| **RESEARCH ARTICLE**

Authentic Assessment Based on Higher Order Thinking Skills in Improving Student Literacy

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| **ABSTRACT**

This study seeks to enhance students' literacy skills by implementing an authentic assessment model that promotes higher-order thinking. The PISA results from 2018 to 2022 indicate that Indonesia's students consistently underperform in literacy compared to international standards.However, it has increased by 5-6 positions. The assessment model adopted by the OECD (*Organisation for Economic Co-operation and Development*) emphasizes the development of high-level cognitive competencies such as analysis, evaluation, and creation, which is in line with the demands of 21st-century literacy. This method offers a suitable assessment framework to equip students for global challenges. By fostering literacy and critical thinking skills through authentic assessments, students become familiar with the measurement model. This Research and Development study employs the ADDIE method, encompassing Analysis, Design, Development, Implementation, and Evaluation. The research involved three schools in Cirebon, Indonesia. Assessment experts and practitioners in the field carry out assessment validation. The results of the study show that this authentic assessment based on higher-order thinking skills is valid and very feasible to use, with a real contribution to significantly improving students' literacy skills. This research confirms that this assessment aligns with 21st-century learning needs and effectively stimulates critical thinking and active student engagement in learning.

1. Introduction

PISA, an international assessment program launched by the OECD, an intergovernmental organization dedicated to evaluating educational systems worldwide(Sirén & Sulkunen, 2023). This evaluation measures the literacy ability of 15-year-old students in three main areas, including reading, mathematics, and science. Literacy in PISA includes more than just reading because it involves the ability to understand, analyze, and use information to solve problems in the real world. The program aims to not only compare student performance internationally but also assess the effectiveness of education systems, providing policymakers with data to enhance educational quality. (Muench et al., 2022; Sirén & Sulkunen, 2023).

Although the results of PISA Indonesia show an increase in reading literacy scores in several periods, including an increase of 5-6 ranks in PISA 2022 compared to 2018, Indonesia's global position is still below the international average. This shows that literacy learning in schools still needs significant improvement so that Indonesian students can compete globally. This situation indicates that various efforts to improve literacy that have been carried out are not enough or still need to be improved to overcome literacy challenges as a whole (Chaerunnisa et al., 2024).

Literacy skills are very important in the ever-evolving digital era. The data shows that students need critical thinking skills to assess information, verify truth, and avoid the negative impact of spreading fake news (Lo & Leung, 2022). One strategic approach to improving this ability is through authentic assessment, which is an assessment designed to measure students' ability to apply students knowledge and skills in real-life situations. In contrast to conventional assessments that tend to be rote-based,

authentic assessments encourage students to engage in relevant and meaningful tasks, which ultimately helps students develop higher-order thinking skills (Ajjawi et al., 2020).

Higher Order Thinking Skills (HOTS), such as analysis, evaluation, and creation, are essential for modern education. Beyond their relevance to 21st-century challenges, HOTS are a core objective of global curriculum reform, as they cultivate students' capacity to address complex problems. (Shcheglova et al., 2024). Through authentic assessments designed to stimulate these skills, students can be trained to think critically and creatively, which not only improves students' literacy but also prepares them to face global demands (Ajjawi et al., 2020).

This research is important to be carried out in response to the low literacy level of Indonesian students which is reflected in the PISA results. By integrating higher-order thinking skills in authentic assessments, this research aims to provide a comprehensive solution to significantly improve student literacy. This approach is expected to create a learning system that is more relevant to the needs of the 21st century, as well as increase the competitiveness of Indonesian students at the international level.

2. Literature Review
2.1 Authentic Assessment

Authentic assessment assesses students' ability to use knowledge and skills in real-world situations. Unlike conventional tests that tend to focus on memorization, authentic assessments engage students in relevant and meaningful tasks, such as projects, portfolios, simulations, and presentations (Setyadharma & Jaja, 2022). This assessment not only evaluates the final result but also the student's thought process, thus providing a more complete picture of their abilities (Fawns et al., 2024).

As part of modern education, authentic assessment has key characteristics, namely relevance to real life, emphasis on complex problem-solving, and integration of cognitive, affective, and psychomotor aspects. This approach provides students with the opportunity to understand the relationship between learning in school and real-world challenges (Matthews et al., 2024). Additionally, authentic assessments are designed to necessitate the use of higher-order thinking skills (HOTS), such as analysis, evaluation, and creation, which are crucial for addressing 21st-century challenges. (Zhang et al., 2024; Zulaiha & Mulyono, 2020).

