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Development of Integrated Writing Materials Based on Multiliteracies and High-Order Thinking Skills

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Abstract: This study aimed to develop Integrated Writing Materials Based on High-Order Thinking Skills and Multiliteracies. This research utilized the D&D research method with the ADDIE design (Analysis, Design, Develop, Implementation, Evaluation). The subjects in this study are Elementary Schools located in the Garut regency. The instruments in this study include expert validation questionnaires, teacher and student response questionnaires, and test instruments to assess high-order thinking skills. Data analysis is conducted using a mixed methods approach. The results of developing multiliteracy-based teaching materials and high-level thinking skills obtained a good category from expert validation, teacher responses, and student responses. Subsequently, the teaching material developed in this research was piloted to students to assess its effectiveness on students' high-order thinking skills. The results of the high-order thinking skills test after using the developed teaching material show that the average N-gain score at school 1 is 78%, which falls into the highly effective category. The average N-gain score at school 2 is 79%, also classified as highly effective. Lastly, the average N-gain score at school 3 is 81%, once again falling into the highly effective category. From these results, it can be concluded that the development of multiliteracy-based teaching materials effectively enhances students' higher-order thinking abilities.

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Introduction

In line with the characteristics of the 21st century, literacy skills are increasingly developing. Morocco (2008) states that in this twenty-first century, there are at least four crucial competencies that students must master. These four 21st-century competencies are conceptual understanding competence, critical thinking competence, collaboration competence, and communication competence. Building a culture of literacy in the realm of education (family, school, society) has been actively promoted by the Indonesian Ministry of Education and Culture since 2016 through the National Literacy Movement (Gerakan Literasi Nasional - GLN). GLN is an integral part of implementing Ministerial Regulation No. 23 of 2015 concerning cultivating character (budi pekerti). Apart from the efforts by Kemdikbud, various stakeholders have also been involved in promoting GLN, including literacy activists, academics, professional organizations, businesses, other ministries, and institutions (Ibrahim, 2017). The World Economic Forum 2015 highlighted three pillars: literacy proficiency, competence, and character. Literacy encompasses more than just reading and writing; it includes literacy in reading and writing, science, information technology, and financial literacy (Widiyanto, 2016).

Socialization and improving literacy movement skills in schools have not yielded maximum results due to the lack of sufficient support and training to enhance awareness and

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literacy skills among students and teachers. Many teachers still believe that literacy is solely the responsibility of the Bahasa Indonesia subject teachers. Additionally, the available reading materials and texts in schools have not been optimally utilized to develop students' literacy abilities. As a result, the initiated literacy movement in schools cannot be effectively implemented. The fact shows that according to the latest ranking based on data from the World's Most Literate Nations, compiled by Central Connecticut State University in 2016, Indonesia's literacy ranking is in the second-to-bottom position out of the 61 researched countries (Agoestyowati, 2017). Concerning this, Musthafa (2014) emphasizes the importance of promoting literacy among children systematically through the following approaches: (1) providing a variety of literacy artifacts for children, (2) demonstrating diverse literacies and involving children in experiencing them, (3) showcasing various literacy events and engaging children in those events, and (4) demonstrating literacy interactions and involving children in them.

Based on the data above, the researchers conducted a preliminary study to assess the multiliteracy abilities of the students. From the questionnaires distributed in several schools in Garut Regency, the results indicated that the average multiliteracy ability of the students is 2.98. According to Widoyoko (2013) this result falls into the category of "sufficient." It shows that the students' multiliteracy skills have not yet reached their maximum potential.

Achieving good multiliteracy skills also requires good teaching materials. Prastowo (2014) states that teaching materials are all materials (whether information, tools, or texts) that are systematically arranged, presenting a complete picture of the competencies that learners will master, and used in the learning process with the purpose of planning and examining the implementation of learning. Literacy teaching materials refer to the availability of reading texts. Well-developed teaching materials with appropriate strategies will foster the creative efforts of the learners to discover the content of the readings on their own. The intended process of discovery, besides recognizing the type of text to be read, can also be achieved by making predictions and summarizing the content of the readings accurately. This aligns with Ghazali's opinion (Ghazali, 2010) that six activities can be undertaken to achieve success in understanding the content of reading, including (1) recognizing the type of text, (2) recognizing various text structures, (3) predicting and summarizing the content of a text or reading, (4) making references to implicit information contained in the text, (5) determining the meaning of unfamiliar words based on the context of the reading, and (6) analyzing the morphology of unfamiliar words. This condition is also in line with the preliminary study data conducted by researchers regarding the implementation of learning in elementary schools. The results of the preliminary study showed that the average implementation of multiliteracy learning in elementary schools was 3.06, which means it is categorized as "sufficient." This certainly should be of greater concern for teachers who are practitioners of learning in elementary schools.

