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Development Of Numeration Literacy Questions Using The Social-Cultural Context Of Labuhanbatu

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Abstract

Assessment Kompetisi Minimum (AKM) is an assessment of the basic competencies possessed by students on a national scale. One of the skills required to participate in the AKM is numeracy literacy. To train these abilities, students must get used to working on numeracy literacy questions. However, at SMP Negeri 2 Rantau Selatan which is located in Labuhanbatu, the treasury of numeracy literacy questions is still lacking and those that use the socio-cultural context of Labuhanbatu do not yet exist. So it is necessary to develop numeracy literacy questions using the socio-cultural context of Labuhanbatu. The purpose of this study was to determine the validity of the results of developing numeracy literacy questions using the socio-cultural context of Labuhanbatu and to determine the numeracy literacy skills of students using these questions. The questions referred to the Minimum Competition Assessment (AKM). The type of this research is Design Research type Development Study which has been modified. This research consists of a stage preliminary, self-evaluation, expert review, and field test. Based on the validation from the validator, all questions can be used for field tests. The results of the field test consist of 14 questions with the criteria "very adequate for use", 2 questions with the criteria "adequate for use", and 1 question with the criteria "considered for use". All questions are included in the final product. The final product is used to see the students' numeracy literacy skills. The percentage of students' numeracy literacy skills is 3% "high" and 97% "low". The average percentage of students who answer questions at the cognitive level of knowing, applying, and reasoning are 50% and 32%, respectively. and 18%.

Keywords: Assessment Kompetensi Minimum, Numeracy Literacy, Labuhanbatu Socio-Culture

INTRODUCTION

The 21st century is described by the development of digital information. This development fills the cavities of human life, especially in the field of education. Based on the RI Assessment and Learning Center (Pusmenjar) (2020a: 1) in the 21st-century education should be able to ensure that students have the skills to learn and innovate, skills to use and utilize technology and information media, can work and survive using life skills (life skills). To achieve these skills, literacy skills can be overcome. The low literacy skills of Indonesian students have an impact on low PISA test results (Babys, 2017: 43). The low score obtained by Indonesia can be seen from the ranking obtained by Indonesia on PISA. African et al. (2018: 608) stated that in the field of mathematics in 2003 Indonesia was ranked 39th out of 40 countries, in 2006 Indonesia was ranked 38th out of 41 countries, in 2009 Indonesia was ranked 61st out of 65 countries, and in 2015 Indonesia was ranked 62 out of 70 countries. Meanwhile, in the PISA test conducted in 2018 Indonesia was ranked 73rd out of 79 countries (Hewi & Shaleh, 2020: 31). Several factors cause Indonesia's numeracy literacy ability to be below. According to Saepullah (2013: 1-2), one of the reasons is that current learning is still identified by simple questions in the sense that it is clear how to solve them. Based on observations made by researchers at SMP Negeri 2 Rantau Selatan in Labuhanbatu district, information was obtained that there were already several teachers who participated in the Minimum Competition Assessment (AKM) training, the curriculum used was also the 2013 curriculum, school facilities were adequate to implement AKM, and the content provided was adequate. The AKM is by what is stated in the 2013 curriculum. This has been said to be able to support the implementation of AKM in the school. However, the treasury of numeracy

literacy questions that use the socio-cultural context of Labuhanbatu is still lacking, causing students to be less accustomed to spelling numeracy literacy questions that use the socio-cultural context of Labuhanbatu. Students' treasury and habit of working on numeracy literacy questions using the socio-cultural context of Labuhanbatu are very much needed for daily life and participating in the Minimum Competition Assessment (AKM).

AKM does not aim to replace the National Examination in evaluating individual student achievements. This is in line with the opinion of the Erlangga AKM Focus Team (2020: 1) which states that AKM replaces the role of the National Examination as a source of information in mapping and evaluating the quality of the education system in an area. The implementation of AKM is planned to start in March 2021, postponed from September to October 2021 (GLN, 2021).

Based on the problems found, it is necessary to develop numeracy literacy questions and the questions must be interesting so that they can foster students' interest in doing them such as using a cultural context. Based on Pusmenjar (2020a:17) problems classified in a socio-cultural context are community or community problems (both local/regional, national, and global). This is done so that in learning students can be motivated in learning mathematics (Widjaja, 2013:151).

Putra et al. (2016) have developed PISA questions using the Lampung cultural context, and Carmila et al. (2016) have developed PISA questions using the Jambi cultural context. It can be concluded, the results of this study were obtained using a cultural context that makes it easier for students to put mathematics into that context so that it will help students use literacy skills when answering questions, and can challenge students' mathematical thinking patterns. However, until now there has been no researcher who has researched the development of numeracy literacy questions in the socio-cultural context of the Labuhanbatu district.