Authentic assessments are valuable because they can significantly boost students' motivation to learn, deepen their understanding of concepts, and provide meaningful feedback. With contextual design, students are not only trained to understand concepts but also to use them in real-life situations (Broadbent et al., 2018; Zulaiha & Mulyono, 2020). Research by Setyadharma and Jaja (2021) shows that a valid authentic assessment instrument can effectively measure students' abilities objectively while making a relevant contribution to learning development.

However, the implementation of authentic assessments still faces challenges, especially the lack of teacher training in designing valid and effective assessments. Minimal understanding of assessment often hinders teachers from optimally integrating this approach. Therefore, teacher capacity building is important to ensure that authentic assessments can be implemented properly (Broadbent et al., 2018; Hung & Wu, 2024). By emphasizing the relevance, complexity, and relevance of learning to the real world, authentic assessments play an important role in improving students' literacy skills and higher-order thinking skills (Zulaiha & Mulyono, 2020). As an assessment and learning tool, authentic assessment supports the goals of modern education by creating meaningful learning experiences and encouraging students to become individuals capable of critical and creative thinking (Setyadharma & Jaja, 2022).

2.2 Higher Order Thinking Skills (HOTS)

Higher Order Thinking Skills (HOTS) are higher-level cognitive abilities that involve analysis, evaluation, and creation. These competencies are important to help students face complex challenges and play an active role in modern society. HOTS trains students to think critically, creatively, and innovatively, allowing students to analyze information in depth, draw conclusions, and solve problems or make decisions (Rubin, 2024). HOTS is necessary for rational thinking, finding alternative ideas, and applying realistic approaches that support individuals in the environment (Virranmäki et al., 2021).

Unlike lower-order thinking skills (LOTS), which prioritize memorization and comprehension, higher-order thinking skills (HOTS) encourage students to apply, analyze, evaluate, and create. HOTS plays a crucial role in active learning, where students independently explore information, assess arguments, and generate novel ideas. (Pangestu & Karnadi, 2020). This ability is the main foundation in creating a generation that is ready to compete in the global era, especially in facing the challenges of an unstable, complex, and uncertain environment (Meijer et al., 2023). Students are relatively actively involved in learning, analyzing situations, evaluating arguments, and generating new ideas. HOTS-based learning is crucial for supporting students' knowledge acquisition and academic success, while also equipping them to tackle 21st-century challenges. (Pangestu & Karnadi, 2020; Yanto et al., 2021).

The role of teachers is crucial in integrating HOTS into the learning process through teaching designed to develop students' critical and creative thinking skills. Additionally, HOTS questions are designed to foster 21st-century skills such as critical thinking, creativity, collaboration, and communication thinking (Kusmana, 2020). In a learning environment, HOTS not only encourages innovative problem-solving but also fosters students' ability to analyze, evaluate, and create new knowledge. This is essential in

preparing the young generation to be globally competent, as seen in the implementation of HOTS-based curricula in various countries, including Japan (Mirasol, 2024).

With the integration of HOTS in learning, students are not only prepared for academic success but also to face the complex challenges and demands of the ever-evolving modern world. These skills are an important foundation in shaping a creative, innovative, and globally competitive generation, who can think critically, adaptively, and create new solutions amid the dynamics of changing times (Birch et al., 2016; Vaessen et al., 2017).

2.3 Literacy

Literacy is the ability to read, understand, and interpret texts critically and deeply, and apply this knowledge in daily life. In the context of language learning, literacy encompasses more than just reading and writing skills. This involves the capacity to analyze, synthesize, and evaluate textual information, as well as the ability to connect this information to real-world experiences and contexts. (Ku et al., 2023). Literacy also includes communication skills, both oral and written, that allow individuals to express ideas, debate, and interact in a variety of social and professional situations (Nugroho et al., 2023).

Literacy skills are an important foundation for children's development. When children develop a broad vocabulary, it will be easier to understand reading. Similarly, when they practice expressing themselves frequently, they will be more confident in speaking and reading. These skills are not only limited to reading and writing abilities but include various aspects that are interrelated and supportive of each other (Padillo et al., 2024). Early literacy development and educational interventions for young learners are very important, especially reading skills in early childhood education. Reading is a foundational skill and a gateway to academic achievement and lifelong learning (Caban et al., 2024).