In the preliminary study conducted by the researcher, in addition to assessing the students' learning and multiliteracy abilities, they also examined the students' Information and Communication Technology (ICT) literacy learning and skills. The average score for ICT literacy learning was 3.1, while the students' ICT literacy skills averaged 3.04. According to Widoyoko (2013) both ICT literacy learning and skills fall into the category of "sufficient." This indicates that apart from the fact that the student's learning and multiliteracy abilities have not reached their full potential, their ICT literacy learning and skills are also not yet at their maximum level.

The urgency of developing 21st-century skills became even stronger when The Partnership for 21st Century Skills formulated the framework for 21st-century learning. In

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this framework, academic content comprising the 3Rs (writing, reading, and arithmetic) and 4Cs (critical thinking, creativity, collaboration, and communication) are considered essential elements in 21st-century learning activities. Referring to this framework, Higher Order Thinking Skills (HOTS) is the answer to meet the challenges of 21st-century education. Moreover, through HOTS, students become accustomed to thinking critically and creatively, enabling them to make informed decisions and solve problems by analyzing, evaluating, and creating (Anderson & Krathwohl, 2001).

To achieve the goal of fostering High Order Thinking Skills in students, a learning process that accommodates the development of these skills is necessary. Active learning, student-centered approaches, promoting curiosity (questioning), and assessment based on HOTS are some of the methods to help students achieve higher-order thinking skills (Boaler & Staples, 2008). The primary emphasis in fostering HOTS lies in the implementation of Student-Centered Learning (SCL). Students engaged in SCL and provided with challenges during their learning process have been shown to exhibit a growth rate of 25% faster than those who did not receive such treatment (Conklin & Manfro, 2012).

In the school learning environment, to achieve the expected Higher-Order Thinking Skills (HOTS) goals, supportive learning materials are necessary. One of the essential learning aids required is instructional materials. Instructional materials are a set of tools or resources that contain learning content, methods, limitations, and evaluation techniques designed systematically and attractively to achieve the intended objectives, which are the acquisition of competencies and their derivatives. According to Prastowo (2014), teaching materials or instructional materials are a set of systematically organized materials or learning substances that present the complete representation of competencies that learners will master in learning activities. However, instructional materials must be structured and developed following established principles or rules. This aligns with Lestari (2013) that instructional materials must be designed and written with instructional standards as they will be used by teachers to assist and support the learning process. Therefore, the development of instructional materials that integrate with HOTS is crucial, based on the need for achieving competencies at the conceptual and skill levels, as well as multiliteracy, as explained earlier.

However, the results of preliminary studies conducted by researchers related to learning and HOTS abilities indicate that the average implementation of HOTS learning is 3.1, and students' HOTS abilities are 3.04, which falls into the category of "adequate" according to Widoyoko (2013). Based on this data, it shows that the learning sources/instructional materials/learning aids currently used in schools do not yet accommodate/develop the expected HOTS abilities.

Based on the review of theoretical studies, paradigms, opportunities, and challenges related to the development of literacy from the perspective of higher-order thinking skills and multiliteracy that are in line with the demands of the 2013 curriculum, especially at the elementary school level, researchers are interested in developing instructional materials to enhance multiliteracy and HOTS abilities. This research aims to know how is the development of multiliteracy-based instructional materials and high-order thinking skills in writing diversity.