The socio-cultural context taken in this study is the characteristics and statistical data of Labuhanbatu district in which there is a mathematical concept. One of the characteristics that contain mathematical concepts is the Tokhubuknonas batik pattern. In Labuhanbatu batik there are mathematical concepts that are by the context in the minimum competition assessment such as numbers and algebra. As well as the content of the data taken from statistical data taken from the population census data of Labuhanbatu district.

Figure 1. Concept of Number Pattern on Batik Pattern Tokhubuknonas
Source: (Nasution, 2018)

In Figure 1, when viewed horizontally, if the number of red squares is 6, then the number of green boxes is 5. If the width of the batik cloth is increased so that the number of red squares becomes 7, the number of squares is green 6. So there is a concept of a number pattern on the motif. this. In addition, each of the four nonas motifs covers 16 squares of both red and green colors. So that in this pattern there is also the concept of a number pattern.

Figure 2. Comparison Concept on Batik Pattern Tokhubuknonas Source: (Nasution, 2018)

In the Tokhubuknonas batik motif, there is also a concept of comparison. This can be seen from the comparison of the number of images on the batik pattern pieces. In the image below, the ratio of the number of red squares to the total number of squares in the form of fractions is 12/25 while the number of green squares from the total number of squares is 13/25. To get the value of the numerator, use the concept of multiplication. To be more clear, look at Figure 2.

Figure 3. Multiplication Concept on Batik Pattern TokhubuknonasSource: (Nasution, 2018)

Based on Figure 3, there is a basic concept in the form of multiplication also in the Tokhubuknonas batik pattern. In one green or red box, there are 4 Terubuk fish.

RESEARCH METHODS

The development model used is the Design Research Development Study type. This type of research is Design Research is a Development Study, which consists of two stages, namely the preliminary stage and the prototype stage (Putra et al., 2016a). The preliminary stage consists of collecting references related to research. At the self-evaluation stage, it consists of student analysis activities, material analysis, and prototype design 1. enters the expert review stage. In this stage prototype 1 will be given to experts who become validators and will be analyzed for validity. At the field test stage, prototype 2 was tested on students. This research will produce a product in the form of numeracy literacy questions using the socio-cultural context of Labuhanbatu that is valid, reliable, has distinguishing power and level of difficulty so that it can be used to measure the level of students' literacy skills.
The research design used is as below:

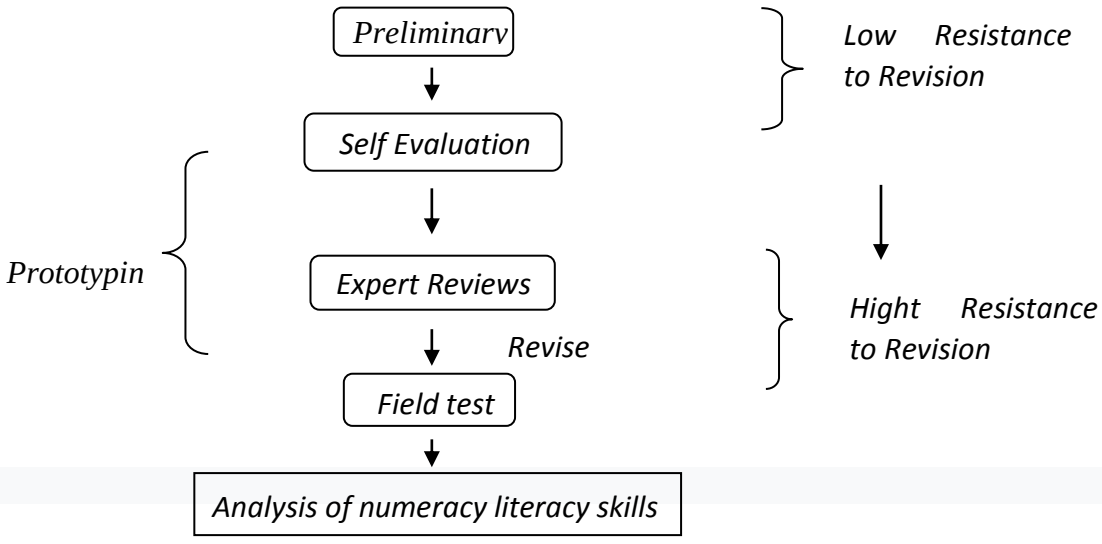

Figure 4. Research Flow Using Design Research Type Development Study
Source: Modification (Tessmer, 1993; Zulkardi, 2006 (Putra et al., 2016a))

RESULTS AND DISCUSSION

The results of the analysis of the average value of the total validation of all aspects (Va). The validation value contained in table 1 is the second validation value from validator 1 and the first validation value from validator 2.

