

# Needs Analysis for Developing an E-Module to Enhance Critical Thinking in Elementary Social Studies Learning

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**Abstract:** This study analyzes learning needs as the foundational basis for developing an electronic module (E-Module) aimed at strengthening elementary students' critical thinking skills in social studies. The research was conducted in three public elementary schools in Bogor City using a descriptive qualitative design through classroom observations, semi-structured interviews, and questionnaire administration involving 60 students and six teachers. The findings indicate that students' critical thinking abilities predominantly remain at the lower-order levels of Bloom's taxonomy. Although 58% of students were able to recall factual information and 61% could restate basic concepts, only 22% demonstrated the ability to apply concepts to novel situations. Moreover, merely 15% were capable of analyzing, and only 8% were able to evaluate social issues presented during instruction. Learning practices are heavily dominated by teacher-centered lectures and textbook dependency, with limited utilization of digital and interactive learning media. Teachers also reported constraints related to insufficient digital resources, limited pedagogical-technology integration skills, and challenges in designing inquiry-oriented materials that support higher-order thinking. These conditions underscore the urgent need for pedagogical innovation through the development of digital E-Modules that scaffold reasoning processes, facilitate inquiry-based learning, and promote higher-order thinking in alignment with the competency demands of the Merdeka Curriculum. The outcomes of this needs analysis provide a substantive empirical foundation for subsequent stages of E-Module design, particularly the development of culturally responsive and technology-enhanced instructional materials that can improve student engagement, conceptual mastery, and critical thinking performance within the elementary social studies context.

**Keywords:**

Critical Thinking, Digital Learning, Elementary Education, E-Module, Social Studies,

## 1. INTRODUCTION

In today's era of rapid digital transformation, education faces the dual challenge of preparing students to navigate an information-rich world by fostering the ability to think critically, evaluate evidence, and make informed decisions. These skills – known as *twenty-first-century skills* – are essential for lifelong learning, civic participation, and sustainable development (1). Within the Indonesian context, *the Merdeka curriculum emphasizes* these skills by positioning students as active knowledge constructors capable of inquiry, reflection, and problem-solving (2). However, empirical data from national and local assessments show that elementary school students' critical thinking skills remain below expectations, especially in social studies (3),(4),(5).

Social Studies (*Ilmu Pengetahuan Sosial/IPS*), which is tightly integrated into the broader theme of *Ilmu Pengetahuan Alam dan Sosial (IPAS)*, plays a crucial role in developing not only cognitive understanding, but also civic values, empathy, and social responsibility (6), (7).

Ideally, teaching social studies should encourage students to analyze social phenomena, question assumptions, assess causes and effects, and propose constructive solutions to community issues (8). However, classroom observations and recent studies suggest that learning often remains teacher-centered and textbook-driven, with limited opportunities for research- or project-based activities (9), (10).

### 1.1 Background and Problem Context

The ability to think critically represents one of the central goals of education in the twenty-first century. It involves interpreting information, evaluating arguments, and making evidence-based judgments (11),(12),(13),(14). However, some studies have consistently shown that at the primary level, Indonesian students struggle to achieve higher levels of Bloom's taxonomy, such as analysis (C4), assessment (C5), and creation (C6) (15),(16). Observations at three primary schools in Bogor City – SDN Bhayangkari, SDN Policy 2, and SDN Lawang Gintung 1 found that only 15% of students were able to identify causal relationships in social issues, 8% were able to assess social behaviour, and only 5% showed creative problem-solving skills.

Teachers reported that learning activities were dominated by lectures and reading from textbooks. About 55% of students said that classroom learning helps them understand the basic facts, but 40% rarely use digital learning media due to limited access and device limitations. Discussion-based activities occur sporadically, and students often rely on memorization rather than conceptual understanding. One teacher said, *"The students remember the facts but struggle to explain why they are important."* This statement reflects the cognitive gap between knowledge, memory, and higher-order thinking identified in national surveys (17),(18).

These findings show a mismatch between curricular expectations, which promote research, contextual understanding, and digital literacy, and classroom realities that still rely on traditional methods. The result is a dissonance between students' potential for critical reasoning and the learning environment designed to cultivate it.

