

Integrating QR Code-Supported Project-Based Learning to Promote Critical Thinking and Social Skills in Primary Science and Social Studies: A Classroom Action Research Study

Eva Diyah Marlina¹, Sudarmiani²

¹ Universitas PGRI Madiun, Madiun, Indonesia; evadiyahm1@gmail.com

² Universitas PGRI Madiun, Madiun, Indonesia; aniwidjiati@unipma.ac.id

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ABSTRACT

Developing critical thinking and social skills is a key objective of Indonesia's Merdeka Curriculum, particularly in Integrated Science and Social Studies (IPAS) learning. Although Project-Based Learning (PjBL) has been widely recognized for promoting higher-order thinking and collaboration, limited research has investigated the pedagogical integration of QR Code technology within PjBL to simultaneously enhance these competencies in elementary education. This study aimed to examine the implementation and effectiveness of QR Code-supported Project-Based Learning in improving students' critical thinking and social skills. This study employed a mixed-method Classroom Action Research (CAR) design following the Kemmis and McTaggart model over two action cycles. The participants were 28 fifth-grade students at an elementary school in Madiun, Indonesia. Quantitative data were collected using rubric-based assessments and questionnaires, while qualitative data were obtained through classroom observations and documentation. Quantitative data were analyzed descriptively using percentage scores, whereas qualitative findings were analyzed through thematic reflection to explain changes in students' learning behaviors. The findings revealed substantial improvements in both competencies across the intervention cycles. Critical thinking increased from 43% during the pre-cycle to 86% in Cycle II, while social skills improved from 39% to 93%. Students demonstrated stronger analytical reasoning, collaborative problem-solving, communication, and responsibility during project activities supported by QR Code-based digital resources. QR Code-supported Project-Based Learning effectively fostered active, collaborative, and inquiry-oriented learning by integrating accessible digital technology with constructivist pedagogy. Although limited by a single-classroom setting and short intervention period, the study provides practical guidance for technology-enhanced elementary instruction and contributes to the growing evidence supporting digitally integrated PjBL for developing 21st-century competencies.

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Corresponding Author:

Sudarmiani

Universitas PGRI Madiun, Madiun, Indonesia; aniwidjiati@unipma.ac.id

1. INTRODUCTION

The increasing complexity of global socio-technological transformation has intensified demands on education systems to prepare learners who are capable of critical reasoning, adaptive thinking, and effective collaboration. Various international frameworks consistently position critical thinking and social skills as essential capacities for participation in knowledge-based societies and evolving labor markets (Griffin & Care, 2019; World economic Forum, 2020). At the elementary education level, these competencies function as foundational skills influencing long-term academic achievement and students readiness to navigate digital and social change (Durlak, 2015).

Critical thinking is generally defined as reflective and rational judgment used to evaluate claims and examine underlying evidence (Facione, 2020; Sudarmiani, Jutmini, Baedhowi, & Gunarhadi, 2019). Meanwhile, social skills refer to the ability to interact, communicate, and collaborate effectively within structured learning environments (Sudarmiani, Jutmini, Baedhowi, & Gunarhadi, 2017; Taguma & Frid, 2024). Empirical studies in elementary education contexts indicate that these competencies have not yet developed optimally, partly due to the dominance of teacher-centered instruction and limited pedagogically grounded technology integration (Care, Kim, Vista, & Anderson, 2018; Wahyuni & Fitria, 2023). These findings highlight the need for instructional approaches that actively engage students in inquiry and collaboration processes.

In the subject of Integrated Science and Social Studies (IPAS), its integrative and contextual characteristics require students to observe phenomena, analyze information, and collaboratively construct explanations (L. P. A. F. Dewi & Abadi, 2022; Sudarmiani, Wuryani, & Nugraha, 2021). These characteristics align with constructivist theory, which views knowledge as actively constructed through meaningful engagement with experience (Sudarmiani et al., 2021). Experiential learning perspectives further emphasize the cycle of experience, reflection, conceptualization, and application in developing higher-order thinking skills (Amriani et al., 2024; Morris, 2020). In addition, social constructivism, as developed by Vygotsky, underscores the importance of social interaction and scaffolding within the zone of proximal development to promote cognitive growth environments (Mulyatno, 2022; Sudarmiani et al., 2017). Collectively, these theoretical foundations suggest that learning environments integrating inquiry, collaboration, and structured guidance are highly relevant for strengthening critical thinking and social skills.