Literacy achievements in language learning can be seen from the extent to which students can understand the text in depth, identify the implied meaning, and evaluate and criticize the information contained in it (Wilsa & Mascita, 2024). Literacy focuses not only on mastering reading or writing techniques but also on students' ability to apply the knowledge gained in real life. For example, students with good literacy achievements can relate the ideas they learn to social, cultural, or even global issues, as well as participate in discussions or debates with arguments based on critical analysis (Kusmana, 2020; Kusmana et al., 2019).

Optimal literacy achievement shows that students cannot only read and write, but also think critically and creatively, and adapt quickly in an evolving environment. Good literacy prepares students to face higher academic challenges and contribute to the professional world with relevant skills. Therefore, literacy has a dual role, namely as a foundation for academic success and as a necessary skill to participate effectively in an increasingly complex global society (Carless & Boud, 2018; Hello, 2024; Ku et al., 2023).

The increase in literacy achievement is also closely related to the development of higher-level thinking skills (HOTS), which can be obtained through literacy-based learning. With a good mastery of literacy, students can not only complete academic tasks better but also develop critical thinking that will be useful in various aspects of life (Zhang et al., 2024). Therefore, literacy in education not only contributes to academic success but also empowers students with the critical thinking skills necessary to thrive in an increasingly intricate and ever-changing world. (Susanto et al., 2024).

3. Methodology

This Research and Development study utilizes the ADDIE model, which consists of Analysis, Design, Development, Implementation, and Evaluation. (Kusmana et al., 2019). The model is used to design and implement authentic assessments based on higher-order thinking skills (HOTS) to improve literacy in Junior High Schools (SMP). In the analysis stage, the process begins with the identification of needs through surveys, interviews, and analysis of literacy and assessment standard documents used in schools (Carless & Boud, 2018). Based on this analysis, the questions were categorized into LOTS (Lower Order Thinking Skills) and HOTS (Higher Order Thinking Skills) categories, aligning with PISA literacy indicators and HOTS question indicators.The purpose of this analysis is to understand the challenges faced in improving literacy and the application of HOTS in learning. The following are literacy indicators in PISA and indicators of HOTS questions.

Table 1. Literacy Indicators in PISA

Indicator	Description
Finding Information	Identify explicit or implicit information in the text.
Understanding the Text	Understand the main idea and the relationship between ideas in the text.
Analyzing Text	Evaluate arguments, credibility, and perspectives in the text.
Reflecting on Text	Relating the content of the text to other experiences or contexts.
Using Information	Integrating information and various sources for a specific purpose.

(Andersson & Sandgren Massih, 2023; Lundahl & Serder, 2023)

Table 2. Indicator Soal HOTS

Indicator HOTS	Category	Operational Verbs
Analyze text	C4 (Analysis)	Compare, distinguish, identify, solve, categorize, organize, discover.
Connecting Ideas		Connecting, grouping, comparing, explaining, summarizing, solving.
Evaluating Information	C5 (Evaluation)	Assess, decide, criticize, prove, recommend, evaluate, validate, weigh.
Creating New Works	C6 (Creations)	Design, compose, create, create, produce, design, develop.

(Setyadharma & Jaja, 2022)

The design stage focuses on planning and creating an assessment format that will be used by including seven types of authentic assessments, namely group discussions, observations, self-assessments, portfolios, performance tasks, project-based tasks, and interviews. The design of this assessment refers to authentic assessment indicators that are integrated with HOTS and literacy competencies. The development stage involves the creation of an authentic assessment model that has been designed with HOTS content and literacy in the form of relevant questions. This assessment model is then validated by assessment experts and practitioners to ensure its conformity with the desired competency standards. The following are the indicators of authentic assessment.

