

Development of a Critical Literacy Program to Enhance Language Literacy and Critical Thinking Skills among Fourth-Grade Elementary School Students

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ABSTRACT

The demands of 21st-century education require elementary school students to possess not only literacy skills but also critical thinking abilities to effectively interpret, evaluate, and utilize information in various contexts. This study aimed to develop a Critical Literacy Program to enhance language literacy and critical thinking skills among fourth-grade elementary school students and to examine its validity, practicality, and effectiveness. The study employed a Research and Development (R&D) approach using the ADDIE model, which consisted of Analysis, Design, Development, Implementation, and Evaluation stages. The research was conducted at SD Negeri Padangsari 02 Semarang involving fourth-grade students and classroom teachers. Data were collected through observations, interviews, expert validation sheets, questionnaires, and pretest-posttest assessments. The developed program integrated literacy activities with critical thinking processes through stages of literacy orientation, information exploration, information analysis, critical reflection, and result communication. The validation results showed that the developed program achieved a very valid category with an average score of 4.77. The practicality test indicated highly positive responses from teachers (93%) and students (91%), demonstrating that the program was feasible and easy to implement in classroom settings. The effectiveness test revealed significant improvements in students' literacy achievement and critical thinking skills, as indicated by a moderate N-Gain score of 0.59 and a statistically significant difference between pretest and posttest scores ($t = 12.84$; $p < 0.05$). These findings suggest that the developed Critical Literacy Program is valid, practical, and effective in improving elementary school students' language literacy and critical thinking skills.

Keywords: Critical Literacy Program, Language Literacy, Critical Thinking Skills

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INTRODUCTION

Education in the 21st century is characterized by increasingly complex challenges driven by rapid digital transformation, information overload, and the growing demand for higher-order thinking skills beyond basic knowledge acquisition. The OECD (2023) emphasizes that modern education should equip learners with the competencies needed to think critically, solve complex problems, and adapt to rapidly changing social and technological environments. In response to these demands, literacy and critical thinking have become key competencies emphasized in the Merdeka Curriculum and the Pancasila Student Profile. The urgency of strengthening these competencies is reflected in both international and national assessment results. According to the OECD (2023), Indonesian students' performance in reading, mathematics, and science remains below the OECD average. Similarly, the Ministry of

Education, Culture, Research, and Technology of Indonesia (2022) reported through the Minimum Competency Assessment (AKM) that many students still require substantial improvement in literacy and numeracy skills. Recent studies further highlight the importance of these competencies. The World Bank (2022) identifies literacy as a fundamental determinant of learning quality and human capital development, while Facione (2020) argues that critical thinking encompasses essential cognitive skills such as interpretation, analysis, evaluation, and inference that support effective learning and decision-making. Recent research has further demonstrated that literacy proficiency contributes significantly to reading comprehension, knowledge acquisition, and academic success, while critical thinking skills are increasingly recognized as essential competencies for navigating complex information environments and making informed decisions (Delgado et al., 2018; Butler et al., 2017; Van Laar et al., 2020). These perspectives underscore that literacy and critical thinking are fundamental competencies for preparing students to succeed in contemporary society.

The literacy level of Indonesian students remains a major educational concern. The OECD (2023) reported through the PISA 2022 assessment that Indonesian students' reading literacy achievement remains below the OECD average, indicating persistent difficulties in understanding, interpreting, and evaluating information from texts. Likewise, UNESCO (2021) emphasized that many developing countries continue to face challenges in fostering functional and critical literacy skills necessary for lifelong learning and active participation in society. Research on reading literacy has shown that students' ability to understand, integrate, and evaluate information from multiple texts is closely associated with academic achievement and higher-order thinking development (Barzilai et al., 2018; Zhang & Ke, 2020). In addition to literacy challenges, elementary school students' critical thinking skills are often underdeveloped. Facione (2020) defined critical thinking as a set of cognitive skills involving interpretation, analysis, evaluation, and inference that support reasoned judgment and decision-making. Similarly, Tiruneh et al. (2018) argued that critical thinking does not develop automatically but requires explicit instructional support and learning experiences that encourage higher-order cognitive processes. Kuhn (2019) emphasized that critical thinking develops through discourse, argumentation, and reflective reasoning experiences rather than through passive learning activities alone. The limited development of literacy and critical thinking skills can negatively affect learning quality. Mullis et al. (2021) reported that students with weak literacy skills often struggle to engage with complex texts and learning tasks, resulting in lower academic achievement. Consequently, insufficient literacy and critical thinking skills may hinder meaningful learning, problem-solving ability, and overall educational outcomes.

The School Literacy Movement (Gerakan Literasi Sekolah/GLS) has been implemented in Indonesian schools as a national initiative to strengthen students' literacy culture. The Ministry of Education, Culture, Research, and Technology (2021) states that GLS aims to foster reading habits and create a literacy-rich learning environment, particularly at the elementary school level. However, the implementation of GLS is still predominantly focused on reading habituation rather than the development of higher-order literacy skills. According to UNESCO (2021), effective literacy programs should extend beyond reading exposure and promote learners' ability to interpret, evaluate, and use information critically. In practice, literacy activities often provide limited opportunities for students to engage in analysis, evaluation, inference, and reflection. Cervetti et al. (2020) argue that literacy instruction should integrate critical inquiry and evidence-based reasoning to support deeper comprehension and thinking processes. This perspective is supported by Duke et al. (2021), who argue that effective reading comprehension instruction should actively engage learners in reasoning, interpretation, and meaning construction processes. Furthermore, Marsh (2021) found that literacy learning environments incorporating multimodal participation can broaden students' engagement and enhance communication and critical reflection. These findings suggest that strengthening GLS requires a shift from reading habituation toward literacy practices that actively promote critical thinking skills.

