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Transforming Social Studies Learning in MI/SD through the Integration of Problem-Based Learning and Augmented Reality to Strengthen HOTS: A Literature Review

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ABSTRACT

Social Studies (IPS) learning at the Madrasah Ibtidaiyah (MI) and Elementary School (SD) levels continues to face challenges, including teacher-centered instruction, memorization-oriented learning, limited contextual experiences, and the underutilization of educational technology to foster Higher Order Thinking Skills (HOTS). These conditions highlight the need for a learning transformation that integrates innovative pedagogy with digital technology. This study aims to analyze the transformation of Social Studies learning through the integration of Problem-Based Learning (PBL) and Augmented Reality (AR) as a conceptual approach to strengthening students' HOTS. The study employed a library research design using a systematic literature search conducted between January and April 2026 across Google Scholar, Scopus, ERIC, ScienceDirect, and SpringerLink. Following predefined inclusion and exclusion criteria, 38 relevant publications published between 2020 and 2026 were selected through identification, screening, eligibility assessment, and qualitative conceptual synthesis. Data were analyzed using content analysis to identify recurring themes and conceptual relationships among learning transformation, PBL, AR, and HOTS. The synthesized literature suggests that integrating PBL and AR provides complementary pedagogical and technological support for creating more contextual, interactive, collaborative, and student-centered Social Studies learning environments that encourage higher-order thinking. The reviewed evidence further indicates that the successful implementation of this approach depends not only on instructional innovation but also on teachers' pedagogical competence, technological readiness, and institutional support. Overall, the literature synthesis provides a conceptual framework that may inform future instructional practices and empirical research on technology-enhanced Social Studies learning at the MI/SD level.

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INTRODUCTION

Social Studies (IPS) learning at the Madrasah Ibtidaiyah (MI) and Elementary School (SD) levels plays a crucial role in shaping students' understanding of social phenomena, environmental awareness, and critical thinking skills. However, instructional practices remain dominated by teacher-centered methods and rote memorization, positioning students mainly as

passive recipients of information rather than active constructors of knowledge (Satriani et al., 2025). This condition hinders the development of Higher Order Thinking Skills (HOTS), such as analyzing, evaluating, and problem-solving (Aulia & Prastowo, 2024). As a result, students struggle to connect Social Studies concepts with real-life experiences (Yona et al., 2023). Moreover, the rapid growth of digital technology has not been fully integrated into Social Studies instruction, despite its potential to foster contextual, interactive, and meaningful learning (Imaduddin et al., 2024). Consequently, Social Studies learning often remains textual and abstract, limiting its ability to provide deep and engaging experiences. Therefore, a transformation toward innovative, student-centered approaches is urgently needed to strengthen 21st-century competencies and enhance the relevance of Social Studies in everyday life.

Recent studies highlight that Problem-Based Learning (PBL) significantly enhances elementary students' critical thinking, analytical reasoning, collaboration, problem-solving, and overall learning outcomes (Burhan, 2026; Sari et al., 2025). Within Social Studies learning, PBL proves effective as it engages students in authentic social issues, connects lessons to real-life contexts, and fosters active knowledge construction through inquiry and collaboration (Aulia & Prastowo, 2024). Meanwhile, Augmented Reality (AR) has emerged as a powerful educational technology, offering improved visualization, heightened engagement, experiential learning, and support for higher-order thinking through interactive digital environments (Lu et al., 2025). Recent research exploring the integration of PBL and AR shows promising impacts on learning experiences and cognitive development (Imaduddin et al., 2024; Jihanifa et al., 2025). However, most of these studies focus on science, physics, or general elementary contexts, with limited attention to Social Studies at the MI/SD level. Moreover, prior research often emphasizes effectiveness, achievement, or critical thinking without fully conceptualizing how PBL–AR integration can serve as a transformative instructional framework for strengthening HOTS in Social Studies. This leaves a notable research gap in developing a comprehensive strategy that combines problem-based pedagogy and immersive digital technology to create contextual, interactive, student-centered, and HOTS-oriented Social Studies learning.

