Development E-Assessment Literacy Oriented *Higher Order Thinking Skills* (HOTS) on Thematic Learning to Measure Critical Thinking Skills of Primary School Students

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ABSTRACT: This research aims to develop E-*Assessment* Literacy Oriented Higher Order Thinking Skills (HOTS) which is expected to be able to measure students' critical thinking skills. This research uses research methods according to ADDIE with five stages, namely *Analisys, Design, Development, Implementation, Evaluation*. The sampling technique used in this research is saturated *sampling*, the population of this study was class V students at SDN Berundung. The sample in this research was class V A students at SDN Berundung. The research results include the feasibility, practicality and effectiveness of the product. Product feasibility seen from the product validation results is classified as very valid, the language aspect shows an average of 0.800. The media aspect shows an average of 0.875. The test instrument was also validated by the validator as the research product showed an average of 0.650. The practicality of the product can be seen from the average percentage of educators' responses of 90% with very practical interpretations, while student responses were 90% with very practical interpretations. The effectiveness of the product can be seen based on trial data carried out in class V of SDN Berundung. The research results prove that class V A is at stage *post-test* has the highest value of 90 and the lowest value of 80 with an average value of 84.58, and a standard deviation of 2.93. This shows that there is a significant influence on measuring critical thinking skills using *E-Assessment* literacy oriented HOTS.

KEYWORDS: Critical Thinking, E-Assessment, HOTS, Literacy, Thematic.

INTRODUCTION

The ability to think critically has become an important competency in education in the 21st century. The ability to think critically is an activity to obtain knowledge that needs to be developed in every learning process. Scriven and Paul (in Yousefi & Mohammadi, 2016) argue that critical thinking is a process of active intellectual discipline and skills in conceptualizing, applying, analyzing, synthesizing, and evaluating information collected or resulting from observation, experience, or communication, as a guide to beliefs and actions. Critical thinking is rational, reflective thinking focused on deciding what to believe or do. According to Kartimi & Liliasari (2012), critical thinking is very necessary for every individual to respond to the life problems they face. By thinking, a person can organize, adjust, change, or correct his thoughts so that he can act more appropriately.

The learning process must be designed in such a way as to achieve the learning objectives themselves. The government implements different curricula from time to time according to current developments. The curriculum currently implemented in Indonesia is the 2013 curriculum. Pohan & Dafit (2021) revealed one of the characteristics2013 curriculum, which is related implementation of learning, where the 2013 curriculum requires teachers to implement learning thematic integrative which emphasizes the scientific approach. The material in the 2013 Curriculum is presented in the form of themes to link several subjects. The 2013 curriculum also expects maximum use of technology in every lesson. This is due to the increasingly rapid development of science and technology, which means that humans must also be faster in pursuing education that is in line with current developments. One of the uses of IPTK that can be used in education is in terms of assessment (evaluation).

E-assessment is an assessment activity that can be carried out anywhere and at any time. According to The Joint Information System Committee (in Permadi & Mustangin, 2015) define-assessment as an electronic assessment process where computer technology is used to present assessment activities, and store responses or answers. The government has implemented a National Assessment (AN) which has been in effect since 2021. AN is the government's effort to take a comprehensive picture of the quality

of the learning processes and outcomes of primary and secondary education units throughout Indonesia. AN is an evaluation method carried out by the government to map the literacy skills of final year students at each level of education. AN in elementary schools is divided into two types, namely Minimum Competency Assessment (AKM) and Environmental Survey (Kemendikbud in Rahmania, 2021). AKM is an assessment of the fundamental competencies needed by students to be able to develop capacity and participate positively in society. Basic competencies what AKM measures are reading literacy and mathematics literacy (numeracy) (Pusat Asesmen dan Pembelajaran, 2021). Through literacy and numeracy trials, when working on AKM students can develop high-level thinking abilities (Mariana & Murnuartu, 2021). AKM presents problems with various contexts that can be solved using reading literacy which is defined as the ability to understand, use, evaluate, reflect on various types of written texts using individual capacities as Indonesian citizens.