Literacy and critical thinking are closely interconnected competencies that support meaningful learning and knowledge construction. Contemporary perspectives on literacy emphasize that literacy is not merely the ability to read and write but also the capacity to access,

comprehend, evaluate, and utilize information effectively in various contexts. According to UNESCO (2021), literacy involves the ability to identify, understand, interpret, create, and communicate using printed and digital materials. Similarly, Cervetti et al. (2020) argue that literacy learning should facilitate knowledge building by engaging learners in inquiry, interpretation, and evidence-based reasoning. Recent scholarship highlights that learning from multiple texts requires students to evaluate sources, compare evidence, and construct coherent understandings, all of which are closely related to critical and analytical thinking processes (Barzilai et al., 2018; List & Sun, 2023). These perspectives suggest that effective literacy instruction requires learners to move beyond basic comprehension toward deeper engagement with information. In this regard, critical thinking serves as an essential component of literacy development. Facione (2020) defines critical thinking as purposeful and self-regulatory judgment involving interpretation, analysis, evaluation, inference, explanation, and self-regulation. When integrated into literacy activities, these cognitive processes enable students to critically examine information, construct arguments, solve problems, and make informed decisions. Cáceres et al. (2020) reported that integrating critical thinking into classroom instruction requires deliberate learning experiences that encourage questioning, reflection, and evidence-based reasoning. Similarly, Morad et al. (2021) proposed that innovative thinking and critical thinking emerge through learning environments that promote analysis, creativity, reflection, and collaborative knowledge construction. Therefore, literacy and critical thinking should be developed simultaneously to promote deeper learning and prepare students for the complex demands of the twenty-first century.

Previous studies have consistently demonstrated the significant role of literacy and critical thinking in enhancing student learning outcomes. Research by Cervetti et al. (2020) highlighted that literacy instruction grounded in knowledge building and inquiry can improve students' ability to interpret information, construct meaning, and engage in evidence-based reasoning. In the context of critical thinking, Tiruneh et al. (2018) emphasized that critical thinking skills can be effectively developed when learning activities explicitly incorporate analysis, evaluation, and reasoning processes. Likewise, Abrami et al. (2015) reported that instructional interventions designed to foster critical thinking significantly improve students' cognitive performance and problem-solving abilities across educational settings. These studies collectively indicate that literacy and critical thinking are mutually reinforcing competencies that contribute to meaningful learning and academic achievement.

Despite these contributions, several limitations remain in the existing literature. Most previous studies have focused either on literacy enhancement programs or critical thinking interventions as separate instructional domains. Research has largely emphasized reading activities, teaching materials, digital learning resources, or classroom strategies aimed at improving specific literacy outcomes. Meanwhile, relatively limited attention has been given to the development of a comprehensive literacy learning model that systematically integrates critical thinking indicators into the learning process, particularly at the elementary school level. Moreover, few studies have explored how literacy and critical thinking can be combined within a unified instructional framework aligned with contemporary educational priorities, such as the Merdeka Curriculum and the Pancasila Student Profile. This gap highlights the need for the development of an integrated literacy learning model that explicitly promotes analysis, evaluation, inference, and reflection as essential components of students' literacy experiences.

This study offers novelty through the development of a literacy-based learning model that systematically integrates critical thinking skills, including analysis, evaluation, inference, and explanation, within classroom learning activities. Unlike previous studies that tend to focus separately on literacy improvement or critical thinking development, this model is designed to explicitly connect both competencies in a structured instructional framework. The integration aims to strengthen students' deeper understanding of learning materials while simultaneously enhancing their ability to think critically in solving problems. In addition, this learning model is developed using the ADDIE development framework, which ensures a systematic process of analysis, design, development, implementation, and evaluation. The model is then empirically tested on fourth-grade elementary school students to examine its practicality and effectiveness in real classroom settings. This approach provides a more comprehensive contribution to

literacy learning innovation by combining theoretical integration and practical classroom application.

The objectives of this study are to develop a literacy-based learning model for elementary school students that integrates critical thinking skills in classroom learning. Specifically, this study aims to examine the validity of the developed model to ensure its theoretical and instructional feasibility, to assess its practicality in terms of ease of use and implementation in real classroom settings, and to evaluate its effectiveness in improving students' critical thinking skills. Through these objectives, the study is expected to produce a learning model that is not only conceptually sound but also applicable and impactful in enhancing elementary students' learning outcomes.

METHOD

This study employed a Research and Development (R&D) approach to develop a literacy learning model integrated with critical thinking skills for elementary school students. Research and Development is a systematic method used to design, develop, validate, and evaluate educational products in order to improve educational practices and solve instructional problems (Borg & Gall, 2003; Richey & Klein, 2007; Sugiyono, 2022). Unlike conventional research that focuses primarily on testing theories, R&D aims to produce practical and empirically validated products that can be implemented in educational settings (Plomp & Nieveen, 2013; Ellis & Levy, 2010). Recent educational design research further emphasizes that development-oriented studies should generate both practical solutions and theoretical contributions through iterative cycles of design, implementation, evaluation, and refinement (McKenney & Reeves, 2020; Reeves & McKenney, 2021). This study adopted the ADDIE instructional design model consisting of Analysis, Design, Development, Implementation, and Evaluation phases. The ADDIE model was selected because it provides a systematic, iterative, and learner-centered framework for instructional product development (Branch, 2009; Molenda, 2015). Furthermore, the model facilitates continuous revision and evaluation throughout the development process, ensuring that the resulting product is aligned with learner needs, curriculum requirements, and instructional objectives (Morrison et al., 2019; Dick et al., 2015). The ADDIE framework remains widely used in instructional design because of its flexibility, systematic structure, and applicability across diverse educational contexts (Kurt, 2018).

The study was conducted at SD Negeri Padangsari 02 Semarang during the 2025/2026 academic year. The participants consisted of fourth-grade students who served as the primary users of the developed learning model. The selection of participants was carried out purposively because they were directly associated with the educational problem addressed in this study and possessed characteristics relevant to the development objectives (Creswell & Creswell, 2018; Patton, 2015). In addition, classroom teachers participated in the research process by providing information during the needs analysis stage and evaluating the practicality of the developed model during implementation. Their involvement was essential because teachers play a central role in determining the feasibility and sustainability of instructional innovations within classroom contexts (Fullan, 2016; Darling-Hammond et al., 2020).