Unlike earlier studies that examined Problem-Based Learning (PBL) and Augmented Reality (AR) separately or focused on other disciplines, this study synthesizes contemporary literature to explain their integration as a comprehensive framework for transforming Social Studies learning at the MI/SD level. Rather than limiting its scope to learning outcomes or academic achievement, the study emphasizes the complementary roles of problem-based pedagogy and immersive technology in fostering Higher Order Thinking Skills (HOTS). This conceptual contribution enriches the discourse on learning transformation by offering a theoretical foundation for integrating innovative instructional models with digital tools in primary Social Studies education. The study aims to develop a conceptual framework for Social Studies learning based on PBL–AR integration to strengthen HOTS, while analyzing how this approach creates contextual, interactive, collaborative, and higher-order thinking–oriented experiences. Additionally, it provides practical insights for teachers to implement innovative strategies that optimize digital technology in Social Studies classrooms. More broadly, it contributes to curriculum development that is adaptive to technological advances and responsive to contemporary competency demands. By positioning PBL–AR integration as a transformative framework, the study offers an alternative approach to address persistent

challenges in Social Studies learning and promote meaningful, technology-enhanced experiences for elementary students.

Research on integrating Problem-Based Learning (PBL) and Augmented Reality (AR) in Social Studies education is increasingly important because contemporary educational transformation requires instructional approaches that combine meaningful pedagogy with digital innovation. In line with the novelty of this study, the integration of PBL and AR is conceptualized as a learning transformation framework that promotes contextual, interactive, and student-centered learning while strengthening Higher Order Thinking Skills (HOTS). From a constructivist perspective, meaningful knowledge is developed through active engagement, interaction, and reflection on authentic learning experiences (Ardiyanti & Pritasari, 2024). Likewise, Experiential Learning Theory emphasizes that concrete experiences and reflective learning processes, both facilitated by the complementary roles of PBL and AR, contribute significantly to deeper conceptual understanding (Lu et al., 2025). Furthermore, the Revised Bloom's Taxonomy highlights that analyzing, evaluating, and creating require authentic problem-solving environments. Therefore, integrating PBL and AR provides a strong theoretical foundation for transforming Social Studies learning while fostering students' HOTS (Imaduddin et al., 2024).

Learning transformation represents a fundamental change in the educational process that encompasses not only improvements in teaching methods but also shifts in paradigms, strategies, and the utilization of technology to create learning experiences that are more relevant to students' needs. In modern education, learning transformation is understood as a systematic effort to shift from teacher-centered instruction toward student-centered, collaborative, adaptive, and digitally supported learning environments (Wang et al., 2024). This transformation has evolved in response to the growing demand for critical thinking, creativity, communication, collaboration, and digitalliteracy skills, which have become essential competencies in the global era (Rêgo et al., 2024). Furthermore, learning transformation is viewed as a process of educational reconstruction that integrates pedagogical innovation with technology to foster more effective and meaningful learning experiences (Medranda & Briones, 2025). Within the context of primary education, such transformation is necessary to help students connect academic concepts with real-life experiences while simultaneously developing independent learning skills through interaction, exploration, and reflection.

The manifestation of learning transformation can be observed in the shift from information-transfer-based instruction toward knowledge-construction-based learning, where students are positioned as the primary actors in the learning process (Allouche, 2024). This transformation is also characterized by the increasing integration of digital technologies, enabling more flexible, personalized, and interactive learning experiences (Gkrimpizi et al., 2024). Various innovative learning models, including project-based learning, inquiry learning, blended learning, and problem-based learning, have become integral components of this transformation because they promote students' active engagement in constructing conceptual understanding (Wang et al., 2024). In practice, teachers no longer function solely as sources of information but rather as facilitators and mediators of learning. Therefore, learning transformation constitutes a multidimensional change that integrates pedagogical innovation, educational technology, and the continuous development of students' competencies.