Research Method

This research uses R&D method with ADDIE model, in developing integrated multiliteracy and High Order Thinking Skill-based writing materials for fifth-grade students in Elementary School. According to Molenda (2003) The ADDIE model is a systematic instructional design framework used to guide the development of effective learning

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experiences. It consists of five key steps: Analysis, Design, Development, Implementation, and Evaluation. The ADDIE design is a widely used framework in instructional design and material development. The ADDIE framework consists of five stages, namely Analysis, Design, Development, Implementation, and Evaluation. The research population consists of all teachers and students in Garut Regency. The sampling technique used is purposive sampling. The selection of the sample is based on the location of schools in urban and rural areas. The samples for this research are SDN 5 Regol, SDN 2 Karangmulya, and SDN 2 Pameungpeuk. These three elementary schools represent the South Garut, Garut City, and North Garut regions.

The research instrument used to develop teaching materials based on the multiliteracy and HOTS model is a questionnaire. According to Safithry (2018) a questionnaire is a data collection technique that involves providing or sending a list of questions to be filled out by the respondents themselves. The content of the questionnaire generally includes questions about facts, opinions, and self-perceptions. The use of questionnaires aims to obtain relevant information for the research and gather information about a particular issue simultaneously. In addition to questionnaires, this research also utilizes a test instrument. The test is used to assess the effectiveness of the developed instructional materials on higher-order thinking skills.

In this study, data was collected through a research instrument in the form of questionnaires given to validators and respondents. The questionnaire was previously guided by a scoring guide called the Likert scale. The Likert scale is used to measure the attitudes, opinions, and perceptions of individuals or groups regarding a phenomenon (Sugiyono, 2018). The statements written on the expert validation questionnaire for content, media, and language use the Likert scale consisting of options: Very Good, Good, Fair, and Poor. On the other hand, the statements written on the teacher, student, and parent response questionnaires consist of options: Strongly Agree, Agree, Disagree, and Strongly Disagree. The scores given to these options depend on consistent assessments. The scoring guide on the questionnaire is as follows:

Table 2.1 Scoring based on the Likert Scale (Djaali et al., 2013)

Excellent	**Good**	**Average**	**Poor**	**Very Poor**
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

The data used in this study consists of both qualitative and quantitative data. Data processing utilizes a mixed methods approach. According to Sugiyono (2018) mixed methods refer to a research method that combines or integrates quantitative and qualitative methods for simultaneous use in a study, resulting in more comprehensive, valid, reliable, and objective data. The data collection method is divided into 2 parts:

1) Data Collection Method for Quality Assessment by Content, Media, and Language Experts: a. Qualitative data is in the form of categorical values: Excellent (E), Good (G), Average (A), Poor (P), and Very Poor (VP). b. Quantitative data is in the form of scoring: E = 5, G = 4, A = 3, P = 2, VP = 1.
2) Data Collection Method for Teacher and Student Assessment: a. Qualitative data is in the form of categorical values: Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD). b. Quantitative data is in the form of scoring: SA = 5, A = 4, N = 3, D = 2, SD = 1.

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Results and Discussion

This section will explain the research results following the chosen research method, which is development research. The method includes Analysis, Design, Development, Implementation, and Evaluation. The explanation of the research results based on each research phase is as follows:

Analysis

The analysis stage is conducted to gather information about students, learning objectives, and the learning environment. The analysis is performed by interviewing several teachers who are the subjects of the study. Design: In the design phase, the researchers formulated a comprehensive plan to address the identified needs and achieve the research objectives. This phase involved designing a prototype or framework that served as the basis for the subsequent development and implementation stages.

Based on the interview and discussion results, several conditions and needs regarding schools and language learning can be concluded. Firstly, the schools have implemented the 2013 Curriculum, started implementing the Merdeka Curriculum in some classes, developed and used materials following the Learning Objectives and syllabus, and established learning assessment standards. Secondly, the teaching methods have not yet focused on the integration of multiliteracy and 21st-century skills (HOTS). The schools have started developing Student Worksheets to accompany the textbooks and have provided some media for language learning. From the data obtained in the interview and discussion, it can be concluded that the current learning process has not adequately considered the methods, teaching materials, and media for multiliteracy and 21st-century skills. Therefore, the development of teaching materials based on multiliteracy and oriented toward 21st-century skills (HOTS) is needed.

Design

The planning stage is conducted to design teaching materials based on the analysis results, including determining learning objectives, content, structure, format, and the learning methods that will be used. This stage is inseparable from the process of examining the conceptual foundation in developing multiliteracy-based and HOTS-oriented teaching materials. The following is the matrix of the results of the study on the conceptual foundation of multiliteracy-based and HOTS-oriented teaching materials.