Project-Based Learning (PjBL) is a pedagogical model consistent with these theoretical premises. By engaging students in authentic projects connected to real-world contexts, PjBL fosters higher-order thinking, collaborative problem solving, and learner responsibility (Chen & Yang, 2019; Indah, Simbolon, & Praramdana, 2023; Saenab, Yunus, & Husain, 2019; Undari, 2023). Recent systematic reviews further reinforce the empirical validity of PjBL. A comprehensive synthesis of international studies concluded that constructivist-based PjBL significantly enhances children's critical thinking when inquiry processes are explicitly and systematically designed (Chen & Yang, 2019; DongJin & Ashari, 2024). Furthermore, theory driven design principles such as sustained inquiry, collaborative scaffolding, and authentic problem contexts are identified as primary determinants of successful PjBL implementation (Al-Kamzari & Alias, 2025). Global trend analyses also indicate that PjBL research increasingly emphasizes the development of 21st century competencies, including critical thinking and collaboration (Arif & Abd Aziz, 2023; Condliffe, 2017).

Despite the growing body of evidence, Classroom Action Research (CAR) studies integrating PjBL within elementary IPAS contexts remain limited, particularly those that systematically combine project-based pedagogy with structured technology integration. The effectiveness of PjBL depends not only on project design but also on how learning resources and digital tools are pedagogically integrated.

Within the Technological Pedagogical Content Knowledge (TPACK) framework, meaningful technology integration requires alignment among content objectives, pedagogical strategies, and technological tools (Saputri & Zulfiati, 2024; Scherer, Siddiq, & Tondeur, 2019). The framework was first introduced to emphasize that technology should transform learning processes rather than merely digitize traditional practices (Koehler, Mishra, & Cain, 2013). Recent systematic and meta-analytic evidence

supports this position. TPACK-based interventions have been shown to significantly enhance instructional effectiveness when technology integration aligns with pedagogical design (Fabian, Backfisch, Kirchner, & Lachner, 2024). Likewise, a systematic review in elementary education highlighted that technology integration at the primary level requires contextual adaptation and pedagogical intentionality to meaningfully impact higher-order thinking skills (N. R. Dewi et al., 2021; Petko, 2012). Furthermore, integrating TPACK with design-based approaches has been argued to strengthen students' creativity and collaborative engagement (Rahman et al., 2023).

One increasingly accessible classroom technology is the Quick Response (QR) Code, which enables rapid access to multimedia learning resources and interactive materials (Li & Tsai, 2017; Pranata, Parmiti, & Agustiana, 2024; Priyambodo, Usman, & Novamizanti, 2020). Previous studies indicate that the use of QR Codes can enhance student motivation, engagement, and learning autonomy (N. K. D. C. Dewi, Widian, & Jayanta, 2024). However, in many implementations, QR Codes function merely as information access tools and have not yet become integral components of inquiry design. When systematically integrated within the PjBL structure, QR Codes can serve broader roles as triggers for investigative tasks, scaffolding for project stages, differentiated access points to learning resources, and facilitators of collaborative reflection thus aligning with constructivist, experiential, and TPACK principles.

Although research on PjBL and QR Code utilization has developed separately, empirical Classroom Action Research explicitly integrating QR Codes within the PjBL model in elementary IPAS instruction and simultaneously examining their impact on critical thinking and social skills remains limited. This theoretical and empirical gap underscores the need for contextualized, theory-grounded research examining how technology-enriched project-based pedagogy can systematically support students' cognitive and social development.