Problem-Based Learning (PBL) is a learning model that employs real-world problems

as the starting point of instruction to develop students' critical, analytical, creative, and problem-solving skills. This model is rooted in the constructivist approach, which posits that knowledge is constructed through experience and interaction with the learning environment rather than passively received from teachers (Burhan, 2026). In its implementation, students are presented with problems relevant to their daily lives, which they analyze, discuss, and solve collaboratively, thereby making learning more meaningful (Sari et al., 2025). Moreover, PBL encourages students to develop independent learning skills through information seeking, identifying alternative solutions, and evaluating the outcomes of problem-solving activiti (Kompas.com, 2024). In primary education, this model is particularly relevant because it connects learning materials with students' social realities while enhancing motivation, communication, collaboration, and reflective thinking, all of which are essential in contemporary education.

The manifestation of PBL is evident in the use of authentic problems as triggers for student learning activities (Kompas.com, 2024). Through this approach, students are encouraged to identify learning needs, gather information, and develop solutions based on analyses conducted individually or collaboratively (Aulia & Prastowo, 2024). PBL also emphasizes collaborative learning, enabling students to exchange ideas and construct shared understandings of the issues being examined (Burhan, 2026). Operationally, the stages of PBL include problem orientation, student organization, individual or group investigation, presentation of results, and reflection on the problem-solving process (Kompas.com, 2024). In Social Studies education, this approach can
be implemented through the analysis of social issues, community case studies, and the resolution of problems occurring within students' immediate environments.

Augmented Reality (AR) is a technology that enables the integration of virtual objects into real-world environments, allowing users to simultaneously perceive both physical and digital elements (Gillis, 2024). In education, AR facilitates the presentation of three-dimensional visualizations, animations, audio, and interactive information through digital devices such as smartphones and tablets (Godoy Jr., 2020). The presence of this technology provides more concrete learning experiences because students can observe representations of objects that would otherwise be difficult to visualize through textbooks or verbal explanations alone (Gillis, 2024). Furthermore, AR enhances learning engagement by offering interactive experiences that combine visual, auditory, and exploratory elements within a single learning environment (Lu et al., 2025). In Social Studies education, AR has the potential to visualize historical events, geographical conditions, and social phenomena in a more engaging and contextualized manner.

The manifestation of AR in education can be observed through the use of marker-based augmented reality, which displays virtual objects based on specific markers, and markerless augmented reality, which utilizes location and sensor technologies without requiring physical markers (Gillis, 2024; merriam-webster.com, 2026). AR is also implemented through interactive three-dimensional models that allow students to explore learning objects from multiple perspectives in real time (Godoy Jr., 2020). This technology can be applied through simulations, social phenomenon visualizations, virtual environment explorations, and context-based information delivery that enriches students' learning experiences (Lu et al., 2025). In Social Studies instruction, AR can be utilized to present interactive maps, reconstruct historical

events, and simulate social conditions that are difficult to observe directly. Therefore, AR demonstrates significant potential as an innovative educational technology capable of enhancing student engagement while simultaneously fostering higher-order thinking skills.

METHOD

This study employed a library research approach to develop a conceptual understanding of the transformation of Social Studies (IPS) learning through the integration of Problem-Based Learning (PBL) and Augmented Reality (AR) in strengthening Higher Order Thinking Skills (HOTS) at the Madrasah Ibtidaiyah (MI) and Elementary School (SD) levels. This approach was selected because it enables a systematic exploration and synthesis of scholarly literature related to learning transformation, innovative pedagogy, educational technology, and higher-order thinking skills without relying on primary field data (Anderson, 2026). The research focused on the challenges of Social Studies learning, including teacher-centered instruction, limited contextual learning, insufficient integration of digital technology, and the need to strengthen students' HOTS (Lu et al., 2025; Satriani et al., 2025; Yona et al., 2023).