Table 2. Conceptual Matrix of Multiliteracy Teaching Materials & Higher Order Thinking Skills

Teaching Material	Multiliteracy	Higher-Order Thinking Skills	Conclusion
Teaching Content	Definition Conceptual	Definition Conceptual	Definition Conceptual and Operational Definition
Student Worksheets	Definition Conceptual	Definition Conceptual	Definition Conceptual and Operational Definition
Assessment Instruments	Definition Conceptual	Definition Conceptual	Definition Conceptual and Operational Definition

a) Teaching Material Based on Multiliteracy and High-order Thinking Skills

Multiliteracy and HOTS-based teaching materials are a systematic set of materials that involve the skills of reading, writing, listening, and speaking. Additionally, they also involve the ability to criticize, analyze, and evaluate information from various sources across different disciplines, as well as the capability to communicate that information. These materials are designed to enhance the development of analytical, evaluative, and creative thinking skills.

b) Student Worksheets Based on Multiliteracy and High-order Thinking Skills

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A student worksheet based on multiliteracy (HOTS) is printed teaching material in the form of sheets of paper that contain subject matter, summaries, and instructions for learning tasks designed with consideration for various forms of literacy. This involves engaging in reading, writing, listening, and speaking skills. Additionally, it also involves the ability to criticize, analyze, and evaluate information from various sources across different disciplines and the ability to communicate

c) Assessment instrument based on Multiliteracy and Higher-order Thinking Skills

Assessment instrument based on Multiliteracy and HOTS is a systematic tool used to collect data on students' competency progress based on learning objectives while considering diverse forms of literacy. It involves skills such as reading, writing, listening, and speaking. Additionally, it incorporates the ability to criticize, analyze, and evaluate information from various sources across different disciplines, as well as the capacity to communicate information to develop analytical, evaluative, and creative thinking skills.

Development

The results of the development of multiliteracy and HOTS teaching materials.

a) Teaching Material Cover

Initial Cover Revised Cover

b) table of contents

Initial Revised

c) Variety of Student Worksheets

LKS 1

LKS 2

LKS 3

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d) Assessment Instruments

Assessment Instrument for Multiliteracy-based Teaching Materials and Higher-Order Thinking Skills to Measure the Achievement of Higher-Order Thinking Skills. The high-level thinking abilities observed in the development of this instructional material include Identifying Relationships, Determining Differences, Analyzing Factors, Analyzing Activities, and Analyzing Advertisements.

The development stage produces a set of teaching materials consisting of instructional materials, student worksheets, and assessment instruments oriented towards multiliteracy and Higher-Order Thinking Skills (HOTS). Subsequently, a feasibility test is conducted to assess the quality and gather input from subject matter experts, media experts, language experts, and practitioners. The results of the feasibility test are as follows.

Results of Feasibility Test by Subject Matter Experts. The results of the material expert evaluation are predominantly good and some are quite good. As for the input for improving the teaching material, it includes providing instructions for using worksheets, presenting sections that facilitate students to ask questions and formulate problems, and completing several sections, especially the bibliography.

Media Expert's Feasibility Test Results. The results of the expert assessment show that the media test results are mostly good, with some being fairly good. As for the input for improving this teaching material, it includes ensuring consistent LKPD (Student Worksheets) sizes, proportional layout, and appropriate placement of illustrations so as not to cover the sentences. Expert Language Proficiency Test Results. The expert assessment results indicate that the media test results are predominantly good and some are fairly good. As for the input for improving this teaching material, it includes standardizing the grammar for better consistency, motivating the students, and refining the language precision.

Implementation

The implementation stage is carried out to introduce and integrate teaching materials into the learning environment. The description of the implementation of multiliteracy-based teaching materials and HOTS is as follows.

Observation of Teaching Materials Implementation

In addition to the observations conducted on the teachers, there are also student work results in the form of worksheets provided during the course of the learning process.

Table 3. Student's Work Result

No	Aspect	Learning 1	Learning 2	Learning 3
1	Language	3.2	3.06	3.3
2	Literature	3.3	3.1	3.2

Evaluation

The evaluation stage is conducted to assess the effectiveness and efficiency of the developed teaching materials.