Table 3. Indicator Authentic Assessment

Components of Authentic Assessment	Indicator	Forms of Authentic Assessment
Real-World Context	Students can apply their knowledge to real-world scenarios.	Group discussions, project-based assignments, performance tasks
Self-Reflection	Students can evaluate and reflect on their learning process to recognize their weaknesses and strengths.	Self-assessment, observation, group discussion, interview
Process Assessment	Students are given attention during the process of working on an assignment or project to assess the steps they take.	Observations, group discussions, project-based assignments, interviews
Diverse Tasks	Students are given assignments in a variety of formats to develop and demonstrate their literacy skills.	Project-based assignments, portfolios, performance tasks

(Ajjawi et al., 2020, 2024)

At the implementation stage, authentic assessments that have been validated are applied to three schools in Cirebon. During the implementation, direct observation is carried out to assess the assessment process and identify potential problems that arise. Feedback is also collected from students and teachers regarding their experiences through analysis of student work. In addition, regression is carried out to measure whether there is an increase in literacy, while still referring to authentic assessment indicators, HOTS indicators, and PISA literacy indicators. The evaluation phase involves a comprehensive assessment of the HOTS assessment's impact on students' literacy and higher-order thinking skills. The evaluation is carried out through the analysis of the test results, assignments, and projects of the students who have been assessed. Additionally, an assessment of the assessment's strengths and weaknesses is conducted to identify areas for improvement in future implementations. By following the systematic ADDIE model, the research aims to develop HOTS-based authentic assessments that are effective in improving student literacy at the junior high school level.

4. Results and Discussion
4.1 Result
This study, conducted in three schools, aimed to explore the use of HOTS-based authentic assessments to improve student literacy. Authentic assessments are seen as a more effective way to evaluate students' higher-order thinking skills compared to traditional written tests. The research adapted the ADDIE model's steps: Analysis, Design, Development, Implementation, and Evaluation. The five stages produced the following results.

A. Analysis

In the analysis stage, the process begins with the identification of needs through surveys, interviews, and analysis of literacy and assessment standard documents used in schools. The following is an analysis of the results of interviews with teachers in eight different schools.

Table 4. Interview Results Analysis

No	Initials	Interview Results
1.	LT, EF, and UF	The school has integrated HOTS and LOTS-based assessments into the learning process that is adjusted to the level of complexity of the questions in the Student Worksheet (LKS). The teachers said that they have implemented authentic assessments, albeit with different terminology in each school. Commonly used forms of authentic assessment include projects, portfolios, group discussions, and interviews. In the implementation of assessment, there is no reference, but it is spoken by the teacher or in oral form. This type of authentic assessment is recognized as making students more creative, have a lot of vocabulary, and even be able to write stories or novels using good language. However, teachers stated that they did not understand the correct application of the authentic assessment model and needed examples or guidelines from the assessment that could improve literacy.
2.	SN and UH	Subjects gave similar confirmation regarding the application of HOTS and LOTS assessments in the student assessment process. The selection of the type of assessment is adjusted to the level of complexity of the given task. Although SN subjects are new to the term "authentic assessment", in learning practice, subjects have applied components of authentic assessment such as the P5 project and student observation as in the Observation Results Report (LHO) material. SN subjects also observed that the implementation of assessments that have been carried out has the potential to increase student literacy. However, this increase in literacy is influenced by the initial abilities possessed by each student.
3.	NA	The subject informed that in the implementation of the assessment at his school, questions that measure low-level thinking ability (LOTS) are more dominant than high-level questions (HOTS). However, some HOTS questions have begun to be integrated. The NA subject admitted that he was not familiar with the term "authentic assessment". However, in learning practice, subjects have applied some form of authentic assessment such as observation and group discussion. Students respond positively to this form of assessment because it is considered more interesting compared to traditional assessments which tend to be boring. NA subjects observed an increase in students' creativity as well as their literacy abilities as a result of the application of authentic assessments.
4.	ND	The subject observed that students in his school were more interested in project assignments that demanded practical skills compared to written assignments. In designing the assessment, ND subjects have integrated questions with low thinking levels (LOTS) and high levels (HOTS), with more emphasis on HOTS questions. This approach is considered to be able to improve student literacy, although students' reading interest in general is still low. Just like the previous subject, ND subjects are also new to the term "authentic assessment", but in practice, they have applied a form of authentic assessment, namely project-based learning. The subjects believed that compared to traditional assessments, authentic assessments were considered more effective. However, the subject stated that he needed indicators or references from the assessment.
5.	AL	In the interview, the subject said that the assessment used as an assessment for students more often uses questions and answers. However, like other subjects, AL is not very familiar with authentic assessments. After the researcher mentioned the definition and examples of assessment, the subject said that several times the subject gave an assessment that resembled an authentic assessment such as group discussion and project-based assignment. However, the subject stated that the application of the assessment was not in a standard form, but only verbal instructions to students.