To enhance methodological transparency, the literature search was conducted systematically between January and April 2026 using Google Scholar, Scopus, ERIC, ScienceDirect, and SpringerLink. Publications published between 2020 and 2026 were retrieved using combinations of the keywords *Problem-Based Learning, Augmented Reality, Social Studies Learning, Elementary Education, Madrasah Ibtidaiyah, Higher Order Thinking Skills (HOTS),* and *Learning Transformation*, combined through Boolean operators (AND, OR). Literature selection followed predefined inclusion and exclusion criteria based on publication type, relevance to the research topic, publication period, language, and accessibility of full-text documents. Subsequently, the retrieved publications underwent identification, duplicate removal, title and abstract screening, full-text eligibility assessment, and final selection according to their conceptual contribution and relevance to the research objectives. Although this study was not designed as a Systematic Literature Review (SLR), systematic literature search and screening procedures were employed to strengthen methodological rigor. The selected literature was then analyzed using content analysis to identify major themes, synthesize findings, and explain the relationships among learning transformation, PBL, AR, and HOTS within the context of Social Studies education (Guo et al., 2024; Sterner, 2024)

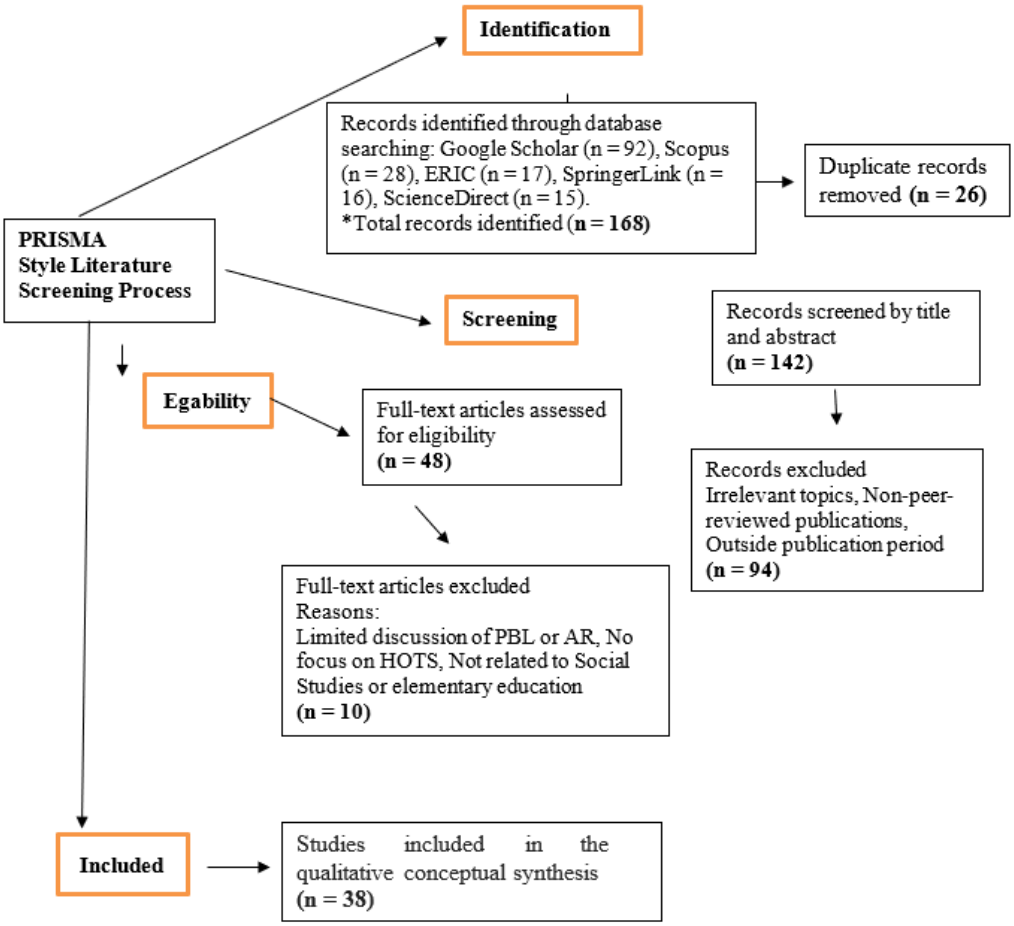

Figure 1: PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram for article selection for qualitative conceptual synthesis.