Table 4. Teacher's Response

No	Aspect	School 1	School 2	School 3
1	Content Suitability	3.0	3.4	3.4
2	Presentation Suitability	3.4	3.0	3.2
3	Language	3.1	3.2	3.1
4	Benefits/Utility	3.2	3.2	3.2
Summary		12.5	12.6	12.8
Average		3.1	3.2	3.2

Based on the responses provided by the teachers in three schools, in the given questionnaire, four different aspects were assessed: Content Suitability, Presentation Suitability, Language, and Benefit/Utility. In terms of Content Suitability, School 1 scored 3.0, School 2 scored 3.4,

and School 3 also scored 3.4. In this aspect, Schools 2 and 3 had slightly higher evaluations compared to School 1. For Presentation Suitability, School 1 scored 3.4, School 2 scored 3.0, and School 3 scored 3.2. Once again, School 1 demonstrated slightly better performance than School 2, while School 3's evaluation approached the score of School 1. The Language aspect was also assessed, with School 1 scoring 3.1, School 2 scoring 3.2, and School 3 scoring 3.1. Here, School 2 had the highest score, while School 1 and School 3 had comparable assessments. Finally, in the Benefit/Utility aspect, all schools received the same score of 3.2. This indicates that the three schools are considered to have similar benefits and utility in the context being evaluated. Overall, the three schools, which were given the questionnaire to assess the suitability of the teaching materials, received positive evaluations.

Table 5. Students Respons

No	Aspect	School 1	School 2	School 3
1	Graphic Design	3.69	4.00	3.63
2	Content Suitability/Relevance	3.63	4.06	4.19
3	Language	3.81	3.81	4.00
Summary		11.13	11.87	11.82
Average		5.57	5.94	5.91

Based on the given student response data, three schools received student responses to assess three different aspects: Graphics, Content Suitability, and Language. Questionnaires were given to each school for these respective aspects: School 1, School 2, and School 3. In the Graphics aspect, School 1 obtained a score of 3.69, School 2 received a score of 4.00, and School 3 received a score of 3.63. This indicates that the quality of graphics in the teaching materials has received very positive responses. Therefore, in terms of graphics, the provided teaching materials are already good.

Regarding the Content Suitability aspect, School 1 obtained a score of 3.63, School 2 received a score of 4.06, and School 3 received a score of 4.19. This shows that the content suitability aspect is already good. The Language aspect was also evaluated, with both School 1 and School 2 receiving the same score of 3.81, and School 3 obtaining a score of 4.00. This indicates that student's responses to the teaching materials are good in terms of language aspect. In this study, testing of students' abilities or competencies was conducted before the implementation of the developed teaching materials, known as the pre-test, and also after the implementation of the teaching materials, known as the post-test. This testing aimed to observe students' competencies in multiliteracy and higher-order thinking skills in three schools. Based on the results of the N-gain score calculation above, it is shown that the average N-gain score at school 1 is 78 or 78%, which falls into the highly effective category. The average N-gain score at school 2 is 78 or 79%, also falling into the highly effective category. Lastly, the average N-gain score at school 3 is 81 or 81%, again classified as highly effective. Therefore, it can be concluded that the use of teaching materials is highly effective in improving students' cognitive learning outcomes in the three schools that were included in the research sample.

Discussion

In this research, instructional material development was carried out based on the ADDIE Model theory developed by Dick & Carey. The developed instructional material is intended to create better, more effective learning and serve as a guideline for teachers in the future. This aligns with the viewpoint of Barokati & Annas (2013) who stated that the ADDIE model is one of the guiding models for developing effective, dynamic, and supportive learning. The selection of the ADDIE Model was not without reason. The

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development of instructional material certainly requires needs analysis, especially regarding the current needs of students. According to Tegeh & Kirna (2013), the ADDIE model is one of the systematic instructional design models. This model is developed or organized systematically in a programmed sequence of activities to solve learning problems related to learning resources suitable for students' needs and characteristics.

Based on the N-gain score calculations conducted, all the schools that were sampled in the study showed significant score improvements. The average N-gain scores for schools 1, 2, and 3 were 78%, 78%, and 81%, respectively. These results indicate that the use of instructional materials in implementing the multiliteracy theory and higher-order thinking skills has had a highly effective impact on enhancing students' higher-order thinking abilities in all three schools.