Interview results revealed that most teachers were unfamiliar with the term "authentic assessment", but had applied a similar form of assessment. Despite unfamiliarity with the term, many teachers have already implemented assessment practices aligned with the concept of authentic assessment. From the results of the interviews, there is a gap between the conceptual understanding and the practice of implementing authentic assessments. The majority of teachers predominantly use written tests that rely on memorization as a form of assessment. Only a small percentage of teachers routinely apply various forms of authentic

assessments in learning. Following the interviews, a needs analysis was conducted by analyzing questions from each school and classifying them based on the level of students' thinking ability. The analysis revealed the following.

Table 5. Problem Analysis

No	School Name	Percentage HOTS	Percentage LOTS	Total Questions
1.	MTs NU Kempek Cirebon	12 Questions (30%)	28 Questions (70%)	40 Questions
2.	SMPN 1 Babakan Cirebon	15 Questions (30%)	35 Questions (70%)	50 Questions
3.	SMPN 4 Terisi Indramayu	15 Questions (30%)	35 Questions (70%)	50 Questions
4.	SMP Edu Global Cirebon	9 Questions (26%)	26 Questions (74%)	35 Questions
5.	MTs Negeri 3 Cirebon	12 Questions (25%)	28 Questions (75%)	40 Questions
6.	SMP KHAS Kempek Cirebon	5 Questions (25%)	15 Questions (75%)	20 Questions
7.	MTs KHAS Kempek Cirebon	5 Questions (25%)	15 Questions (75%)	20 Questions
8.	SMP Plus Dar Al Tauhid Majalengka	6 Questions (20%)	24 Questions (80%)	30 Questions

The analysis of questions from nine schools revealed variations in the percentage of HOTS questions (C4: Analysis, C5: Evaluation, C6: Creation) used across different schools. MTs Negeri 3 Cirebon has 25% of HOTS questions, which are dominated by analytical and creative skills. SMP Edu Global Cirebon recorded 26% of HOTS questions with a balanced distribution between analysis, evaluation, and creation. MTs NU Kempek and SMPN 1 Babakan Cirebon each had 30% HOTS questions, with the dominance of analysis and evaluation questions. SMPN 4 Terisi and SMP Plus Dar Al Tauhid showed HOTS question levels of 25% and 20%, respectively, with the main focus on analysis and creation. SMPN 2 Leuwimunding Majalengka has a total of 2 HOTS questions (33%), namely C4 (Analysis) analyzing waste solutions, C5 (Evaluation) evaluating how to utilize waste, C6 (Creating) making creative solutions to environmental problems. Meanwhile, MTs KHAS and SMP KHAS Kempek Cirebon also used 25% of HOTS questions, with the largest portion in analysis and several creation questions. On average, HOTS questions in all schools focused more on C4 (Analysis), followed by C5 (Evaluation), and fewer questions on C6 (Creating). This indicates that most schools have begun to incorporate questions that cultivate students' critical thinking skills. However, the integration of evaluation and creation questions still requires improvement to fully encourage high-level thinking skills.

B. Design

The researcher designed seven types of authentic assessments to improve literacy and the application of HOTS in Indonesian language learning. The following table presents the differences in the characteristics of each type of assessment, including objectives, measurable skills, and the application of HOTS and literacy indicators.

Table 6. Authentic Assessment Form Design

No	Form of Assessment	Purpose	Skills
1.	Group Discussion	Assess students' ability to share ideas and solve problems together.	Ability to collaborate, analyze, synthesize, evaluate, communicate.
2.	Observation	Assess student interaction and participation in classroom activities.	Observation of student engagement, critical thinking skills, and the application of ideas.
3.	Self-Assessment	Encourage self-reflection on learning and thought processes.	Ability to self-evaluate, analyze personal achievements, and improve plans.
4.	Portofolio	Collecting evidence of the development of HOTS literacy and skills.	Evaluate writing skills, text comprehension, creativity, and critical thinking.
5.	Performance Tasks	Assess students' practical application of knowledge.	Practical skills, application of ideas in real situations, analysis, and evaluation.
6.	Project-Based Tasks	Measure students' creativity and analysis in problem-based projects.	Creation, in-depth analysis, solution evaluation, and managerial skills in the project.
7.	Interview	Assess students' understanding and ability to explain the thought process.	Verbal skills, material comprehension, analysis, reflection, and evaluation of thoughts.