The development procedure followed the five phases of the ADDIE model proposed by Branch (2009). During the Analysis phase, a comprehensive needs assessment was conducted through classroom observations, teacher interviews, document reviews, and curriculum analysis to identify instructional problems, learner characteristics, and curriculum demands related to literacy and critical thinking. Needs analysis is considered a critical step in instructional design because it provides the foundation for developing learning solutions that are responsive to actual educational needs (Brown & Green, 2020; Morrison et al., 2019). Educational design research highlights that systematic analysis of learners, contexts, and instructional needs is fundamental for ensuring the relevance and effectiveness of educational innovations (Akker et al., 2013; Plomp & Nieveen, 2013). The Design phase involved constructing the learning model syntax, developing teaching modules, preparing student worksheets (LKPD), and designing assessment instruments. This phase emphasized the integration of critical thinking indicators, including analysis, evaluation, inference, and

reflection, into literacy learning activities, which are widely recognized as core dimensions of critical thinking (Facione, 2020; Ennis, 2018).

The Development phase focused on producing the initial prototype of the literacy learning model and its supporting materials. The prototype was subsequently subjected to expert validation involving specialists in elementary education, literacy instruction, curriculum development, and instructional design. Expert validation is an essential component of educational product development because it helps ensure content validity, instructional appropriateness, and alignment with learning objectives (Plomp & Nieveen, 2013; Akker et al., 2013). Feedback and recommendations provided by the validators were incorporated into the revision process to improve the quality of the product before implementation.

The Implementation phase involved a limited field trial conducted with fourth-grade students to examine the practicality and usability of the developed model in authentic classroom settings. During implementation, classroom observations were conducted to monitor learning activities, while teacher and student response questionnaires were administered to evaluate the attractiveness, usability, and practicality of the model. Field testing is considered an important stage in development research because it provides empirical evidence regarding how a product functions under actual learning conditions (Borg & Gall, 2003; Richey & Klein, 2007). In line with contemporary educational design research, implementation serves as an opportunity to examine how instructional products operate in real learning environments and to identify necessary revisions before wider application (McKenney & Reeves, 2020).

The Evaluation phase was conducted to determine the overall quality of the developed learning model. Evaluation focused on three major aspects: validity, practicality, and effectiveness. These criteria are widely recognized as fundamental indicators of quality in educational development research (Nieveen, 1999; Plomp & Nieveen, 2013). McKenney and Reeves (2020) argue that evaluation in educational design research should not only assess product quality but also contribute to the refinement of design principles that can inform future educational innovations. Through continuous evaluation and revision, the developed model was expected to provide a meaningful contribution to literacy instruction and the development of students' critical thinking skills.

RESULT AND DISCUSSION

1. Analysis Phase Results

The analysis phase was conducted to identify students' initial literacy conditions, critical thinking skills, and teachers' needs regarding literacy instruction. This phase served as the foundation for developing a literacy-based learning model integrated with critical thinking skills. Data were collected through classroom observations, teacher interviews, and document analysis at SD Negeri Padangsari 02 Semarang.

The findings revealed that students generally demonstrated adequate basic reading literacy skills. Most students were able to read texts appropriate to their grade level and identify explicit information contained in the reading materials. However, their literacy skills were largely limited to literal comprehension. Students tended to answer questions whose answers were directly stated in the text but encountered difficulties when required to interpret information, establish relationships among ideas, draw conclusions, or provide evidence-based arguments.

The analysis also indicated that students' critical thinking skills had not yet developed optimally. Classroom observations showed that students rarely engaged in activities requiring analysis, evaluation, reflection, or problem-solving. During learning activities, students tended to focus on recalling information rather than examining, comparing, or assessing the validity of information. Furthermore, when asked to explain the reasons behind their answers, many students provided brief responses without sufficient justification. These findings suggest that opportunities for developing higher-order thinking skills in classroom instruction were still limited.

In addition to examining students' conditions, the analysis phase explored teachers' instructional needs. Interview results showed that literacy activities had been routinely implemented through reading sessions before lessons and the use of reading materials during classroom instruction. Nevertheless, these activities primarily focused on improving reading

habits and basic comprehension. Teachers acknowledged that literacy instruction had not yet been systematically integrated with activities that foster critical thinking, such as analyzing information, evaluating arguments, making evidence-based judgments, and reflecting on learning outcomes. Consequently, teachers expressed the need for an instructional model that could effectively combine literacy practices with critical thinking development in a structured and practical manner.

The results of the needs analysis are presented in Table 1.

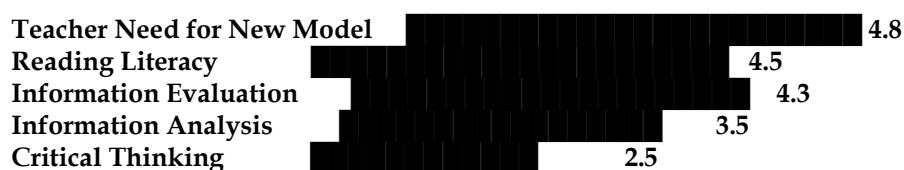
Table 1. Needs Analysis Results

Aspect	Findings
Reading literacy	Students are able to read simple texts and identify explicit information
Information analysis	Students experience difficulties in analyzing information from texts
Information evaluation	Students have not optimally developed the ability to evaluate information
Teaching practice	Learning activities are predominantly conducted using conventional approaches
Teacher needs	A literacy learning model integrated with critical thinking skills

The findings presented in Table 1 indicate that although students possess adequate basic literacy skills, their abilities to analyze and evaluate information remain relatively low. At the same time, instructional practices continue to emphasize information acquisition rather than critical engagement with texts. These conditions highlight the necessity of developing a learning model capable of facilitating both literacy improvement and critical thinking development.

To provide a clearer overview of the needs analysis findings, Figure 1 illustrates the relative condition of each aspect identified during the analysis phase.

Figure 1. Needs Analysis Results



Insert bar chart showing Reading Literacy (75%), Information Analysis (45%), Information Evaluation (40%), Critical Thinking (42%), and Teacher Need for New Model (85%).