This indicates that the use of instructional materials that align with the principles of multiliteracy theory and higher-order thinking skills can provide positive benefits for students in developing their literacy skills and higher-order thinking abilities. The emphasis on text variation and approaches that encourage higher-order thinking has facilitated better comprehension, reflection, and the development of critical thinking skills. The instructional materials developed by the researchers prioritize student activities involving reading, writing, and peer discussions.

Furthermore, research by Graham & Perin (2001) that regular writing can improve critical and analytical thinking skills. Through the writing process, individuals are required to organize and articulate ideas clearly, consider strong arguments, and develop cohesive thoughts. These writing activities encourage individuals to think critically, analyze information, and develop evidence-based arguments. Even in research by Krashen (2002) it was found that extensive and regular reading can enhance comprehension, analytical ability, and general knowledge, all of which are essential components of higher-order thinking skills.

Theoretically, multiliteracy-based instructional materials can enhance higher-order thinking abilities, including analysis, evaluation, and creation. This is because they involve multiliteracy using various forms of literacy and communication in diverse contexts. Kress (1996) emphasizes the importance of understanding various text formats, such as images, videos, and audio, as well as the ability to read, write, and communicate through digital media. He argues that multiliteracy helps improve critical, analytical, and interpretative skills, enabling individuals to effectively evaluate, compare, and synthesize information from various sources.

Willingham & Daniel (2017) emphasize that reading and writing build knowledge, aid in organizing and formulating ideas, and enhance abstract and logical thinking skills. Therefore, reading and writing not only train basic cognitive processes through critical information processing but also develop analytical, synthesis, evaluation skills, as well as problem-solving and creative abilities. The application of multiliteracy in education is also highlighted by Marsh & Jackie (2017) in their book titled "Popular Culture, New Media, and Digital Literacy in Early Childhood." According to Marsh, multiliteracy helps children to comprehend, interpret, and interact with various forms of popular media, thereby enhancing their thinking skills. Improving students' abilities can also be associated with the Constructivism Theory. According to this theory, individuals construct their knowledge through interactions with the environment and their personal experiences. As stated by Paradesa (2015) constructivism is an approach that believes individuals actively build or create their own knowledge, and reality is determined by their experiences. Meanwhile, according to Driscoll & Marcy (2000), the constructivist learning theory is a philosophy that enhances students' logical and conceptual growth. In the context of multiliteracy instructional

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materials, students engage in exploring and interacting with various types of texts, including print materials, digital media, images, videos, and more. This process allows students to view different perspectives, compare and contrast information, and build a broader and deeper understanding of the topics they are learning. It enhances their ability to analyze information, evaluate arguments, and generate new ideas.

Conclusion

The results of developing multiliteracy-based teaching materials and high-level thinking skills obtained a good category from expert validation, teacher responses, and student responses. Subsequently, the teaching material developed in this research was piloted to students to assess its effectiveness on students' high-order thinking skills. The results of the high-order thinking skills test after using the developed teaching material show that the average N-gain score at school 1 is 78%, which falls into the highly effective category. The average N-gain score at school 2 is 79%, also classified as highly effective. Lastly, the average N-gain score at school 3 is 81%, once again falling into the highly effective category. From these results, it can be concluded that the development of multiliteracy-based teaching materials effectively enhances students' higher-order thinking abilities.

Recommendation

Based on the conclusions and implications of the research above, the following recommendations can be given to teachers, schools, and researchers:

1) The research has produced multiliteracy-based teaching materials to develop students' Knowledge, Belief, and High Order Thinking Skills (HOTS). Therefore, elementary school teachers can create and utilize these teaching materials consistently in language learning to enhance their students' High Order Thinking Skills.
2) This study has demonstrated that multiliteracy-based teaching materials effectively and significantly improve High Order Thinking Skills. As a result, it is hoped that schools will continuously support teachers in implementing multiliteracy-based learning to develop High Order Thinking Skills among elementary school students.
3) The research has generated multiliteracy-based teaching materials for elementary school students and has proven their effectiveness in significantly improving High Order Thinking Skills. Therefore, further research with similar topics in different contexts and broader scope is encouraged.

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