The theoretical framework of this study is based on three complementary perspectives. Constructivism Theory explains that meaningful knowledge is actively constructed through experience, interaction, and cognitive adaptation (Ardiyanti & Pritasari, 2024). Experiential Learning Theory emphasizes that learning develops through concrete experience, reflection, conceptualization, and active experimentation, with AR providing interactive learning experiences and PBL facilitating inquiry and collaborative problem-solving. In addition, the Revised Bloom's Taxonomy identifies analyzing, evaluating, and creating as the core indicators of Higher Order Thinking Skills (HOTS), forming the conceptual basis of this study.

Following the literature screening process, the selected publications were systematically documented, coded, classified, and compared according to their relevance to learning transformation, Problem-Based Learning, Augmented Reality, HOTS, and Social Studies education (Almira et al., 2023; Chourio-Acevedo et al., 2024). The data were then analyzed using content analysis, involving data reduction, thematic categorization, pattern identification, interpretation, and conceptual synthesis (Guo et al., 2024; Sterner, 2024). This procedure enabled the identification of conceptual relationships among learning transformation, PBL, AR, and HOTS, resulting in a comprehensive conceptual framework for transforming Social Studies learning at the MI/SD level.

FINDINGS

Learning Transformation as a Foundation for Strengthening Higher Order Thinking Skills in Social Studies Education

The thematic analysis of the reviewed literature identified three recurring patterns regarding the transformation of Social Studies learning at the Madrasah Ibtidaiyah (MI) and Elementary School (SD) levels. First, contemporary studies consistently emphasize a paradigm shift from teacher-centered instruction toward student-centered learning that actively engages learners in constructing knowledge through exploration, collaboration, and reflection (Ardiyanti & Pritasari, 2024; Gkrimpizi et al., 2024). Second, learning transformation increasingly involves the integration of digital technology to create more interactive, flexible, and meaningful learning environments that support students' active participation (Nevrelova et al., 2024; Purnama et al., 2024). Third, the literature highlights that strengthening contemporary education, including critical thinking, creativity, communication, collaboration, and digital literacy, has become a central objective of educational transformation, positioning Higher Order Thinking Skills (HOTS) as an essential outcome of Social Studies learning (Medranda & Briones, 2025; Wang et al., 2024).

The reviewed studies further demonstrate that these three transformation patterns are closely interconnected rather than operating independently. The transition toward student-centered learning encourages learners to construct conceptual understanding through authentic learning experiences, while digital technology enriches these experiences by providing interactive and contextual learning resources (Allouche, 2024; Gkrimpizi et al., 2024). Consequently, innovative instructional approaches such as Problem-Based Learning become increasingly relevant because they align with the broader objective of transforming learning from information transmission into knowledge construction (Wang et al., 2024). Collectively, the literature suggests that meaningful learning transformation requires simultaneous changes in pedagogical practices, teacher roles, learning environments, and technology integration to facilitate the development of higher-order cognitive competencies.

Despite these developments, the literature also reveals a persistent gap between the expected characteristics of learning transformation and the realities of Social Studies instruction in many MI/SD classrooms. Several studies report that Social Studies learning continues to rely heavily on lecture-based instruction, memorization activities, and limited contextual engagement, restricting students' opportunities to relate academic concepts to real-life social phenomena (Satriani et al., 2025; Yona et al., 2023). Furthermore, although educational technologies have developed rapidly, their integration into Social Studies instruction remains relatively limited, resulting in learning experiences that are often textual rather than experiential (Imaduddin et al., 2024). These recurring findings indicate that learning transformation should be understood not merely as the adoption of digital technology but as a comprehensive pedagogical change that integrates innovative instructional strategies and technology to strengthen students' Higher Order Thinking Skills within contemporary Social Studies education.

Pedagogical Contributions of Problem-Based Learning in Strengthening Higher Order Thinking Skills

The thematic synthesis identified three major pedagogical contributions of Problem-Based Learning (PBL) to the transformation of Social Studies learning. First, the reviewed studies consistently indicate that PBL promotes higher-order thinking by engaging students in authentic problem-solving, critical inquiry, and collaborative knowledge construction (Aulia & Prastowo, 2024; Burhan, 2026). Second, PBL encourages students to become active learners who identify learning needs, investigate information, evaluate alternative solutions, and communicate their findings through discussion and reflection (Sari et al., 2025). Third, the literature highlights that PBL creates more meaningful learning experiences by connecting classroom content with students' everyday social realities, thereby supporting the development of analytical, creative, and reflective thinking.