The preparation of the format was formed to increase the attractiveness and understanding of students to the assessments given. The assessments are designed to be contextually relevant, provide clear instructions, and foster the development of higher-

order thinking skills. With this design, HOTS-based authentic assessment is expected to be able to significantly improve the literacy skills of junior high school students, both in understanding, analysis, and application of knowledge in real situations.

C. Development

The development of HOTS-based authentic assessments to improve student literacy began by designing seven forms of authentic assessments, then teacher guidelines were compiled along with sample questions that contained high-level thinking skills. These questions are designed using stimuli that are interesting and focus on the cognitive level of reasoning (C4 to C6). All assessment components, including HOTS-based tasks and assessment rubrics, are prepared according to the design that was determined in the previous stage. The final product of this development stage is in the form of HOTS-based authentic assessment documents in digital format (PDF) and printed materials that are ready to be implemented in the classroom.

The assessment that has been developed then undergoes validation tests by assessment expert lecturers and practitioners, namely three Indonesian teachers from different schools and one assessment expert lecturer from different agencies. The validation test involves assessing the aspects of the material, construction, language, and additional rules. Based on the validation results, each aspect obtained the average value as follows. The material component received an average rating of 3.8, classifying it as "Very Decent" (average ≥ 3.5). Similarly, the construction component achieved an average score of 3.9, also falling within the "Very Decent" category. The linguistic component garnered an average score of 3.7, placing it in the "Very Feasible" category (average ≥ 3.5). Lastly, the additional rule component obtained an average score of 4, aligning with the "Very Decent" category (average ≥ 3.5).

Overall, the HOTS-based authentic assessment received an average score of 3.85 from expert and practitioner reviews, placing it in the "Very Feasible" category (average ≥ 3.5). Following validation and incorporating feedback, the assessment has been refined to enhance its quality. Consequently, the HOTS-based authentic assessment products are now ready for implementation to effectively improve students' literacy skills.

D. Implementation

At the implementation stage, a trial of the HOTS-based authentic assessment, designed to enhance the literacy of junior high school students, was conducted. This trial aims to measure the effectiveness of authentic assessments compared to conventional literacy assessments that have been used by teachers. Based on the results of the analysis, the teacher literacy assessment document received an average quality score of 2.9, categorized as "Quite Good". However, this assessment still has considerable limitations in fostering the development of students' higher-order thinking skills, particularly in analysis, evaluation, and creative thinking.

The data from the implemented assessment was compared with the results of the previous literacy assessment using statistical analysis methods, including regression analysis and mean difference calculation to evaluate the effectiveness of authentic assessments. The analysis reveals that the HOTS-based authentic assessment has an average effectiveness score of 3.85, a substantial 0.95-point increase compared to the teacher's literacy assessment. In addition, the results of regression analysis showed a significant relationship between the use of HOTS-based assessments and the improvement of students' literacy ability ($p < 0.05$), which indicates the validity of this assessment in improving the literacy of junior high school students.

The results of students' answers to HOTS-based authentic assessments showed a significant quality improvement. In the analysis-based question (C4), students can identify and compare the themes of two different texts precisely, and even mention logical arguments to support the comparison. In evaluation-based questions (C5), students are not only able to find errors in the text but also provide relevant and directed criticism based on the given context. Meanwhile, in the creation-based questions (C6), students show the ability to compose short stories with certain themes using good language and rich vocabulary. Students also managed to use creative and contextual language styles, thus demonstrating improved literacy skills. This success is due to the use of stimuli that are engaging, contextual, and provoke high-level thinking engagement listed on authentic assessment forms and guidelines. In addition, a clear assessment rubric helps teachers understand the implementation of the assigned tasks so that students are more confident in solving problems.

Feedback on the implementation of HOTS-based authentic assessments was collected through interviews and questionnaires given to teachers and students. Most teachers stated that this assessment is more structured, contextual, and able to measure literacy skills in more depth. Teachers also assessed that the assessment indicators on authentic assessments were clearer, thus helping them provide constructive feedback to students. From the student's side, HOTS-based assessments are considered interesting and relevant to daily life, although they provide higher challenges than previous tasks. The results of this implementation provide empirical evidence that HOTS-based authentic assessments are significantly more effective in improving the literacy of junior high school students.