Accordingly, this study proposes the following research questions: (1) How is the QR Code-based PjBL model implemented in elementary IPAS learning? (2) To what extent does the implementation improve students critical thinking skills? (3) How does the model contribute to the development of students social skills?

This study is guided by the action hypothesis that implementing a QR Code-based PjBL model grounded in constructivism, experiential learning, social constructivism, and TPACK principles will produce measurable improvements in students' critical thinking and social skills through iterative classroom action cycles.

Therefore, the purpose of this study is to analyze the implementation and contribution of the QR Code-based Project-Based Learning model in enhancing elementary students' critical thinking and social skills in IPAS learning, while simultaneously providing theoretical contributions to the development of technology-enhanced constructivist pedagogy and practical guidance for classroom innovation.

2. METHODS

This section details the approach, subjects, procedures, instruments, data collection techniques, and data analysis utilized in this research.

2.1 Research Design

This study employed a mixed-method Classroom Action Research (CAR) design conducted in two cycles. The mixed method approach integrated qualitative data describing the implementation of QR Code based Project-Based Learning with quantitative data measuring improvements in students critical thinking and social skills using rubric based assessment.

The qualitative component explored the natural classroom setting, with the researcher acting as the primary instrument and applying inductive analysis (Creswell & Poth, 2016; Sugiyono, 2016). CAR was selected because the study aimed to improve instructional practice through systematic and reflective classroom interventions (Kemmis, McTaggart, & Nixon, 2014; Suharsimi, 2015), rather than to test causal relationships as in experimental research.

The procedure followed the cyclical model of Kemmis dan McTaggart, consisting of planning, action, observation, and reflection. Qualitative data were collected through observation and documentation, while quantitative data were obtained from analytic rubrics assessing critical thinking and social skills.

Quantitative analysis used descriptive statistics in the form of percentage achievement scores derived from rubric performance. Improvement was determined by comparing average percentage scores across cycles. The intervention was considered successful if at least 85% of students reached the good or excellent category.

Institutional approval and informed consent from parents/guardians were obtained prior to data collection, and all data were treated confidentially.

2.2 Participants

The participants were 28 fifth-grade students at SDN 01 Kartoharjo, Madiun City, Indonesia, during the 2025/2026 academic year. The students ages ranged from 10 to 11 years, with 12 boys and 16 girls.

A purposive sampling approach was initially applied to select the class based on predetermined criteria relevant to the research objectives. These criteria included the readiness of both the teacher and students to implement Project-Based Learning (PjBL), the availability of supporting facilities for QR Code integration, the diversity of students' academic and social abilities, and the alignment of the IPAS learning schedule with the planned research activities.

However, as all students in the selected class were included in the study, the sampling procedure can also be classified as classroom census sampling. This approach ensured that no eligible participant was excluded, providing a complete view of the class dynamics and learning outcomes.

Although the class was considered representative for examining the effectiveness of QR Code-based PjBL in enhancing critical thinking and social skills, the findings are limited in generalizability. The results primarily apply to this specific class and school context, and caution is advised when extending the conclusions to broader populations without additional studies involving larger and more diverse samples.

2.3 Research Procedure

This research was executed through several consecutive action stages to achieve the research objective. These stages include:

- 2.3.1 Action Planning: 1) Determining the learning outcomes and objectives for QR Code-based PjBL; 2) Developing the In-Depth Learning Plan (RPM) following the QR Code-based PjBL syntax; 3) Preparing learning tools and QR Code media; 4) Preparing research instruments (observation sheets, questionnaires, tests); 5) Establishing success indicators.
- 2.3.2 Action Implementation: 1) Conducting the learning process according to the RPM using QR Code PjBL; 2) Facilitating access to project materials and guides via QR Code; 3) Providing direction, mentorship, and guidance to students; 4) Encouraging project result presentations and feedback.
- 2.3.3 Observation: 1) Observing student interaction and activities during the project; 2) Recording critical thinking and social skills; 3) Identifying student obstacles; 4) Documenting findings for reflection.
- 2.3.4 Reflection: 1) Analyzing observation data, questionnaires, and tests; 2) Evaluating successes and weaknesses; 3) Identifying problems; 4) Formulating improvements for the subsequent Cycle.