Reading literacy skills are closely related to the thinking skills that a person needs for life in this era. Reading literacy is a person's ability to understand, use and reflect on written reading to achieve goals in accordance with the need to expand knowledge and potential, as well as participate in society. Reading literacy is measured by (1) reading format: narrative, exposition activities, and arguments, formations, tables, or charts; (2) the level of thinking in the reading process includes activities of searching for information, forming a broad understanding of the text, interpreting, reflecting/evaluating (content, form and characteristics); and (3) the context of the content of the quotation and the purpose of selecting the quotation (Harsiati & Priani, 2017).

Data from the recapitulation of instrument results needs analysis which was carried out by researchers with class V students, obtained results on Open Mindedness indicators with a percentage of 26.96% very low predicate. It is known that in this indicator students have not focused on the questions given, students have not been able to analyze the arguments contained in the needs analysis questions. Analytic Indicator with a percentage of 26.96% very low predicate. Analytic Indicator, Students are not yet able to consider the answers to needs analysis questions. Indicator Sistematica with a percentage of 27.8% very low predicate. It is known that students have not been able to conclude the material presented, this is also known in the needs analysis questions that students answer. Self Confidence Indicator with a very low percentage of 29.1%, students have not been able to explain the answers to the needs analysis questions well. Inquisitiveness Indicator obtained a percentage of 23.8% with a very low predicate. This indicator can show that students have difficulty in determining actions on questions needs analysis given is given. Indicator Maturity with a percentage of 25.4% in the very low category. This indicator is that students have difficulty in deciding problems on the needs analysis questions that have been given.

METHOD

This research is a type of development research. This research uses the ADDIE development model which consists of five stages according to (Branch, 2009) namely: (1) Analysis, (2) Design, (3) Development, (4) Implementation, (5) Evaluation. This research was conducted at SDN Berundung, Ketapang District. The population in this study were all students in Class V of SDN Berundung. The sample in this study was determined by: saturated sampling. Purpose of use saturation sampling, namely so that the entire population can be sampled, so that it can solve the problem being studied.

Data collection was carried out using interviews, expert validation, and test techniques. Interviews are used to find out what teaching materials are used by educators and what the characteristics of students are when learning in class. Expert validation aims to validate development products E-Assessment literacy oriented HOTS. The data obtained through expert validation sheets is in the form of quantitative data based on the score results of questions regarding suitability E-Assessment, and qualitative data obtained based on comments or suggestions regarding feasibility E-Assessment which was developed. Tests are used to assess and measure students' critical thinking, especially more complex critical thinking. Each question item contains indicators of critical thinking skills.

RESULTS AND DISCUSSION

Based on the results of the development of e-assessment literacy oriented HOTS for fifth grade elementary school students. The data obtained illustrates the validity, reliability, differentiation, level of difficulty, and effectiveness of e-assessment in thematic learning of class V students as if it were basic. Refers to the ADDIE development model which includes five stages, namely analysis stage, design stage, development stage, implementation stage and analysis stage.

1. Analysis Stage

At this stage, an analysis of the conditions of the learning environment is carried out so that products can be found to be developed. The introduction was carried out to obtain data and analyze the needs of teachers and students according to problems in the field. Preliminary research was carried out to obtain initial information through field studies using a questionnaire analyzing teacher and student needs for development e-assessment literacy oriented HOTS to measure students' critical thinking skills.

Table 1. Results of Student Needs Analysis

No.	Critical Thinking Indicator	Percentage
1.	Open Mindedness	26,95 %
2.	Analytic	26,96%
3.	Sistematical	27,8%
4.	Self Confidence	29,1%
5.	Maturity	23,8%

Based on the table above, it is known that this is an Open Mindedness indicator, students have not been able to analyze the arguments contained in the needs analysis questions. Analytic Indicators are not yet able to consider the answers to needs analysis questions. Sistematica Indicator, It is known that students have not been able to conclude the material presented in an organized manner, this is also known in the needs analysis questions that students answer. Self Confidence Indicator, students have not been able to explain the answers to the needs analysis questions well. Inquisitiveness Indicator, It is known that students have difficulty in determining actions on the needs analysis questions given. Maturity Indicator, students have difficulty in deciding problems on the needs analysis questions that have been given.