The reviewed literature further demonstrates that these pedagogical characteristics are closely related to the demands of contemporary Social Studies education. Rather than positioning teachers as the primary source of knowledge, PBL transforms their role into that of facilitators who guide students through inquiry, collaboration, and problem-solving (Burhan, 2026). This learning environment not only strengthens cognitive competencies but also develops communication, teamwork, and independent learning skills, all of which are essential components of twenty-first-century education (Aulia & Prastowo, 2024). Consequently, PBL contributes to the creation of a more participatory and student-centered instructional environment than conventional lecture-based approaches.

Despite these advantages, the literature consistently indicates that the implementation of PBL in Social Studies learning at the MI/SD level remains relatively limited. Conventional instruction continues to emphasize memorization and one-way knowledge transmission, reducing opportunities for students to analyze social issues and apply conceptual understanding in authentic contexts (Aulia & Prastowo, 2024; Putra & Lestari, 2024). Collectively, these findings suggest that PBL provides a strong pedagogical foundation for strengthening Higher Order Thinking Skills while supporting the broader transformation of Social Studies learning toward more contextual, collaborative, and inquiry-oriented educational practices.

Educational Potential of Augmented Reality in Transforming Social Studies Learning

The thematic synthesis identified three recurring contributions of Augmented Reality (AR) to the transformation of Social Studies learning. First, the reviewed studies consistently demonstrate that AR enhances students' conceptual understanding by providing interactive three-dimensional visualizations of abstract social, historical, and geographical phenomena that are difficult to comprehend through conventional instruction (Faria, 2024; Gillis, 2024). Second, AR increases students' learning engagement by integrating visual, auditory, and exploratory experiences within a single digital environment, thereby promoting more meaningful and immersive learning (Godoy Jr., 2020; Lu et al., 2025). Third, the literature indicates that AR supports the development of higher-order thinking by encouraging exploration, observation, and contextual interpretation of learning materials through interactive digital experiences (Nevrelova et al., 2024).

The reviewed studies further reveal that these characteristics position AR as an effective educational technology for supporting student-centered learning. Through marker-based and

markerless applications, AR enables learners to interact directly with virtual objects, explore learning materials from multiple perspectives, and construct deeper conceptual understanding than traditional text-based instruction (Faria, 2024; Gillis, 2024). The integration of multimedia elements, including text, animation, audio, and three-dimensional visualization, also strengthens students' motivation and participation while enriching the overall quality of learning experiences (Lu et al., 2025; Nevrelova et al., 2024).

Despite its considerable educational potential, the literature consistently highlights that the implementation of AR in Social Studies learning at the MI/SD level remains limited. Instruction continues to rely predominantly on textbooks and verbal explanations, thereby reducing opportunities for students to engage in contextual and interactive learning environments that facilitate deeper conceptual understanding (Imaduddin et al., 2024; Susanto & Aramudin, 2024). Collectively, these findings suggest that AR should be viewed not merely as a technological innovation but as a pedagogical enabler capable of enriching learning experiences and supporting the broader transformation of Social Studies education toward more contextual, engaging, and HOTS-oriented instructional practices.

Across the reviewed literature, the thematic synthesis reveals a consistent pattern indicating that the transformation of Social Studies learning cannot be achieved through pedagogical innovation or educational technology alone, but rather through their complementary integration. The first theme highlights the need to transform Social Studies learning toward more student-centered, contextual, and competency-oriented practices. The second theme demonstrates that Problem-Based Learning (PBL) provides the pedagogical foundation for developing inquiry, collaboration, problem-solving, and Higher Order Thinking Skills (HOTS). The third theme shows that Augmented Reality (AR) enriches these pedagogical processes by providing interactive, immersive, and concrete learning experiences that facilitate deeper conceptual understanding. Collectively, these findings suggest that the integration of PBL and AR constitutes a complementary instructional framework that fosters more active, meaningful, and technology-enhanced Social Studies learning environments. This thematic synthesis further provides the conceptual basis for the subsequent discussion regarding the educational implications of integrating innovative pedagogy and digital technology to strengthen HOTS at the MI/SD level.