Figure 1 demonstrates that reading literacy achieved the highest level among students' competencies, indicating that most students were able to comprehend basic textual information. However, the levels of information analysis, information evaluation, and critical thinking were considerably lower. The figure also reveals a high level of teacher demand for an instructional model that explicitly integrates literacy activities with critical thinking skills. These findings confirm the existence of a gap between students' literacy performance and the higher-order thinking competencies expected in twenty-first-century learning.

Overall, the analysis phase revealed that literacy instruction at SD Negeri Padangsari 02 Semarang had successfully supported students' reading habits but had not yet sufficiently promoted critical thinking development. Therefore, there is a need for an innovative instructional model that enables students not only to read and understand texts but also to analyze, evaluate, interpret, and reflect upon information critically. These findings served as the basis for designing the literacy-based learning model integrated with critical thinking skills in the subsequent stages of development.

2. Design Phase Results

The design phase was carried out based on the findings obtained during the analysis phase. The needs analysis revealed that although students demonstrated adequate basic literacy skills, their ability to analyze information, evaluate evidence, and formulate logical arguments remained relatively low. Furthermore, teachers indicated the need for an innovative instructional model that could systematically integrate literacy activities with critical thinking

development. These findings became the foundation for designing a literacy-based learning model integrated with critical thinking skills.

The model was developed to facilitate students in constructing knowledge actively through literacy activities while simultaneously enhancing their critical thinking abilities. The design process emphasized the integration of reading, information exploration, information analysis, critical reflection, and communication activities within a coherent learning framework. Through these stages, students are expected not only to comprehend textual information but also to evaluate, interpret, and communicate ideas critically.

Based on these considerations, a prototype of the Literacy-Based Critical Thinking Learning Model was designed. The model consists of five sequential instructional stages: Literacy Orientation, Information Exploration, Information Analysis, Critical Reflection, and Result Communication. These stages were developed to provide structured learning experiences that gradually guide students from understanding information to engaging in higher-order thinking processes. The first stage, Literacy Orientation, aims to stimulate students' interest in learning and activate their prior knowledge related to the learning topic. At this stage, teachers provide literacy stimuli through texts, images, videos, or contextual problems that encourage students to engage with the learning material. The second stage, Information Exploration, involves students in reading activities and information gathering from various learning resources. Through this activity, students are encouraged to identify important information and develop initial understanding of the topic being studied. The third stage, Information Analysis, focuses on developing students' analytical abilities. Students are guided to identify key ideas, compare information, classify evidence, determine relationships among concepts, and interpret information critically. This stage serves as the core component of the model because it provides opportunities for students to engage in deeper cognitive processing. The fourth stage, Critical Reflection, encourages students to evaluate information, assess the validity of arguments, identify supporting evidence, and formulate reasoned conclusions. Through reflective activities, students develop the ability to make judgments based on logical reasoning and evidence-based thinking. The final stage, Result Communication, provides opportunities for students to communicate their findings, express opinions, and present arguments either orally or in written form. This stage is designed to strengthen students' confidence in conveying ideas while also developing communication skills that support critical thinking. Through the communication process, students learn to defend their opinions using relevant evidence and logical explanations.

The overall framework of the developed learning model is presented in Figure 3. The figure illustrates the systematic relationship among the five instructional stages that collectively facilitate the development of students' literacy and critical thinking skills.

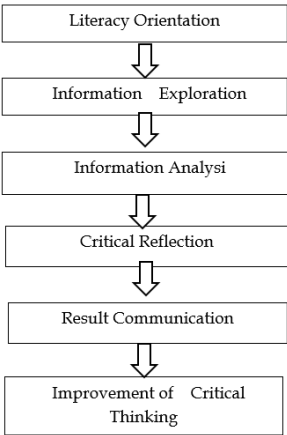


Figure 3. Framework of the Literacy-Based Critical Thinking Learning Model.

The developed model also incorporates several essential components, including learning syntax, social system, reaction principles, support system, and instructional impacts.

These components were designed to ensure that the model can be effectively implemented in elementary school learning contexts.

The components of the developed learning model are presented in Table 2.

Table 2. Components of the Developed Learning Model

Component	Description
Syntax	Five instructional stages consisting of Literacy Orientation, Information Exploration, Information Analysis, Critical Reflection, and Result Communication
Social System	Collaborative, interactive, and student-centered learning environment
Reaction Principles	Teachers provide guidance, questioning strategies, feedback, and scaffolding to support critical thinking processes
Support System	Lesson plans, teaching materials, literacy-based learning book, LKPD, multimedia resources, and assessment instruments
Instructional Impact	Improvement of literacy skills, critical thinking skills, analytical abilities, and communication competence
Accompanying Impact	Increased learning motivation, collaboration skills, self-confidence, and independent learning habits

In addition to designing the learning model, several instructional devices were developed to support its implementation. These devices include lesson plans, teaching materials, student worksheets (LKPD), critical thinking assessment instruments, and a literacy-based learning book. All learning devices were designed in accordance with the characteristics and instructional stages of the developed model. The learning devices produced during the design phase are presented in Table 3.

Table 3. Learning Devices Developed in the Design Phase

Learning Device	Description
Lesson Plan (RPP/Teaching Module)	Designed according to the five stages of the developed learning model
Teaching Materials	Literacy-based materials that stimulate critical analysis and reflection
Student Worksheet (LKPD)	Activities focused on information analysis, evidence evaluation, and argument development
Assessment Instrument	Instruments for measuring students' critical thinking skills and literacy achievement
Learning Book	Main product containing learning materials, literacy activities, critical thinking tasks, and reflection exercises
Observation Sheet	Instrument for monitoring learning implementation and student participation

As the main instructional product, a literacy-based learning book integrated with critical thinking skills was developed. The book contains literacy activities, learning materials, critical thinking exercises, reflective questions, and assessment tasks that align with the learning model syntax. The book was designed to provide systematic guidance for both teachers and students during the learning process.



Figure 4. Prototype Cover of the Literacy-Based Critical Thinking Learning Book Developed in the Design Phase.