2. Design

Planning stage (*Design*) is carried out to design an initial description of the product being developed. This stage is carried out to determine the format of the initial product being developed and to calculate the appearance that can be used. Stage Design An activity carried out at this stage is designing a prototype (Rumadan et al., 2023). There are several things that must be done, at the product design development stage *E-Assessment* literacy oriented HOTS to measure the critical thinking skills of class V students. The steps for preparing product designs developed by researchers include determining the material that will be used as a reference in making the e-assessment. The material chosen in this research was Thematic learning material Theme 6 heat and its transfer Subtheme 1 temperature and heat in science and Indonesian language learning for class V elementary school semester 2 (even). After determining the material to be used, then create a grid based on indicators according to (Ennis, 1985), the next step is to create an E-Design Assessment The interesting things about the Quizizz application include determining the background, choosing the type and color of the font so that it is easy for students to read.

3. Development

The development stage is the stage of combining all the parts that have been prepared in the previous stage and put them together to produce a product *E-Assessment* literacy oriented HOTS. This stage includes preparing the systematics and components used, preparing the content and determining the design, consulting on initial product results, product validation, and product revision (Fitria & Wisudawati, 2018).

a. Product Validation

This development stage begins with compiling *E-Assessment* literacy oriented HOTS to make it more interesting. Researchers validated the E-*Assessment* this involves three validators, namely language experts, media experts and evaluation experts.

Table 2. Linguist Expert Validation Results

No	Aspects of Assessment	Index Aiken	Interpretation
1	Language	0,800	Valid
	Holistic Aiken Index	**0,800**	**Valid**

Linguist validation aims to test the completeness in terms of material, and the words and accuracy of sentences used in the language *E-Assessment* literacy oriented HOTS, correct use of language and correct spelling of words and sentences. Based on Table 2, it is known that the language used is good. This can be seen from the holistic Aiken index which is in the good category. Media expert validation aims to test the development presentation *AE-Assessment* literacy oriented HOTS.

Table 3. Media Expert Validation Results

No	Aspects of Assessment	Index Aiken	Interpretation
1	Cover (Critical Thinking Assessment Instrument)	0,875	Very valid
2	Text Matter (Main Part)	0,875	Very valid
Indeks Aiken Holistik		**0,875**	**Very valid**

Based on Table 3, it is known that the presentation of the e-assessment developed is very good. This is based on the interpretation of the holistic Aiken index as a result of media expert validation which was interpreted very well.

Table 4. Evaluation Validation Results

No	Indicator	Percentage	Interpretation
1	Eligibility Content	0,650	Quite Valid
2	Construct	0,600	Quite Valid
Holistic Aiken Index		**0,625**	**Quite Valid**

Evaluation validation aims to see the suitability of the questions that will be used in this research. Based on Table 5, it can be seen that the questions contained in the e-assessment are interpreted quite well and are suitable for use.

b. Test Instrument Test

Validity testing is carried out to determine whether or not an item in this research is valid. Validity calculations are carried out using the product moment formula. The calculations obtained in the validity test contained 26 of the 30 questions stated. Next, the questions were tested for their level of reliability using the Alpha Cronbach formula. The reliability calculation shows a reliability coefficient of 0.9350834 with a Very Reliable interpretation. The difficulty level of a question item is the percentage of students who answer a question item correctly as measured by the question item score produced by a number of examinees (Gronlund & Linn, 1995). The difficulty level test aims to find out whether the questions are in the easy, medium and difficult categories.

Table 5. Test Results for Difficulty Level of Question Items

Difficulty Level	Question Number
Hard	12, 11, 13,14, 15, 16, 17, 18, 23, 25, 27, 28, 29, 30
Medium	7, 8, 9, 10, 2, 19, 22, 24, 26
Easy	1, 3, 4, 5, 6, 20, 21

c. Differentiation Test

The purpose of this item discrimination test is to find out and differentiate between students who are able to master it and students who are not yet able to master it. This also makes it easier for educators to assess students who do not understand and students who have not yet mastered the material.