Table 1. Analysis of Results V_a

No Question	Results V_a	Category	**No** Question	Results V_a	Category
1	4,00	Valid	10	4,05	Valid
2	4,05	Valid	11	4,30	Valid
3	4,15	Valid	12	4,00	Valid
4	4,05	Valid	13	4,20	Valid
5	4,25	Valid	14	4,00	Valid
6	4,50	Valid	15	4,40	Valid
7	4,00	Valid	16	4,50	Valid
8	3,90	quite valid	17	4,45	Valid
9	3,95	quite valid			

The 17 questions consist of 7 multiple choice questions, 3 short questions, and 5 essay questions. The time given to students to answer the questions is 90 minutes. Multiple-choice questions are numbered 1, 2, 3, 5, 8, 12, and 14. Short-term questions are questions numbered 4, 6, and 9. Explanatory questions are questions numbered 7, 10, 11, 13, 15, 16, and 17.

a. Field Test Validity Analysis Results

Based on the values obtained from the field test, the next step is to find validity tests, reliability tests, discriminatory tests, and difficulty level tests. A validity test is carried out to see whether the items are valid or not.

Table 2. Results of Validity Analysis of Multiple-Choice Questions and Short Fields

No questions	r_{xy}	r_{tabel}	Question Status	Validity Criteria	**No questions**	r_{xy}	r_{tabel}	Question Status	Validity Criteria
1	0,453	0,361	Valid	Enough	4	0,753	0,361	Valid	High
2	0,497		Valid	Enough	6	0,776		Valid	High
3	0,542		Valid	Enough	9	0,658		Valid	High
5	0,448		Valid	Enough					
8	0,496		Valid	Enough					
12	0,521		Valid	Enough					
14	0,618		Valid	High					

Table 3. Results of the Analysis of the Validity of the Problem Description

No Questions	r_{xy}	r_{tabel}	Questions Status	Validity Criteria	No Questions	r_{xy}	r_{tabel}	Questions Status	Validity Criteria
7	0,435	0,361	Valid	Enough	15	0,382	0,361	Valid	Low
10	0,694		Valid	High	16	0,451		Valid	Enough

11	0,707		Valid	High	17	0,622		Valid	High
13	0,754		Valid	High					

The results of the validity test state that all the items in prototype 2b are valid so it can be said that the students who worked on the package of questions understood the language in the questions, the meaning of the questions and did not cause ambiguous interpretations (Lestari & Yudhanegara, 2015; 192). The criteria for the items start from "low", "quite valid", "valid" to "high". All valid items then enter the reliability test stage.

b. Field Test Reliability Analysis Results

A reliability test was conducted to see whether the multiple-choice items, short entries, and descriptions were reliable.

Table 4. Results of Reliability Analysis of Multiple-Choice Questions and Short Fields

No Question	r_{hitung}	r_{tabel}	Reliability Status	Criteria	No Question	r_{hitung}	r_{tabel}	Reliability Status	Criteria
1	0,504	0,361	Reliable	Enough	4	0,564	0,361	Reliable	Enough
2					6				
3					9				
5									
8									
12									
14									

Table 5. Results of the Reliability Analysis of the Problem Description

No Questions			r_{hitung}	r_{tabel}	Reliability Status	Criteria
7	13	16	0,763	0,361	Reliable	High
10	15	17				
11						

The reliability test results stated that both multiple-choice questions, short entries, and descriptions were reliable. It can be said that the questions in the package can be trusted or relied on as an instrument to see the students' numeracy literacy abilities. Reliability criteria on multiple-choice questions, short entries, and descriptions are “enough”, “enough” and “high”. After conducting a reliability test on valid questions, the next step is to perform a discriminatory test.

c. Results of Field Test Distinguishing Power Analysis

Table 6. Results of the Differentiating Power of Multiple-Choice Questions, Short Fields, and Descriptions

No Questions	DP	Criteria DP	No Questions	DP	Criteria DP	No Questions	DP	Criteria DP
1	0,333	Enough	4	0,467	Good	7	0,150	Bad
2	0,400	Enough	6	0,533	Good	10	0,583	Good
3	0,266	Enough	9	0,333	Enough	11	0,516	Good
5	0,400	Enough				13	0,500	Good
8	0,333	Enough				15	0,033	Bad
12	0,400	Enough				16	0,050	Bad
14	0,333	Enough				17	0,550	Good