2.4 Research Instruments

The research instruments consisted of a critical thinking questionnaire, a social skills questionnaire, observation sheets for student and teacher activities, and project outcome documentation (Dunlosky, Rawson, Marsh, Nathan, & Willingham, 2013; Graesser et al., 2018; Sugiyono, 2016). All instruments were developed based on indicators of critical thinking and social skills relevant to the QR Code-based Project-Based Learning model in the IPAS subject.

Instrument reliability was tested using Cronbach's alpha. The questionnaires employed a 4-point Likert scale, while the observation sheets and project documentation were assessed using a rubric aligned

with the research indicators. Detailed tables of the instruments and item distributions are provided in Tables 1 to 3.

Table 1. Questionnaire Instruments for Critical Thinking and Social Skills

Variable	Indicators
Critical Thinking	Identifying problems, collecting and understanding information, analyzing information, proposing solutions and opinions, drawing logical conclusions
Social Skills	Communicating effectively, cooperating in a team, resolving conflicts, empathizing, respecting differences of opinion

Table 2. Observation Instrument for Students Critical Thinking Skills

Indicators	Measurement Indicator
Identifying problems	Knowing the difficult or misunderstood parts of the QR Code based project material.
Collecting and understanding information	Reading and gathering information, exploring information sources, reviewing information
Analyzing information	Comparing information, giving examples from real life.
Proposing solutions and opinions	Conveying ideas, giving suggestions
Drawing logical conclusions	Concluding, writing one's own conclusion, concluding, explaining the lesson to peers or the teacher.

Table 3. Observation Instrument for Students Social Skills

Indicators	Measurement Indicators
Communicating effectively	Speaking clearly during group discussions, listening to peers without interrupting, explaining group work results in front of the class.
Cooperating in a team	Working together and fairly in a group, helping peers in difficulty, accepting and respecting peers ideas.
Resolving conflicts	Apologizing and forgiving, resolving problems well.
Empathizing	Showing concern for peers, encouraging peers.
Respecting differences of opinion	Listening to peers opinions, giving suggestions politely, accepting peers opinions.

2.5 Data Collection Techniques

The data collection techniques in this research included questionnaires, observation, and documentation, which were utilized to obtain comprehensive information.

- 2.5.1 Questionnaires were used to obtain data regarding students' critical thinking and social skills during the implementation of QR Code-based PjBL in the IPAS subject. The questionnaire instrument was compiled with statements that described the indicators of students' critical thinking and social skills.
- 2.5.2 Observation was carried out to monitor teacher and student activities during the learning process. The resulting observation data were used to strengthen the findings from the questionnaires.
- 2.5.3 Documentation was used to gather supporting data in the form of activity photos, project worksheets, and students' product outcomes.

2.6 Data Analysis Technique

This study employed Miles and Huberman's interactive analysis model, comprising three main steps: data reduction, data display, and conclusion drawing (Miles, Huberman, & Saldana, 2014). In the data reduction phase, key information relevant to the implementation of QR Code-based Project-Based Learning was identified and organized. Data display involved presenting findings through narrative

descriptions, tables, and charts to support the interpretation of classroom actions. Conclusion drawing and verification were conducted iteratively until the results were deemed valid and reliable (Nowell, Norris, White, & Moules, 2017; Sugiyono, 2016).

Quantitative analysis focused on measuring students critical thinking and social skills, with a success criterion set at 85% or higher, reflecting a high level of competency according to the established standards (Education, 2019; Sugiyono, 2016; Suharsimi, 2015).

To ensure validity, triangulation was applied by combining multiple data sources and methods, including questionnaires, observation sheets for students and teachers, and project documentation (Creswell & Clark, 2017; Flick, 2022). Qualitative data were analyzed narratively to complement quantitative results, ensuring alignment between the two types of data and providing a comprehensive interpretation of the improvements in students critical thinking and social skills as a result of QR Code-based Project-Based Learning (Fetters, Curry, & Creswell, 2013; Guetterman, Fetters, & Creswell, 2015; Suharsimi, 2015).