### 1.2 Theoretical Foundation and Previous Studies

Critical thinking is conceived as a multifaceted cognitive process that includes interpretation, analysis, evaluation, conclusion, and self-regulation (11). It is not only a skill, but also a mindset that requires curiosity, open-mindedness, and reflective judgment (19),(20).

Researchers have emphasized that fostering critical thinking requires learning environments that are dialogical, research-based, and culturally responsive (21),(22).

In recent years, digital learning tools – especially electronic modules (E-modules) – have been recognised as effective tools to support student-centred learning. Electronic modules combine multimedia, interactivity, and adaptive feedback to foster deeper understanding and engagement (23),(24),(25). They allow for flexible access, visual explanations of abstract concepts, and self-paced learning that meets the needs of different learners. Additionally, studies show that integrating electronic modules with higher-order thinking frameworks like HOTS and research-based learning significantly improves students' analytical and reflective abilities (26).

Despite these benefits, the availability of electronic modules for elementary social studies remains limited, especially those that align with the cultural and contextual realities of Indonesian students (27),(28). Many existing texts remain linear and text-heavy, offering minimal interactivity and neglecting local wisdom as a source of learning (29). Thus, in light of the *Merdeka curriculum*, the development of electronic modules should be based on the principles of *culturally responsible* teaching, recognising students' local experiences and using them as a bridge towards broader conceptual understanding (21),(22).

### 1.3 Research Gap and Rationale

While numerous studies have examined the impact of electronic modules on learning outcomes in science and mathematics (30),(31),(32), little *has explored the needs analysis phase* as a basis for the development of such digital learning materials in social studies. This stage is critical to ensure that the final product addresses the real-world challenges faced by teachers and students. As (33),(34) note, the success of developing educational products depends on accurately identifying student needs and learning gaps.

In this study, the needs analysis serves as the first step towards designing an electronic module tailored to the learning characteristics of primary school students, the local culture, and the goals of developing critical thinking. By systematically mapping learning needs, the research aims to answer the following questions:

- a. What are the current conditions for teaching social studies in primary schools in relation to the development of critical thinking?

- b. What challenges do teachers and students face in implementing technology-based research and learning?
- c. What learning features are needed in an e-module to effectively support critical thinking?

#### 1.4 Research Objectives and Significance

The main objective of this research is to analyze the learning needs that can guide the development of an electronic module to improve the critical thinking of elementary school students in social studies. The study provides empirical evidence on the cognitive gaps between actual and desired learning outcomes, identifies pedagogical and technological needs, and formulates practical implications for digital learning design.

The importance of this study lies in three aspects:

- a. **Theoretical Contribution:** It reinforces the theoretical connection between *constructivism*, *culturally responsible pedagogy*, and *digital learning innovation* within the context of elementary social studies.
- b. **Practical Contribution:** It provides concrete input for teachers and curriculum developers to design electronic modules that integrate local culture and promote higher-order thinking.
- c. **Policy Implication:** It supports the *Merdeka curriculum* agenda to promote differentiated and contextualized learning experiences.

#### 1.5 Conceptual Framework

The conceptual foundation of this study integrates the principles of *constructivism* (35), (36),(37), *multimedia learning* (38), and *culturally responsive teaching* (39), (21). Within this framework, students actively construct knowledge through interaction, reflection, and problem-solving supported by digital media. An effective E-Module should therefore:

- a. Facilitate active inquiry through contextual and problem-based tasks;
- b. Provide visual and interactive stimuli that enhance cognitive engagement;
- c. Reflect local culture to sustain emotional connection and motivation;
- d. Scaffold students' reasoning from basic recall toward analytical and evaluative thinking.

This framework serves as the conceptual lens for analyzing current learning conditions and designing the future E-Module prototype.

## 2. METHODOLOGY

### 2.1 Research Design

This study adopted a **qualitative descriptive research design** to analyze learning needs informing the development of an electronic module aimed at improving critical thinking in the teaching of elementary social studies. Quality descriptive research is suitable for examining natural phenomena in the classroom and understanding the real-world experiences of teachers and students (40). The design also corresponds to the first phase of the **research and development (R&D) models** proposed by (33),(34), emphasizing the importance of a needs analysis as a basis for the development of educational products.