The discriminatory power test was carried out to see the questions’ ability to differentiate the students' numeracy literacy abilities. The criteria for discriminating power on numeracy

literacy questions using the socio-cultural context of Labuhanbatu are different, starting from "bad", "enough" and "good". Items that have distinguishing power with bad criteria are not immediately discarded or not included in the final product because the final decision on the question is adjusted to the criteria for concluding.

d. Results of the Analysis of the Difficulty Level of the Field Test
The last test on the items is the level of difficulty test. The difficulty level test is carried out to see whether a question is too easy, easy, moderate, difficult, or too difficult. Researchers used Microsoft excel to find the value of each item's difficulty level, which was then used to see the criteria for the question. According to Lestari & Yudhanegara (2015, 224) that a good question is a question with criteria that are not too easy and not too difficult.

Table 8. The results of the analysis of the difficulty level of multiple-choice questions, short entries, and descriptions

No Questions	TK	Criteria TK	No Questions	TK	Criteria TK	No Questions	TK	Criteria TK
1	0,633	currently	4	0,753	easy	7	0,175	Hard
2	0,333	currently	6	0,776	easy	10	0,708	easy
3	0,133	Hard	9	0,658	currently	11	0,525	currently
5	0,333	currently				13	0,717	easy
8	0,167	Hard				15	0,042	Hard
12	0,200	Hard				16	0,025	Hard
14	0,167	Hard				17	0,325	currently

On the items that have been tested, the criteria for the questions obtained are "easy", "medium" and "difficult" so that all items are good questions. When a question has an "easy" difficulty level, it means that many students answered the question correctly. When the questions have "medium" criteria, it means that the number of students who answered correctly and incorrectly was balanced. When the question has a "difficult" level of difficulty, it means that more students answer wrongly than students who answer correctly.

e. Item Criteria Analysis
Analysis of item criteria is the final stage to see whether the questions that have been tested can be said to be prototype 3 / final product.

Table 9. Analysis of Item Criteria

No Question	Criteria Items	No Question	Criteria Items
1	Very adequate to use	10	Very adequate to use
2	Very adequate to use	11	Very adequate to use
3	Very adequate to use	12	Very adequate to use
4	Very adequate to use	13	Very adequate to use
5	Very adequate to use	14	Very adequate to use
6	Very adequate to use	15	Considered for use
7	Adequate to use	16	Adequate to use
8	Very adequate to use	17	Very adequate to use
9	Very adequate to use		

The last step is concluding. Based on the results obtained, the conclusion criteria are "very adequate for use", "adequate for use" and "considered for use". For questions with very adequate criteria to be used, it means that all the results of all validation factors (test validity, reliability, discriminating power, and level of difficulty) are met and these criteria are in questions number 1, 2, 3, 4, 5, 6, 8, 9. , 10, 11, 12, 13, 14, and 17. For the criteria for questions that are adequate to use, it means that there is one validation factor that is not met and this criterion is in questions number 7 and 16. This is because questions number 7 and 16 have power criteria. bad differentiator. For the question criteria to be considered for use, it means that two validation factors do not meet and this criterion is in question number 15. This is because the validity criteria on the questions are bad and the discriminatory power is also bad. Even though the validity criteria are poor, question number 15 is still in the valid category. Because more of these things support the inclusion of question number 15 into the final product. Based on these explanations, all the questions in prototype 2b are included in prototype 3/ final product. Henceforth prototype 3 is called the final product. Final products.
The final product is a package of numeracy literacy questions using the socio-cultural context of Labuhanbatu consisting of 17 questions.

The maximum score is 41 (the result of the sum of all scores). Based on the scores obtained by the students, the result is that 3% of students have high numeracy literacy skills and 93% of students have low numeracy literacy skills. If the number of students who have low numeracy literacy skills is greater than those with high numeracy literacy skills, it can be concluded that the numeracy literacy abilities are in a low category. This has not been able to break the opinion of Mansur (2018, 141) who states that students' mathematical literacy skills are still low.

CONCLUSION

1) Based on the results of the analysis of students' numeracy literacy skills using the final product, the percentage of students who have literacy skills in the "high" category is 3% and literacy skills in the "low" category are 97%.

2) Based on the average number of students who answered numeracy literacy questions using the socio-cultural context of Labuhanbatu, it was found that 50% of students who answered questions with a cognitive level of knowing, 32% of students who answered questions with a cognitive level of applying, and 18% of students who answered questions with a cognitive reasoning level

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