3 FINDINGS AND DISCUSSION

3.1 Findings

The implementation of an integrated QR Code-based Project-Based Learning (PjBL) approach had a significant positive effect on the critical thinking and social skills of fifth-grade students at SDN 01 Kartoharjo, Madiun City. These findings were derived from three consecutive action cycles, systematically analyzed in Table 4.

Table 4. Improvement in Students Critical Thinking and Social Skills

Assessed Aspect	Pre-Cycle (%)	Cycle I (%)	Cycle II (%)	Improvement (percentage points)
Critical Thinking	43	75	86	43
Social Skills	39	86	93	54

The analysis shows that both aspects experienced substantial improvement. In critical thinking skills, student achievement increased from 43% in the pre-cycle to 86% in Cycle II. The largest gain occurred between the pre-cycle and Cycle I, with an increase of 32 percentage points, indicating that QR Code-based project activities facilitated students access to information, problem analysis, and logical reasoning.

For social skills, achievement rose from 39% to 93%, representing a total increase of 54 percentage points. Students demonstrated tangible development in their ability to collaborate, communicate, and take responsibility within groups. The use of QR Codes enabled more dynamic interaction, allowing students to share links, follow digital instructions, and engage in discussions based on shared resources.

The progression of both aspects is illustrated in Figure 1.

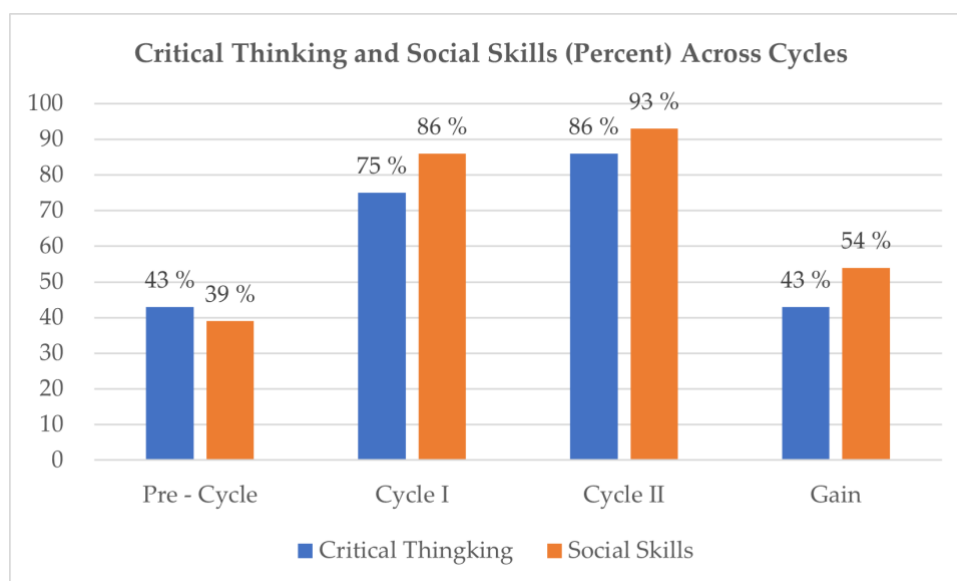


Figure 1. Improvement in Students Critical Thinking and Social Skills Across Cycles

Overall, these results indicate that QR Code-based PjBL successfully established a collaborative, interactive, and student-centered learning environment. QR Code media facilitated students access to digital learning resources, such as texts, videos, and project guides, enabling them to learn independently, reflectively, and with a focus on real-world problem-solving.