3. Development Phase Results

The development phase aimed to produce a valid and feasible literacy-based learning model integrated with critical thinking skills before implementation in the classroom. During this phase, the prototype developed in the design stage underwent expert validation to assess its content quality, instructional suitability, and design feasibility. The validation process involved three experts, namely a material expert, a learning expert, and a design expert. Their evaluations focused on the appropriateness of the learning content, the instructional design of the model, and the quality of the developed learning materials. The results of expert validation are presented in Table 4.

Table 4. Expert Validation Results

Indicators	Material Expert	Learning Expert	Design Expert	Average	Category
Content Accuracy	4.90	4.75	4.70	4.78	Very Valid
Content Relevance	4.85	4.80	4.75	4.80	Very Valid
Learning Syntax	4.80	4.90	4.75	4.82	Very Valid
Learning Activities	4.75	4.85	4.70	4.77	Very Valid
Assessment System	4.70	4.80	4.65	4.72	Very Valid
Visual Design	4.65	4.70	4.90	4.75	Very Valid
Language Clarity	4.80	4.75	4.70	4.75	Very Valid
Overall Average	4.78	4.79	4.74	4.77	Very Valid

Based on the validation results presented in Table 4, the literacy-based learning model integrated with critical thinking skills achieved an overall average score of 4.77, indicating a very high level of validity. The material expert confirmed that the learning content, literacy activities, and critical thinking components were relevant to the learning objectives, aligned with curriculum requirements, and appropriate for the cognitive characteristics of fourth-grade elementary school students. The learning expert evaluated the instructional syntax, learning activities, and assessment system positively, indicating that the five stages of the model Literacy Orientation, Information Exploration, Information Analysis, Critical Reflection, and Result Communication were systematically organized and capable of facilitating active and student-centered learning. Meanwhile, the design expert assessed the visual appearance, layout, readability, language clarity, and overall presentation of the learning materials as attractive, user-friendly, and suitable for supporting literacy and critical thinking activities. These findings

indicate that the developed model possesses strong content, pedagogical, and design validity and is therefore suitable for implementation in classroom learning with only minor revisions based on expert recommendations. The overall validation score indicated that the developed model met the criteria of a valid learning product and was suitable for classroom implementation with minor revisions. The validation results demonstrate that the model has adequately integrated literacy activities with critical thinking processes and provides a structured framework for facilitating students' higher-order thinking skills.

In addition to quantitative evaluation, the experts provided several suggestions for product improvement. The material expert recommended refining several examples and adding contextual learning materials relevant to students' daily experiences. The learning expert suggested strengthening critical reflection activities to encourage deeper analytical thinking. The design expert recommended improving visual consistency, adjusting typography, and enhancing the layout of learning materials to increase readability and user engagement.

Based on these recommendations, revisions were conducted to improve the quality of the learning model and supporting instructional devices. The revisions included refinement of learning content, enhancement of critical thinking activities, improvement of assessment instruments, and modification of visual design elements. These revisions were intended to ensure that the final product met the standards of validity, practicality, and effectiveness required for classroom implementation.

The validation and revision process conducted during the development phase resulted in a revised prototype that was considered suitable for implementation in the next phase of the ADDIE model. The finalized product subsequently became the basis for field testing during the implementation phase.

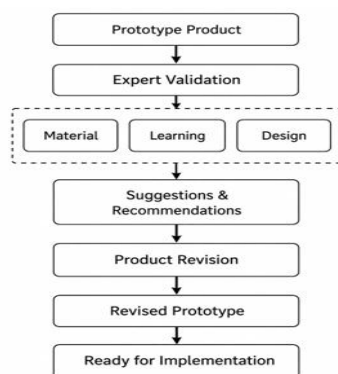


Figure 6. Expert Validation and Product Revision Process.

4. Implementation Phase Results

Following the validation and revision process, the School Literacy Program Package was implemented with fourth-grade students at SD Negeri Padangsari 02 Semarang. The implementation phase aimed to evaluate the practicality of the developed program package, including the School Literacy Program Guidebook, Student Activity Module, Language Literacy Assessment Instrument, Critical Thinking Skills Assessment Instrument, and Program Monitoring and Evaluation Sheet. Practicality was assessed through teacher and student responses after the implementation of the program.

The results of teacher responses are presented in Table 5.

Table 5. Teacher Responses toward the School Literacy Program Package

Aspect	Percentage (%)
Ease of Use	93
Clarity of Program Procedures	92

Aspect	Percentage (%)
Suitability of Learning Materials	94
Average	93

The average teacher response score reached 93%, indicating that the School Literacy Program Package was considered highly practical. Teachers reported that the program components were easy to implement, the procedures were clearly explained, and the literacy activities were appropriate for the characteristics and learning needs of elementary school students.

The results of student responses are presented in Table 6.

Table 6. Student Responses toward the School Literacy Program Package

Aspect	Percentage (%)
Interest and Engagement	91
Ease of Participation	89
Active Involvement	92
Average	91

As shown in Table 6, students provided positive responses to the implemented literacy program, with an average score of 91%. The results indicate that students were highly interested in participating in literacy activities, found the program easy to follow, and actively engaged in discussions, reading activities, and critical thinking exercises provided in the program package. The findings demonstrate that the School Literacy Program Package achieved a high level of practicality. Both teachers and students responded positively to the program implementation, indicating that the developed package was feasible and user-friendly for use in elementary school literacy activities. The positive responses also suggest that the program successfully facilitated meaningful literacy experiences while promoting students' critical thinking skills.

3.1.5 Evaluation Phase Results

The evaluation phase was conducted to determine the effectiveness of the School Literacy Program Package in improving students' literacy achievement and critical thinking skills. Effectiveness was assessed through pretest and posttest scores, N-Gain analysis, and a paired sample t-test.

The comparison of students' pretest and posttest scores is presented in Table 7.

Test	Mean Score
Pretest	58–65
Posttest	82–90

The results demonstrate that students showed better learning outcomes after participating in the implementation of the School Literacy Program Package. The improvement can be observed from the higher posttest mean score compared with the pretest mean score. This finding suggests that the program successfully facilitated students' literacy development while simultaneously promoting their critical thinking skills through structured literacy activities, information analysis, reflection, and communication tasks.

