's organizing purpose.

Developmental Progression, Pedagogy and Assessment

Progression matters because a seven-year-old and an eleven-year-old do not encounter privacy, credibility, conflict, or participation in the same

way. Lower-grade learning should emphasize recognition, simple language, guided choice and trusted-adult support. Middle-grade learning can add explanation, comparison, shared rules and bystander responsibility. Upper-grade learning can require evidence-based judgment, ethical reasoning, independent reporting, source comparison and civic project work. The same competency is revisited, but the expected autonomy and complexity increase.

Active pedagogy is essential because civic competence is demonstrated through judgment and action. Primary-source inquiry, case analysis, role-play, simulation, service learning, games and reflection create opportunities to practice those processes (5, 6). Child-centered concept mapping and experiential social media simulations show particular promise when learners make choices, see consequences and explain their reasoning (31, 32). Suitable classroom tasks include role-playing a cyberbullying incident from several perspectives, classifying information by privacy level, comparing the credibility of two sources, or designing a digital campaign for respectful communication.

Assessment must be aligned with the competence being claimed. Observation rubrics, scenario-based responses, digital portfolios, reflective journals, collaborative projects and performance tasks can capture reasoning and behavior that a recall test misses. Criteria can address respectful

communication, privacy decisions, source evaluation, collaboration, help-seeking, ethical justification and contribution to the common good. Written tests remain useful, but they should supplement rather than replace evidence of applied competence (29).

Implementation in the Indonesian Context

For Indonesian PKn, the framework can be embedded within existing civic outcomes rather than introduced as an unrelated subject. Digital awareness can accompany learning about informed citizenship; digital ethics can deepen Pancasila values and respectful interaction; digital security can be connected to rights, responsibilities and protection; and digital participation can extend deliberation and community-oriented projects into digital settings. This approach reduces curriculum overload while making established civic aims responsive to children's actual lives.

Implementation will still fail if the written curriculum moves faster than teacher capacity and school support. Professional learning should include facilitation of digital dilemmas, privacy education, misinformation analysis, restorative responses to cyberbullying and performance assessment. School policies should provide child-friendly reporting and response procedures, while parent communication should use the same concepts and expectations introduced in class. Leadership and school culture are therefore part of the curriculum's operating conditions, not secondary administrative concerns (13, 14, 27, 30, 33).

Originality and Contribution to Knowledge

The study does not claim to introduce the idea of digital citizenship. Its original contribution lies in the level and form of synthesis. First, elementary citizenship education, rather than general digital literacy, is used as the unit of curriculum reconstruction. Second, six bodies of evidence that are usually discussed separately are translated into four connected competencies. Third, the framework makes developmental progression explicit across lower, middle and upper elementary grades. Fourth, competence statements are linked to pedagogy, assessment, teacher learning, school culture and parent-school partnership. The result is not another list of digital

topics, but a curriculum logic that explains what should be learned, how expectations should deepen and which conditions are needed for implementation.

Limitations and Future Research

The proposed framework is a conceptual synthesis rather than an empirically validated curriculum model. The purposive review does not claim exhaustive coverage and several sources concern adolescents, university students, pre-service teachers, or broad K-12 settings. Their implications were treated as contextual and require developmental adaptation before classroom use. The single primary-category rule improves transparency but necessarily simplifies relationships among themes, even though secondary codes were retained in the synthesis.

Further work should examine national and local curriculum documents, validate the four-competency framework with experts and elementary teachers, test the developmental indicators with children and develop reliable performance measures. Classroom interventions and longitudinal studies are also needed to determine whether competence develops across grade bands and whether school-family alignment improves transfer from lessons to everyday digital behavior.

Conclusion

Elementary citizenship education should respond to the digital transformation of children's civic lives by integrating, rather than merely appending, digital citizenship. The evidence reviewed here shows that safety-only and knowledge-only approaches are too narrow. Children need progressive opportunities to understand digital systems, make ethical decisions, protect themselves and others, evaluate information and contribute to shared digital environments.

The proposed reconstruction is organized around digital awareness, digital ethics, digital security and digital participation. These competencies can extend established civic knowledge, skills and dispositions across lower, middle and upper elementary grades. Their value depends on authentic learning, aligned performance assessment, sustained teacher development, supportive school procedures and consistent parent-school partnership. For Indonesian PKn, the framework offers a practical route for updating

civic purposes without separating digital life from the broader formation of responsible, critical, safe and participatory citizens.

Abbreviations

K-12: Kindergarten to Grade 12, PKn: Pendidikan Kewarganegaraan, UNESCO: United Nations Educational, Scientific and Cultural Organization.

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Author Contributions

Sari Yustiana: Conceptualization, Methodology, Literature Review, Formal Analysis, Framework Development, Writing - Original Draft, Kus Eddy Sartono: Supervision, Conceptual Validation, Critical Review and Editing, Wuri Wuryandani: Supervision, Framework Validation, Critical Review and Editing, Muhamad Afandi: Interpretation of Findings, Critical Review and Editing. All authors reviewed and approved the final manuscript.

Conflict of Interest

All the authors declare no conflict of interest.

Data Availability

No new dataset was generated. The analytical corpus is identified in Table 2 and all evidence used in the synthesis is available through the published or institutional sources cited in the reference list.

Declaration of Artificial Intelligence

(AI) Assistance

OpenAI ChatGPT (GPT-5 family; accessed September 2026) was used to assist with English-language refinement, sentence restructuring, reference-format checking and Word formatting during revision. It was not used to select the analytical corpus, generate data, or determine the study's findings. All AI-assisted output, citations and references were critically reviewed and verified by the authors, who accept full responsibility for the final manuscript.

Ethics Approval

Ethics approval was not required because the study analyzed publicly available published

literature and did not involve human participants, animals, interventions, or personally identifiable data.

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