3.2. Discussion

The findings of this study demonstrate that the integration of QR Code-supported Project-Based Learning (PjBL) effectively enhanced both students' critical thinking and social skills in elementary Integrated Science and Social Studies (IPAS). The improvements observed across the two action cycles indicate that combining project-based pedagogy with accessible digital technology creates a learning environment that encourages inquiry, collaboration, and reflective learning. Quantitatively, critical thinking increased from 43% during the pre-cycle to 86% in Cycle II, while social skills improved from 39% to 93%. These progressive gains suggest that the intervention not only improved students' academic engagement but also facilitated the development of higher-order cognitive processes and productive interpersonal interactions. Rather than functioning merely as a supplementary technological tool, QR Codes served as instructional scaffolds that guided students through inquiry activities, enabled independent access to learning resources, and supported collaborative project completion.

The improvement in critical thinking can be interpreted through constructivist learning theory, which posits that knowledge is actively constructed through meaningful engagement with authentic problems rather than passively transmitted by teachers. Throughout the intervention, students were required to identify problems, gather and evaluate information from QR Code-linked resources, discuss alternative explanations, formulate solutions, and present project outcomes collaboratively. These learning experiences required students to continuously analyze evidence, justify decisions, and reflect upon their understanding, all of which represent core dimensions of critical thinking (Facione, 2020). Unlike traditional teacher-centered instruction, QR Code-supported PjBL positioned students as active investigators responsible for constructing knowledge through exploration and collaborative inquiry. Consequently, the substantial increase in critical thinking scores reflects not only greater content mastery but also improvements in students' reasoning, evaluation, and decision-making abilities. This finding is consistent with the meta-analysis conducted by Chen and Yang (2019), which concluded that Project-Based Learning significantly improves higher-order thinking when students engage in sustained inquiry and authentic problem solving.

An important contribution of this study lies in explaining how QR Code technology strengthened the pedagogical effectiveness of Project-Based Learning rather than simply digitizing instructional materials. Previous studies have frequently used QR Codes as tools for rapid access to information or multimedia content (Li & Tsai, 2017; Pranata et al., 2024). In contrast, the present study embedded QR Codes within each stage of the project cycle as instructional scaffolds supporting investigation, information gathering, collaborative discussion, and reflection. This pedagogical integration aligns closely with the Technological Pedagogical Content Knowledge (TPACK) framework, which emphasizes that educational technology becomes meaningful only when technology, pedagogy, and content knowledge are intentionally integrated (Koehler et al., 2013; Scherer et al., 2019). Rather than replacing teacher instruction, QR Codes extended learning opportunities by enabling students to independently access videos, digital worksheets, authentic cases, and project guidelines while maintaining collaborative interaction within their groups. Therefore, the positive outcomes observed in this study are better explained by pedagogically meaningful technology integration than by the mere presence of digital media.

The findings also demonstrate that social skills improved more substantially than critical thinking, increasing by 54 percentage points compared with a 43-point improvement in critical thinking. This difference deserves particular attention because it illustrates the distinctive characteristics of Project-Based Learning. Collaborative project activities naturally require students to negotiate responsibilities, exchange ideas, resolve disagreements, communicate effectively, and collectively achieve shared goals. These repeated social interactions provide continuous opportunities to develop teamwork, empathy, respect for different opinions, and interpersonal responsibility. From the perspective of Vygotsky's social constructivism, cognitive development is fundamentally mediated through social interaction within the Zone of Proximal Development, where learning occurs through communication, collaboration, and scaffolding provided by teachers and peers (Mulyatno, 2022). Consequently, the greater improvement in social skills is theoretically understandable because collaboration constitutes the central mechanism through which Project-Based Learning operates. Similar findings have been reported in previous research indicating that collaborative PjBL environments significantly strengthen students' communication, cooperation, and social competence (Condliffe, 2017; Sa'diyah et al., 2023).

Beyond improving collaborative behavior, the intervention also fostered greater student autonomy and self-regulated learning. During the first cycle, many students remained dependent on teacher explanations when navigating QR Code resources and organizing project tasks. However, by Cycle II, students demonstrated increased confidence in independently accessing digital materials, interpreting information, distributing group responsibilities, and solving emerging problems with minimal teacher intervention. This behavioral progression suggests that QR Code-supported PjBL gradually shifted classroom dynamics from teacher-directed instruction toward learner-centered inquiry. Such findings support experiential learning theory, which argues that meaningful learning occurs through iterative cycles of concrete experience, reflective observation, conceptualization, and active experimentation (Morris, 2020). The repeated implementation of project cycles enabled students to refine both cognitive strategies and collaborative behaviors through continuous reflection and practical application.