This research focused on identifying the gaps between *the ideal learning conditions* required by *the Merdeka curriculum* and *the real-world practices* found in classrooms. Through this design, the study sought to capture authentic data on students' learning difficulties, teachers' pedagogical challenges, and the potential roles of digital media in promoting higher-order thinking.

### 2.2 Research Site and Participants

The study was conducted in three public primary schools in Bogor City, Indonesia: **SDN Bhayangkari**, **SDN Polisi 2**, and **SDN Lawang Gintung 1**. These schools were chosen based on the representation of diverse student populations and learning environments. Each school implements *the Merdeka curriculum*, but faces different levels of availability of digital resources.

The participants included **60 third-grade students** and **six teachers** (two from each school). Participants were deliberately selected to ensure the involvement of experienced teachers in teaching social studies and students representing different levels of academic achievement. The average age of the students was 9-10 years old, which corresponds to the concrete operational phase of cognitive development as described by (41).

### 2.3 Data Collection Instruments

The data was collected using **three complementary tools**: observation sheets, semi-structured interviews, and questionnaires.

- a. **Observation sheets** were used to record classroom interactions, learning methods, media use, and student engagement during social studies lessons.
- b. **Teacher interviews** focused on their perceptions of students' critical thinking, challenges in teaching social studies, and familiarity with digital learning media.
- c. **Student questionnaires** measured students' perceived learning experiences, use of digital tools, and levels of engagement in analytical tasks.

The triangle of these tools provided a comprehensive understanding of the current learning environment (42). Additionally, field notes and photos of classroom activities provided contextual insights into how the learning materials were implemented.

#### 2.4 Data Analysis Procedure

The data analysis followed the interactive model of (43), which consists of three phases:

- a. **Data reduction** – organizing and condensing observation notes, interview transcripts, and questionnaire responses;
- b. **Data display** – visualizing findings through maps and narrative summaries;
- c. **Inference and verification** – interpret patterns and verify them across data sources.

Quantitative elements from the questionnaires (p.sh, percentages of students showing certain levels of cognitive ability) were integrated into the qualitative interpretation to reinforce the validity of the findings. Reliability was ensured through peer-to-peer questions between researchers and cross-checking with teachers to confirm the accuracy of the data.

### 3. RESULTS AND DISCUSSION

#### 3.1 Overview of Current Learning Conditions

Observations in all three schools found that social studies teaching is dominated **by teacher-centered methods** such as lectures and note-taking. Teachers rely primarily on printed textbooks provided by the Ministry of Education. About **55% of students** reported that classroom explanations helped them understand basic facts, while **45%** expressed difficulty connecting lessons to real-world contexts.

Although *the Merdeka curriculum* encourages project-based research and learning, **only 22% of students were** observed participating in hands-on activities, such as mapping their environment or analyzing community issues. Most students passively listened to explanations and memorized definitions without further questions or analysis.

Digital tools are rarely integrated into lessons. Only **40% of students** indicated that they had ever used digital media (p.sh, videos, or interactive slides) during social studies. Teachers cite limited access to school equipment and inadequate training as the main barriers. One teacher explained, "*We have some digital tools, but we're not sure how to integrate them effectively into lessons.*"

This finding is in line with national reports showing a significant digital readiness gap between urban and suburban schools (2). As a result, the learning process often fails to stimulate curiosity or critical reflection, as students remain at the levels of *memory* and *understanding* in Bloom's taxonomy (44),(45).

### 3.2 Students' Critical Thinking Profiles

The questionnaire data showed that only a handful of students showed higher-order cognitive skills. **58%** were able to accurately recall (*recall*) factual information **61%** were able to restore basic concepts (*understanding*), **22%** can apply these concepts to new examples (*application*). Only **15%** were able to analyze cause-and-effect relationships in social phenomena (*analysis*). Only **8%** were able to assess social behavior or express (*evaluate*) judgments. And **5%** showed creativity in proposing (*creating*) solutions.