To examine the effectiveness of the program in greater detail, an N-Gain analysis was conducted to measure the magnitude of students' learning improvement between the pretest and posttest. The N-Gain results indicate that the School Literacy Program Package produced a meaningful improvement in students' literacy achievement and critical thinking performance. These findings suggest that the developed program is not only valid and practical but also effective in supporting the development of literacy competencies and higher-order thinking skills among elementary school students. The result are presented in Table 8.

Table 8. N-Gain Results

N-Gain Score Category	
0.59	Medium

The N-Gain score of 0.59 indicates a moderate improvement in students' learning outcomes. This finding suggests that the School Literacy Program Package was effective in facilitating students' literacy development and critical thinking skills during the implementation phase.

To examine whether the improvement was statistically significant, a paired sample t-test was performed. The results are presented in Table 9.

Table 9. Paired Sample t-Test Results

Variable	t-value	Sig. (2-tailed)	Decision
Pretest-Posttest	12.84	0.000	Significa

The paired sample t-test results showed a significance value below 0.05, indicating a statistically significant difference between students' pretest and posttest scores. Therefore, the null hypothesis was rejected, and the alternative hypothesis was accepted. This finding confirms that the implementation of the School Literacy Program Package significantly improved students' literacy achievement and critical thinking skills. Overall, the evaluation results demonstrate that the developed School Literacy Program Package was effective in enhancing students' literacy competencies and critical thinking abilities. Combined with the high validity and practicality results obtained in the previous phases, these findings indicate that the developed program package meets the criteria of a valid, practical, and effective educational product.

Discussion

The findings of this study demonstrate that the developed School Literacy Program Package meets the criteria of a high-quality educational product in terms of validity, practicality, and effectiveness. The expert validation process resulted in an overall score of 4.77, indicating that the package possesses strong content, pedagogical, and design quality. This result suggests that the literacy activities, learning procedures, assessment instruments, and supporting materials were systematically designed and aligned with the characteristics of elementary school learners. The high validation score also reflects the successful integration of literacy practices and critical thinking components within a coherent instructional framework. Such findings are consistent with the ADDIE development model, which emphasizes iterative processes of analysis, design, development, implementation, and evaluation to ensure the quality and relevance of educational products. The results also support the perspective of Borg and Gall, who argue that expert validation and product revision are essential stages in producing educational innovations that are theoretically sound and practically applicable.

The strong validity of the developed package can be attributed to its emphasis on literacy as an active cognitive process rather than merely a reading activity. Through stages of literacy orientation, information exploration, information analysis, critical reflection, and result communication, students are encouraged to engage with information critically and meaningfully. This approach reflects current educational demands that require learners not only to acquire information but also to analyze, evaluate, and utilize information in solving problems. Previous studies have similarly highlighted the importance of designing learning materials that are contextual, meaningful, and responsive to learners' needs. Napiah (2022) emphasized that instructional materials should be developed based on learners' contextual needs to maximize engagement and learning outcomes. Likewise, Napiah (2024) demonstrated that contextual learning materials contribute positively to students' participation and understanding by connecting learning experiences with real-life situations. The present study

extends these findings by integrating literacy development and critical thinking skills within a comprehensive school literacy program.

Beyond its validity, the practicality findings indicate that the developed package can be implemented effectively in elementary school classrooms. Teacher responses reached 93%, while student responses reached 91%, both categorized as highly practical. These results suggest that teachers found the guidebook, student activity module, assessment instruments, and monitoring sheets easy to use and helpful in organizing literacy activities. At the same time, students perceived the learning activities as engaging, understandable, and enjoyable. The positive responses from both groups indicate that the program package is compatible with classroom realities and can be implemented without imposing excessive instructional burdens on teachers or students.

The practicality findings also demonstrate the importance of providing structured literacy activities that encourage active participation. Students were not positioned merely as readers but as active learners who explored information, discussed ideas, analyzed evidence, reflected on findings, and communicated conclusions. Such activities align with the developmental characteristics of elementary school students, who learn most effectively through active engagement and meaningful social interaction. These findings support previous research showing that student-centered literacy programs contribute positively to classroom engagement and learning motivation. The positive teacher and student responses obtained in this study suggest that the developed package has the potential to be adopted more broadly within elementary education contexts.

The effectiveness analysis further strengthens the quality of the developed package. The increase in posttest scores compared with pretest scores indicates that students experienced meaningful learning improvement after participating in the literacy program. The N-Gain analysis revealed a moderate level of improvement, while the paired sample t-test confirmed a statistically significant difference between pretest and posttest scores. These findings suggest that the School Literacy Program Package was successful in enhancing students' literacy achievement and critical thinking abilities. The results indicate that literacy activities designed around inquiry, analysis, reflection, and communication can create learning experiences that foster deeper cognitive engagement and promote higher-order thinking skills.

From a theoretical perspective, the findings provide empirical support for constructivist learning theories. Piaget's constructivist theory argues that learners actively construct knowledge through interaction with learning experiences. In the present study, students were required to interpret information, connect ideas, formulate conclusions, and communicate understanding, reflecting active knowledge construction rather than passive information reception. Similarly, Vygotsky's social constructivist theory emphasizes the importance of social interaction in cognitive development. The collaborative discussions, reflective activities, and communication tasks incorporated within the literacy program provided opportunities for students to negotiate meaning and develop understanding through interaction with peers and teachers.

The findings also align closely with Facione's critical thinking framework, which identifies analysis, evaluation, inference, explanation, and self-regulation as core dimensions of critical thinking. These dimensions were embedded throughout the learning activities, enabling students to move beyond surface-level comprehension toward deeper engagement with information. Furthermore, the results support UNESCO's broader conception of literacy, which views literacy as the capacity to access, understand, interpret, evaluate, and use information effectively in various contexts. The developed program operationalizes this perspective by positioning literacy as a vehicle for developing critical and reflective thinking rather than solely as a means of improving reading habits.