DISCUSSION

The findings indicate that transforming Social Studies learning at the Madrasah Ibtidaiyah (MI)/Elementary School (SD) level requires learning approaches that effectively strengthen students' Higher Order Thinking Skills (HOTS). The reviewed literature shows that teacher-centered instruction and memorization-oriented learning continue to limit students' opportunities to develop analytical, evaluative, and problem-solving abilities, which are fundamental components of HOTS (Imaduddin et al., 2024). In contrast, Problem-Based Learning (PBL) promotes inquiry and contextual problem-solving, while Augmented Reality (AR) enhances conceptual understanding through interactive and concrete learning experiences (Ansori et al., 2025; Lespita et al., 2023). The synthesis suggests that integrating PBL and AR creates more participatory and meaningful learning environments aligned with the demands of contemporary education. Consequently, the development of HOTS depends not only on the

instructional model employed but also on the quality of learning experiences facilitated through the complementary integration of innovative pedagogy and educational technology.

Compared with previous studies, the present research offers a broader conceptual perspective by examining the integration of Problem-Based Learning (PBL) and Augmented Reality (AR) within the context of Social Studies learning at the MI/SD level rather than investigating each approach independently. (Lespita et al., 2023) demonstrated that AR-assisted PBL effectively improved students' HOTS in physics education, while (Nurlaela et al., 2025) reported its positive contribution to elementary students' critical thinking in science learning. Likewise, (Imaduddin et al., 2024) found that AR-assisted PBL enhanced the quality of Social Studies instruction, although the study primarily emphasized learning activities and academic achievement. Building upon these findings, this study conceptualizes the integration of PBL and AR as a learning transformation framework that strengthens HOTS through the complementary roles of pedagogy, educational technology, and educational psychology, thereby extending current understanding of technology-supported Social Studies learning.

Reflection on the findings suggests that integrating Problem-Based Learning (PBL) and Augmented Reality (AR) provides meaningful opportunities to strengthen Higher Order Thinking Skills (HOTS) through more contextual and student-centered learning experiences. The reviewed literature indicates that HOTS development extends beyond academic achievement, encompassing students' ability to understand social realities, make informed decisions, and solve authentic problems encountered in everyday life (Lespita et al., 2023). In this context, PBL promotes reflective thinking through inquiry and problem-solving, while AR enhances conceptual understanding by providing concrete and interactive learning experiences (Rahmanda, 2025). These findings further suggest that effective learning transformation requires not only technology integration but also a pedagogical shift toward active student participation, resulting in more meaningful and developmentally responsive Social Studies learning.

The findings of this study have important implications for the transformation of Social Studies learning at the MI/SD level. The reviewed literature suggests that integrating Problem-Based Learning (PBL) and Augmented Reality (AR) has considerable potential to promote more contextual, interactive, and student-centered learning environments that foster Higher Order Thinking Skills (HOTS). However, the successful implementation of this integrated approach depends not only on the instructional model itself but also on teachers' pedagogical competence, technological literacy, institutional support, and the availability of adequate digital infrastructure (Ansori et al., 2025; Nurlaela et al., 2025). Furthermore, curriculum design should provide sufficient flexibility to accommodate inquiry-based learning activities supported by educational technology. These findings therefore indicate that learning transformation requires a comprehensive ecosystem in which pedagogical innovation, technology integration, and teacher professional development are developed simultaneously to ensure meaningful and sustainable improvements in Social Studies education.