Table 6. Test Results for Differentiating Items

Discriminating Power	Question Numbers
Very Ugly	2, 14, 15
Signs	11
Currently	13, 16, 17
Good	1, 3, 4, 5, 7, 8, 9 19, 20, 21, 24, 25, 26
Very Good k	6, 10, 12, 18, 22, 23, 27, 28, 29, 30

Based on Table 6, it can be seen that there are four questions that have very poor criteria in the question difference power test. This shows that these four questions cannot be used as questions in the assessment. An item is said to be empirically valid if it meets the 4 criteria obtained in terms of empirical validity of the item, test reliability, level of difficulty of questions, and distinguishing power of questions (Alfiyah et al., 2023).

4. Implementation

This activity was carried out to measure the practicality criteria of the product being developed. The trial carried out was a limited or small-scale trial involving 6 educators and 12 class V students with criteria of 4 high, 4 medium and 4 low based on information from educators through daily test scores in class V at SDN Berundung.

Table 7. Educator Practicality Test Results

No	Indicator	Percentage	Interpretation
1	Practicality Content	90%	Very Practical
2	Language Practicality	90%	Very Practical
Average		**90%**	**Very Practical**

Based on Table 7, the results of the practicality test which have been tested by distributing questionnaires to 6 educators in class V show a very practical interpretation, this is shown by the average percentage of 90%.

Table 8. Results of Student Practicality Test

No	Indicator	Percentage	Interpretation
1	Practicality Content	90%	Very Practical
2	Language Practicality	90%	Very Practical
Average		**90%**	**Very Practical**

Based on Table 8, the results of the practicality test which have been tested by distributing questionnaires to 12 students in class V show a very practical interpretation. This is indicated by an average percentage of 90%.

5. Evaluation

Evaluation stage, carried out on development products in the form of content/materials developed by learning media and evaluating the effectiveness and success of the media developed (Panggabean et al., 2022). Field trials were carried out in class V at SDN Berundung. Field trial data will be taken, namely one class that will be held in class V A at SDN Berundung.

Table 9. Recapitulation of Test Results

Information	Post-Test
maximum score	90
minimum score	80
($\bar{X}$)	84,93
S	2,93

Based on Table 9, usage *E-Assessment* literacy oriented HOTS in thematic learners shows a significant influence on student learning outcomes. The results of the analysis of critical thinking ability identification can be seen in Table 10.

Table 10. Results of Identification of Critical Thinking Abilities

No.	Indicator	Average
1	*Open Mindedness*	85,32%
2	*Analytic*	86,00%
3	*Systematical*	80,56%
4	*Self-Covindence*	83,10%
5	*Inquisitiveness*	82,64%
6	*Maturity*	89,81%
Average		83,52%

Based on Table 10 it can be seen that *E-Assessment* literacy oriented HOTS developed can measure the critical thinking abilities of class V students at SDN Berundung. Furthermore, observations were carried out in class V A to see the development of students' critical thinking skills from the researcher's perspective during the learning process and it could be seen that the percentage of critical thinking skills was 92.37% with the interpretation "very good. This proves that *E-Assessment* literacy oriented HOTS can measure students' critical thinking skills.

CONCLUSION

Based on the results of the research, product feasibility can be obtained in the form of *E-Assessment* literacy oriented HOTS to measure the critical thinking skills of class V students has been tested for feasibility and has met valid criteria. The product validation results are classified as very valid, both in terms of language which shows an average holistic Aiken index of 0.800 with a very valid feasibility interpretation. The media aspect shows an average holistic Aiken index of 0.875 with a very valid feasibility interpretation. The test instrument was also validated by the validator as a research product which showed an average holistic Aiken index of 0.625 with a fairly valid interpretation of feasibility. Product *E-Assessment* literacy oriented HOTS to measure students' critical thinking skills has met practical criteria taken from the results of teacher and student response questionnaires. The practicality of the product can be seen from the students' activities in using the product during learning to use it *E-Assessment* literacy oriented HOTS. The average percentage of practicality of educators' responses is 90% with very practical interpretations. Meanwhile, students have an average practicality percentage of 90% with very practical interpretation.

The effectiveness of this product can be seen based on trial data carried out in class V of SDN Berundung. Based on the research results, it is proven that in class V A at stage *post-test* has the highest value of 08 and the lowest value of 80 with an average value of 83.52, and a standard deviation of 2.93. This shows that there is a significant influence on measuring students' critical thinking skills by using *E-Assessment* literacy oriented HOTS.

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