Another noteworthy finding concerns the interaction between digital technology and student engagement. QR Codes did not merely increase technological exposure; instead, they transformed students' engagement by making learning resources immediately accessible, interactive, and contextually connected to project activities. Previous studies have suggested that digital technologies enhance learning only when integrated within sound pedagogical frameworks rather than functioning as isolated instructional innovations (Fabian et al., 2024; Petko, 2012). The present findings support this argument by demonstrating that students' increased engagement emerged from meaningful project participation rather than from the novelty of QR Code technology itself. Students actively discussed multimedia resources, compared information obtained from different digital sources, and collaboratively evaluated project evidence before presenting their conclusions. These activities fostered

analytical reasoning while simultaneously strengthening communication and teamwork, illustrating how technology-enhanced inquiry can facilitate multiple dimensions of twenty-first-century competence.

Despite these positive outcomes, several limitations should be acknowledged when interpreting the findings. First, the research was conducted in a single classroom involving only twenty-eight students, limiting the generalizability of the results to broader educational contexts. Second, the Classroom Action Research design did not include a control group, making it difficult to attribute observed improvements exclusively to the intervention because repeated practice, teacher attention, or classroom familiarity may also have contributed to students' progress. Third, although observation rubrics and questionnaires were triangulated through documentation, assessments of critical thinking and social skills inevitably involve some degree of observer judgment. Finally, the relatively short duration of the intervention prevents conclusions regarding the long-term sustainability of students' cognitive and social development. Future research should therefore employ longitudinal or quasi-experimental designs involving larger and more diverse samples, incorporate standardized performance-based assessments, and investigate whether QR Code-supported Project-Based Learning produces sustained improvements across different subjects and educational settings.

Overall, this study contributes both theoretically and practically to technology-enhanced elementary education. Theoretically, it extends existing Project-Based Learning literature by demonstrating how QR Codes can function as pedagogical scaffolds that support constructivist inquiry rather than merely serving as information-access technologies. The findings further strengthen the integration of constructivism, social constructivism, experiential learning, and TPACK by illustrating how these complementary perspectives jointly explain the development of critical thinking and social competence within digitally supported project environments. Practically, the study provides an instructional model that is feasible for elementary schools because QR Codes represent an inexpensive and widely accessible technology requiring minimal infrastructure. Teachers can therefore integrate QR Codes strategically throughout project activities to facilitate inquiry, collaboration, reflection, and independent learning, thereby supporting the broader educational objective of developing twenty-first-century competencies in accordance with the principles of Indonesia's Merdeka Curriculum.

4 CONCLUSION

This study concludes that integrating QR Code-based Project-Based Learning (PjBL) into fifth-grade IPAS instruction can create a more active, collaborative, and contextual learning environment while supporting students' critical thinking and social skills. The findings address the study purpose by showing that QR Codes are not merely supplementary digital tools but can function as instructional scaffolds within structured project activities. Theoretically, this study contributes to technology-integrated PjBL literature by demonstrating how accessible digital tools can mediate higher-order thinking and social interaction in primary education, especially in resource-limited contexts.

Practically, the study offers elementary teachers a feasible model for meaningful technology integration without requiring complex infrastructure. QR Code-supported project activities can guide inquiry, increase engagement, and strengthen collaboration. However, the study is limited by its single-classroom setting, small sample, uncontrolled baseline differences, possible observer subjectivity, and short intervention duration. Future research should involve larger and more diverse samples, apply more standardized and objective assessment instruments, use stronger data triangulation, and conduct longitudinal studies to examine the sustainability of learning outcomes across subjects and educational levels.

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Conflict of Interest: The authors affirm that this research was conducted free from any conflicts of interest.

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