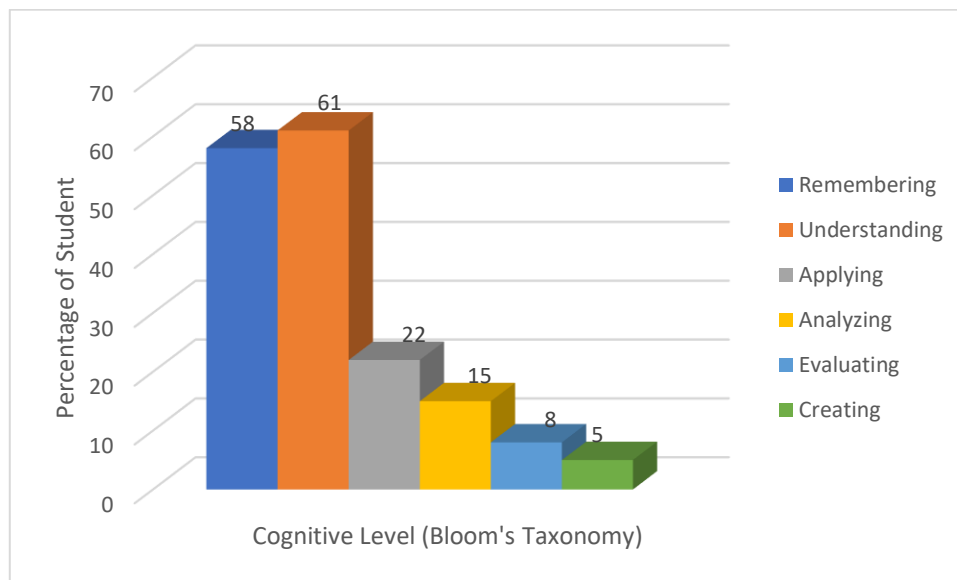


Table 1. Students' Critical Thinking Levels in Elementary Social Studies Learning

These figures suggest that most students remain at low cognitive levels. Similar patterns have been reported in previous studies highlighting students' difficulties in relating abstract social concepts to concrete experiences (46),(8).

When asked to explain concepts such as *tolerance* or *community responsibility*, students often repeated textbook definitions without elaborating. One student said, "*I know what tolerance means, but I can't explain why it's important.*" This statement reflects limited analytical depth and a lack of contextual understanding.

These results confirm the argument that **social studies instruction in primary schools has not yet achieved its intended cognitive and character-building goals** (47),(48). The lack of inquiry-driven guidance and reflective dialogue limits students' ability to develop the reasoning skills necessary for true citizenship.

### 3.3 Teachers' Perceptions and Challenges

Interviews with teachers revealed some recurring challenges:

- a. **Limitations in instructional design.** Teachers rarely develop lesson plans aimed at higher-order thinking outcomes. They tend to prioritize content coverage over deep exploration due to time constraints.

- b. **Limited digital competence.** Most teachers have recognized the importance of digital learning but feel unprepared to create or manage electronic modules. As one teacher said, *"I want to make learning more interactive, but I don't know where to start."*
- c. **Assessment practices.** Assessment is dominated by multiple-choice questions that measure memory rather than analytical reasoning.
- d. **Lack of contextual material.** Textbooks do not represent local culture and social realities, which reduces student engagement and emotional connection.

These findings resonate with previous studies showing that teachers' technological and pedagogical readiness significantly impacts the integration of digital innovation in classrooms (25),(49). According to **the Technology Acceptance Model (50)**, perceived usability and ease of use determine whether educators adopt new technologies. Without adequate support and training, teachers can resist the transition from traditional to digital ways.

### 3.4 Identified Learning Needs

Based on triangular data, the study identified four key needs that need to be addressed in the development of an electronic module for learning social studies:

#### 1. **Interactive and Research-Based Learning Design**

Students need learning activities that encourage exploration, questioning, and problem-solving. Integrating research tasks can help bridge the gap between external learning and critical reasoning (51),(52).

#### 2. **Integration of local culture and context**

Teachers emphasized that students react better when learning materials reflect their immediate environment. Thus, e-modules should include local cultural narratives and relevant examples for students' daily experiences (53),(21).

#### 3. **Digital interactivity and multimedia**

Module E should combine text, visuals, animations, and sound to retain attention and improve conceptual understanding (38),(54). Interactive quizzes and game assessments are expected to improve motivation (55).