An important contribution of this study lies in its reconceptualization of school literacy activities. In many schools, literacy programs are still predominantly associated with reading routines conducted before learning activities begin. Although such practices contribute to reading culture, they often provide limited opportunities for students to develop analytical and evaluative thinking. The present study offers an alternative perspective by demonstrating that literacy activities can be systematically integrated with critical thinking processes through a structured program package. This integration represents the primary novelty of the study.

Rather than focusing exclusively on reading behavior, the developed package transforms literacy into a comprehensive learning process that encourages students to explore information, analyze evidence, reflect critically, and communicate ideas.

The contribution of this research is particularly relevant within the context of the Merdeka Curriculum and the Profil Pelajar Pancasila, both of which emphasize critical reasoning, independence, communication, and lifelong learning competencies. By integrating literacy and critical thinking within a single instructional framework, the School Literacy Program Package provides a practical model for supporting the development of twenty-first-century skills in elementary education. Consequently, the findings offer both theoretical and practical contributions to literacy education by demonstrating that literacy programs can function not only as reading promotion initiatives but also as effective instruments for fostering higher-order thinking skills among young learners.

CONCLUSION

The findings of this study indicate that the developed Literacy-Based Learning Model is valid based on expert judgment involving material, learning, and design experts. The validation results show that the model meets the required criteria in terms of content appropriateness, instructional alignment, and design feasibility. Revisions suggested by experts were incorporated to strengthen clarity, usability, and alignment with literacy and critical thinking objectives, confirming that the product is theoretically sound and suitable for classroom implementation. In terms of practicality, the model was found to be highly practical based on teacher and student responses during limited and broader implementation trials. Teachers reported that the learning tools, including guidebooks, student worksheets, and assessment instruments, were easy to use, systematically structured, and supportive of classroom instruction. Students also demonstrated positive engagement during learning activities, indicating that the model is user-friendly and feasible to implement within real classroom conditions without requiring excessive additional resources.

Regarding effectiveness, the implementation of the Literacy-Based Learning Model showed a positive impact on students' learning outcomes, particularly in improving literacy skills and critical thinking abilities. The results of pre-test and post-test comparisons indicated an increase in student achievement after the use of the developed model. This suggests that integrating literacy-based activities with structured learning tasks can enhance students' cognitive engagement and deepen their understanding of learning materials. Theoretically, this study contributes to the development of instructional design theory by integrating literacy-based learning with critical thinking skill development in a structured learning model. Practically, the model provides teachers with an applicable instructional framework that can be directly implemented in classroom settings to strengthen student literacy and thinking skills in line with 21st-century learning demands and the Merdeka Curriculum orientation.

For future research, it is recommended that further studies expand the implementation of this model to different educational levels and subject areas to test its broader applicability. Additionally, future researchers may refine the assessment instruments and incorporate digital-based learning components to enhance interactivity and scalability. Longitudinal studies are also suggested to examine the long-term impact of the model on students' literacy development and critical thinking sustainability.

REFERENCES

- Abrami, P. C., Bernard, R. M., Borokhovski, E., Waddington, D. I., Wade, A., & Persson, T. (2015). Strategies for teaching students to think critically: A meta-analysis. *Review of Educational Research*, 85(2), 275–314. <https://doi.org/10.3102/0034654314551063>
- Akker, J. van den, Bannan, B., Kelly, A. E., Nieveen, N., & Plomp, T. (2013). *Educational design research: Part A: An introduction*. SLO.
- Aldoobie, N. (2015). ADDIE Model. *American International Journal of Contemporary Research*, 5(6), 68–72. http://www.aijcrnet.com/journals/Vol_5_No_6_December_2015/10.pdf
- Arrona-Palacios, A., & Díaz-Morales, J. F. (2018). Morningness-eveningness is not associated with academic performance in the afternoon school shift: Preliminary findings. *British Journal of Educational Psychology*, 88(3), 480–498.

- Barzilai, S., Zohar, A. R., & Mor-Hagani, S. (2018). Promoting integration of multiple texts: A review of instructional approaches and practices. *Educational Psychology Review*, 30(3), 973–999. <https://doi.org/10.1007/s10648-018-9436-8>
- Borg, W. R., & Gall, M. D. (2003). *Educational research: An introduction* (7th ed.). Allyn & Bacon.
- Branch, R. M. (2009). *Instructional Design: The ADDIE Approach*. New York: Springer. <https://doi.org/10.1007/978-0-387-09506-6>
- Brown, A. H., & Green, T. D. (2020). *The essentials of instructional design: Connecting fundamental principles with process and practice* (4th ed.). Routledge.
- Butler, H. A., Pentoney, C., & Bong, M. P. (2017). Critical thinking ability is a better predictor of life decisions than intelligence. *Thinking Skills and Creativity*, 25, 38–46. <https://doi.org/10.1016/j.tsc.2017.06.005>
- Cáceres, M., Nussbaum, M., & Ortiz, J. (2020). Integrating critical thinking into the classroom: A teacher's perspective. *Thinking Skills and Creativity*, 37, 100674. <https://doi.org/10.1016/j.tsc.2020.100674>
- Cervetti, G. N., Pearson, P. D., Palincsar, A. S., & Afflerbach, P. (2020). Reading and knowledge building in the digital age. *Reading Research Quarterly*, 55(S1), S1–S12. <https://doi.org/10.1002/rrq.301>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
- Delgado, P., Vargas, C., Ackerman, R., & Salmerón, L. (2018). Don't throw away your printed books: A meta-analysis on the effects of reading media on reading comprehension. *Educational Research Review*, 25, 23–38. <https://doi.org/10.1016/j.edurev.2018.09.003>
- Dick, W., Carey, L., & Carey, J. O. (2015). *The systematic design of instruction* (8th ed.). Pearson.
- Duke, N. K., Ward, A. E., & Pearson, P. D. (2021). The science of reading comprehension instruction. *The Reading Teacher*, 74(6), 663–672. <https://doi.org/10.1002/trtr.1993>
- Ennis, R. H. (2018). Critical thinking across the curriculum: A vision. *Topoi*, 37(1), 165–184. <https://doi.org/10.1007/s11245-016-9401-4>
- Facione, P. A. (2020). *Critical thinking: What it is and why it counts*. Insight Assessment. <https://www.insightassessment.com>
- Fullan, M. (2016). *The new meaning of educational change* (5th ed.). Teachers College Press.
- Furenes, M. I., Kucirkova, N., Bus, A. G., & Buchsbaum, D. (2021). A systematic review of shared reading interventions and their impact on language development. *Review of Educational Research*, 91(4), 499–529. <https://doi.org/10.3102/00346543211022380>
- Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi. (2021). *Panduan gerakan literasi sekolah*. Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi.
- Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi. (2022). *Asesmen Nasional tahun 2022*. Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi.
- Kim, H., & Choi, I. (2021). The Relationship Between Literacy Practices and Critical Thinking Skills in Elementary Education. *Thinking Skills and Creativity*, 41, 100899. <https://doi.org/10.1016/j.tsc.2021.100899>
- Kuhn, D. (2019). Critical thinking as discourse. *Human Development*, 62(3), 146–164. <https://doi.org/10.1159/000500171>
- Kurt, S. (2018). ADDIE Model: Instructional Design. Educational Technology. <https://educationaltechnology.net/the-addie-model-instructional-design/>
- Lederman, N. G., & Abell, S. K. (Eds.). (2014). *Handbook of research on science education* (Vol. 2, pp. 600–620). New York: Routledge.
- List, A., & Sun, Y. (2023). *To clarity and beyond: Situating higher-order, critical, and critical-analytic thinking in the literature on learning from multiple texts*. *Educational Psychology Review*, 35(2), Article 40. <https://doi.org/10.1007/s10648-023-09756-y>
- Marsh, V. L. (2021). Broadening student and teacher participation: Multimodal projects in a classroom affinity space. *Journal of Adolescent & Adult Literacy*, 64(5), 521–529. <https://doi.org/10.1002/jaal.1134>
- McKenney, S., & Reeves, T. C. (2020). Educational design research: Portraying, conducting, and enhancing productive scholarship. *Medical Education*, 55(1), 82–92. <https://doi.org/10.1111/medu.14280>