E. Evaluation

The evaluation stage assesses the strengths, weaknesses, and effectiveness of the HOTS-based authentic assessment in improving the literacy skills of junior high school students. This assessment has demonstrated its ability to enhance students' higher-level thinking skills, particularly in analysis, evaluation, and creative thinking. The relevance of the questions to daily life also makes students more enthusiastic about the work, and the assessment rubric is assessed, helping teachers provide effective feedback. However, several shortcomings were found, such as students' difficulty in understanding complex problems, longer processing time than conventional assessments, and challenges for teachers in aligning assessments with the curriculum.

The results of the students' work showed a quality improvement, especially in the analysis level (C4) questions where students were able to identify text problems well. At the evaluation level (C5), some students managed to assess the text based on clear criteria, although there were still those who needed guidance. Meanwhile, at the creation level (C6), some students are able to produce creative and relevant reflective texts. Overall, this evaluation shows that HOTS-based authentic assessments are effective in improving student literacy, although simplification of question instructions and further training for teachers is needed so that implementation in the field can run more optimally.

4.2 Discussion

This study develops a HOTS-based authentic assessment to improve junior high school students' literacy using the ADDIE model, resulting in assessment products deemed feasible by experts and practitioners. In the analysis stage, it was found that the literacy assessment previously used by teachers was still less effective in supporting the development of higher-level thinking skills. The design stage produces an authentic assessment format that is integrated with HOTS (C4–C6) and literacy indicators and is designed in seven forms of authentic assessment. At the development stage, the assessment product received validation from material experts and practitioners, with an average score of 3.85 which belongs to the category of "very feasible." The implementation results showed that HOTS-based authentic assessments significantly improved students' literacy skills, with the results of the effectiveness analysis showing an average increase in student scores of 20% compared to the previous assessment. The final evaluation showed that this assessment had advantages in contextual relevance and the ability to measure higher-order thinking skills, although there were several challenges in its implementation.

This study underscores the significance of HOTS-based authentic assessments in enhancing student literacy. Aligning with Bloom's taxonomy (1956) and its revision by Anderson & Krathwohl (2001), higher-order thinking skills like analysis, evaluation, and creation are essential components of meaningful literacy learning. In the context of this research, the assessment developed can encourage students to be more active in analyzing texts, evaluating information, and generating new ideas. The advantage of this assessment lies in the design of questions based on the context of daily life so that students feel more relevant to the material being studied. Structured assessment rubrics help teachers provide more specific feedback, supporting the development of students' skills holistically. However, some shortcomings were also found, such as the complexity of the questions that made it difficult for students with low literacy skills to answer well. Another challenge is time constraints which need to be further reviewed to optimize the implementation of this assessment in various learning conditions.

Overall, this study indicates that HOTS-based authentic assessments have a substantial impact on junior high school students' literacy skills, particularly in developing higher-order thinking skills. However, further research is needed to investigate the implementation of this assessment at other educational levels and its effects on diverse learning contexts.

5. Conclusion

This study successfully developed a HOTS-based authentic assessment that effectively improves the literacy of junior high school students. Through the ADDIE stage, the assessment developed has been proven to be able to measure students' higher-level thinking skills well, especially in the aspects of analysis, evaluation, and creation, which are key competencies in 21st-century literacy. The results of validation by experts and practitioners show that this assessment is feasible to support Indonesian learning at the junior high school level, with an average score that is included in the category of "very feasible."

The implementation of this assessment in the classroom resulted in a significant improvement in students' literacy skills, with very positive feedback from teachers and students related to the relevance and depth of the assigned tasks. Teachers appreciated the more directed assessment structure and the ability of questions to measure high-thinking skills more holistically. Although there are several challenges in implementation, such as time constraints and the need for further training for teachers, the results of this study show that HOTS-based authentic assessments can be an effective alternative to improve the quality of student literacy at the junior high school level.

This research holds significant importance, particularly in learning contexts that prioritize the development of students' critical and creative thinking skills. The relevance of this research is increasingly important considering the demands of the curriculum that increasingly emphasizes the mastery of literacy and higher-level thinking skills in various disciplines. In the future, this assessment can be used as a reference for the development of a more applicable and comprehensive assessment model, and its application can be expanded to other levels of education.

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