#### 4. Higher-order thinking scaffolds

Instruction and learning activities should systematically guide students from simple memory to complex analysis and evaluation, following Bloom's revised taxonomy (45). Structured reflection journals, case studies, and digital discussion boards can serve this purpose.

These identified needs are consistent with previous studies highlighting how digital tools can transform passive learning environments into interactive, research-rich spaces (56),(57).

#### 3.5 Discussion

The findings highlight a critical difference **between curricular expectations and classroom realities** in the development of critical thinking through social studies. While *the Merdeka curriculum* makes contextual, student-centered, and technology-integrated learning mandatory, real-world practices remain largely traditional.

This gap reflects broader global challenges. Research across Southeast Asia and similar educational contexts shows that systemic barriers – such as limited digital infrastructure and teacher readiness – hinder the effective implementation of higher-order thinking curricula (58), (59).

From a theoretical standpoint, the results confirm **constructivist learning theory**, which emphasizes that students actively build understanding through meaningful interaction rather than passive waiting (35),(36). When students are limited to external activities, they do not develop metacognitive awareness and critical reflection. Conversely, digital modules that enable exploration, feedback, and cultural relevance can activate *the Student Proximal Development Zone* (ZPD), promoting cognitive growth.

Additionally, incorporating *cultural teaching provides* emotional and contextual engagement, which has been shown to significantly improve motivation and understanding of learning. By connecting abstract social concepts with popular cultural practices, teachers can stimulate curiosity and empathy, two mindsets essential to critical thinking (60).

Finally, the results of the study confirm that a **systematic needs** analysis is indispensable for effective educational design. Following the R&D framework (61), identifying learner characteristics, environmental constraints, and learning objectives precedes each stage of product development. Neglecting this step often results in tools that aren't aligned with users' realities.

Therefore, this study provides a research-based basis for developing an **E-Module prototype** that integrates higher-order interactive multimedia, local culture, and higher-order cognitive scaffolding. Such a product can catalyze transforming social studies learning into an engaging, reflective, and research-driven process – in line with the vision of *the Merdeka curriculum* and education of the XXI century.

#### 4. Conclusion

This study conducted a comprehensive needs analysis as a basis for the development of an electronic module (E-module) aimed at improving critical thinking in the teaching of elementary social studies. The findings show a consistent pattern in three public schools in Bogor City: learning remains largely traditional, dominated by teacher-centered learning, limited use of digital tools, and minimal emphasis on research or reflective learning. As a result, students' critical thinking abilities remain at the lowest levels of Bloom's taxonomy, with only a small percentage demonstrating analytical or evaluative skills.

Teachers' testimonials highlight enthusiasm and uncertainty in adopting digital learning innovations. They express a strong desire for interactive and culturally relevant resources, but recognize limited technical competence and time to design them. Therefore, the learning environment requires a structured digital solution that not only provides engaging materials but also higher-order reasoning.

From the analysis, four main needs were identified:

- a. **Interactive, research-based learning designs** that promote exploration and reasoning;
- b. **Integrating local culture and context** to improve student relevance and motivation;
- c. **multimedia interactivity** that supports visual and experiential learning; and
- d. **Structured scaffolding for higher-order thinking**, guiding students from memory to analysis and evaluation.

The study contributes to theory and practice in several ways.

- a. **Theoretically**, it validates the integration of *constructivism*, *culturally responsible pedagogy*, and *multimedia learning theory* as fundamental frameworks for the development of effective electronic modules.
- b. **Practically**, it provides concrete empirical data that can guide the design of a prototype E module that responds to real-world classroom conditions, teachers' skills, and students' cognitive needs.
- c. **In terms of policy**, the findings support the *Merdeka curriculum's* vision to promote contextualized, differentiated, and technology-assisted learning experiences.

Ultimately, this research underlines that the success of educational technology innovation does not depend on the sophistication of the tools themselves, but on *their alignment with the students' contexts and cognitive development goals*. A well-designed electronic module can transform social studies from a memorization topic into a meaningful exploration of community, culture, and citizenship – nurturing analytical thinkers, evaluators, and creators ready to tackle real-world challenges.

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