- Morad, S., Ragonis, N., & Barak, M. (2021). *An integrative conceptual model of innovation and innovative thinking based on a synthesis of a literature review*. *Thinking Skills and Creativity*, 40, Article 100824. <https://doi.org/10.1016/j.tsc.2021.100824>
- Morrison, G. R., Ross, S. M., Morrison, J. R., & Kalman, H. K. (2019). *Designing effective instruction* (8th ed.). Wiley.
- Mullis, I. V. S., Martin, M. O., Foy, P., & Hooper, M. (2023). *PIRLS 2021 international results in reading*. TIMSS & PIRLS International Study Center, Boston College. <https://pirls2021.org/results>
- Napiah, N. (2022). The Need Analysis of Ethnoscience-Based English Learning Material: A Contextual Model. *Eternal (English Teaching Journal)*, 13(1), 32–38.
- Napiah, N. (2024). *The Development of Ethnoscience-Based English Learning Materials in a Contextual Model* (Doctoral Dissertation). Universitas PGRI Semarang.
- OECD. (2023). *PISA 2022 Results (Volume I): The State of Learning and Equity in Education*. Paris: OECD Publishing. <https://doi.org/10.1787/53f23881-en>
- Organisation for Economic Co-operation and Development. (2023). *PISA 2022 results (Volume I): The state of learning and equity in education*. OECD Publishing. <https://doi.org/10.1787/53f23881-en>
- Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). SAGE Publications.
- Piaget, J. (1972). *The Psychology of the Child*. New York: Basic Books.
- Plomp, T., & Nieveen, N. (Eds.). (2013). *Educational design research*. Netherlands Institute for Curriculum Development (SLO).
- Plomp, T., & Nieveen, N. M. (2013). Educational design research: Part A: An introduction.
- Ra, E., Kim, S. J., Seo, E. Y., & So, G. (2025). Designing LMS and instructional strategies for integrating generative-conversational AI. *arXiv*. <https://doi.org/10.48550/arXiv.2509.00709>
- Reeves, T. C., & McKenney, S. (2021). *Educational design research: Practical applications and methodological challenges*. In *Handbook of Design Research Methods in Education*. Routledge.
- Richey, R. C., & Klein, J. D. (2007). *Design and development research: Methods, strategies, and issues*. Lawrence Erlbaum Associates.
- Tiruneh, D. T., Verburgh, A., & Elen, J. (2018). Effectiveness of critical thinking instruction in higher education: A systematic review of intervention studies. *Educational Research Review*, 24, 1–17. <https://doi.org/10.1016/j.edurev.2018.03.001>
- UNESCO. (2023). *Global Education Monitoring Report 2023: Technology in Education – A Tool on Whose Terms?* Paris: UNESCO
- United Nations Educational, Scientific and Cultural Organization. (2021). *Reimagining our futures together: A new social contract for education*. UNESCO. <https://unesdoc.unesco.org>
- Van Laar, E., Van Deursen, A. J. A. M., Van Dijk, J. A. G. M., & De Haan, J. (2020). Determinants of 21st-century digital skills: A large-scale survey among working professionals. *Computers in Human Behavior*, 100, 93–104.
- Viano, S., & Baker, D. J. (2020). *How administrative data collection and analysis can better reflect racial and ethnic identities*. *Review of Research in Education*, 44(1), 301–331.
- Vygotsky, L. S. (1978). *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.
- World Bank. (2022). *Learning poverty: Solving the reading crisis globally*. World Bank. <https://www.worldbank.org/en/topic/education/brief/learning-poverty>
- Zhang, D., & Ke, S. (2020). The simple view of reading made complex by morphological decoding fluency in bilingual fourth-grade readers of English. *Reading Research Quarterly*, 55(2), 311–329. <https://doi.org/10.1002/rrq.287>
- Zhang, L., & Kim, S. (2023). Literacy-Based Learning and Critical Thinking Development: A Meta-Analysis of Educational Interventions. *Education Sciences*, 13(8), 812. <https://doi.org/10.3390/educsci13080812>