Conceptually, the influence of integrating PBL and AR on the enhancement of HOTS can be explained through the complementary characteristics of these two approaches. PBL encourages students to engage in higher-order thinking processes through problem identification, information analysis, solution development, and reflection on problem-solving outcomes (Burhan, 2026). Meanwhile, AR provides more concrete learning experiences

through the visualization of objects and phenomena that are difficult to observe directly (Faria, 2024). When these approaches are combined, learning occurs not only through cognitive activities but also through visual experiences that strengthen students' conceptual understanding. Numerous studies have demonstrated that the integration of PBL and AR contributes to improvements in critical thinking, problem-solving abilities, and student engagement (Shiva Febrianto & Aeni, 2024; Suharti et al., 2024). Moreover, the close relationship between Social Studies learning and real-world social phenomena further enhances the relevance of integrating these approaches. Based on these findings, the strengthening of HOTS can be understood as the outcome of a synergistic interaction between problem-solving activities and visual learning experiences that support deeper knowledge construction.

Despite the promising theoretical and pedagogical advantages of integrating Problem-Based Learning (PBL) and Augmented Reality (AR), the reviewed literature also identifies several implementation challenges that may influence its effectiveness in educational settings. Although many studies report positive impacts on students' Higher Order Thinking Skills (HOTS), learning engagement, and conceptual understanding, these outcomes vary across educational contexts. The effectiveness of PBL depends largely on teachers' pedagogical competence, instructional planning, and their ability to facilitate inquiry and collaborative learning (Aulia & Prastowo, 2024; Burhan, 2026). Similarly, the implementation of AR is often constrained by limited technological infrastructure, inadequate digital devices, unequal internet access, and insufficient teacher digital literacy, particularly in elementary education (Imaduddin et al., 2024; Lu et al., 2025). Furthermore, successful integration of PBL and AR requires adequate instructional time, effective classroom management, and institutional support. These findings suggest that sustainable learning transformation depends not only on innovative instructional approaches but also on teacher readiness, technological capacity, and supportive educational environments.

Based on the synthesized literature, the integration of PBL and AR represents a promising direction for future Social Studies learning; however, its implementation should be adapted to the characteristics and resources of individual educational contexts. Future initiatives are therefore encouraged to consider factors such as teacher readiness, students' digital literacy, technological infrastructure, and institutional capacity when designing technology-supported learning environments (Fuadi & Wasino, 2026; Shiva Febrianto & Aeni, 2024). In addition, further empirical research is needed to evaluate the implementation of the proposed conceptual framework across diverse educational settings, grade levels, and socio-cultural contexts. Such investigations will contribute to a deeper understanding of the conditions under which the integration of PBL and AR can most effectively strengthen HOTS and support sustainable learning transformation in Social Studies education.

CONCLUSION

The reviewed literature suggests that transforming Social Studies learning at the Madrasah Ibtidaiyah (MI) and Elementary School (SD) levels requires the integration of innovative pedagogical approaches and educational technologies that support the development of Higher Order Thinking Skills (HOTS). The synthesized evidence indicates that Problem-Based Learning (PBL) provides meaningful opportunities for inquiry, collaboration, and

contextual problem-solving, while Augmented Reality (AR) enriches learning through interactive visualization and concrete learning experiences. Collectively, the reviewed studies highlight that the complementary integration of PBL and AR offers a promising conceptual framework for creating more student-centered, contextual, and technology-enhanced Social Studies learning environments.

The literature synthesis further indicates that strengthening HOTS depends not only on the selection of appropriate instructional models but also on the quality of learning experiences, teachers' pedagogical competence, technological readiness, and institutional support. Consequently, the integration of PBL and AR should be understood as part of a broader process of learning transformation rather than merely the application of digital technology in classrooms. These findings provide theoretical contributions by extending current discussions on the relationship between innovative pedagogy, educational technology, and HOTS development, while also offering practical insights for educators seeking to design more meaningful and engaging Social Studies learning experiences.

This study is limited by its reliance on published literature and therefore does not empirically evaluate the implementation or effectiveness of the proposed conceptual framework in classroom settings. Accordingly, future research is encouraged to examine the integration of PBL and AR through empirical investigations involving diverse educational contexts, grade levels, and student characteristics. Such studies are expected to provide deeper evidence regarding the contextual factors that influence the successful implementation of this integrated approach and to further enrich the development of innovative Social Studies learning that is responsive to the evolving demands of contemporary education.

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