Effectiveness Of Minimum Competency Assessment Instruments at Level 2

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Abstract. This study aims to describe the effectiveness of the minimum competency assessment instrument at level 2. This research is included in research and development. Research and development procedures carried out in the development of learning curriculum teaching materials for primary school teacher education refer to Borg and Gall's development steps. The steps are grouped into three steps, namely a preliminary study, development, and testing and dissemination. This article only focuses on effectiveness that include in the testing and dissemination stage. The method used to test the effectiveness of the minimum competency assessment instrument at level 2 is the experimental method. The effectiveness test of the minimum competency assessment instrument shows that the minimum competency assessment instrument at level 2 is able to provide information about the literacy and numeracy abilities of students into 4 competency categories. To test the quality of items in the minimum competency assessment instrument level 2 instrument, it has good discriminatory power, and the proportion of questions with an adequate level of difficulty to describe the literacy and numeracy abilities of students. To test the reliability of the minimum competency assessment instrument on the literacy load, it has a range of 0.72. While the numeric charge has a range of 0.81. This shows that the level 2 minimum competency assessment instrument product developed can be said to be very feasible and effective to use.

Keywords: Effectiveness; Minimum Competency Assessment; Numeracy; Literacy

1 Introduction

Development in the field of education plays an important role in improving the quality of human resources. In other words, improving the quality of human resources can be done through improving the quality of education (Sholihah & Firdaus, 2019). One of the ways the government does to improve the quality of education is through a policy of independent learning. Independent learning policy is implemented to accelerate the achievement of national education goals, namely increasing the quality of Indonesian human resources who have advantages and competitiveness compared to other countries (Kemendikbud, 2020). To realize this goal, independent learning provides several offers in reconstructing the national education system (Yamin & Syahrir, 2020). One of the reconstructed systems in the independent learning policy is the evaluation system.

Starting in 2020, the Ministry of Education and Culture has decided to abolish the "Ujian Nasional" which was originally a form of final evaluation of each level of education, to be replaced with the National Assessment in 2021. There are 3 reasons for changing the "Ujian Nasional" to become a national assessment, namely, 1) The "Ujian Nasional" Materials are

too dense so that students and teachers tend to test mastery of content, not reasoning competence, 2) "Ujian Nasional" become a burden for students, teachers, and parents because they are an indicator of student as individuals, 3) "Ujian Nasional" only assess cognitive aspects of learning outcomes, have not touched the character of students as a whole (Kemendikbud, 2019).

Seeing these three reasons, the government is increasingly convinced to replace the "Ujian Nasional" with a national assessment. The national assessment is designed to monitor and evaluate the primary and secondary education systems (Kemendikbud, 2020). The national assessment is held as a basic mapping of the real quality of education so there are no consequences for schools and students on the results of the assessment (Pusmenjar, 2021). Through the national assessment, information about literacy, numeracy, and character of students will be obtained. The information was obtained from the three main national assessment instruments, namely the Minimum Competency Assessment, the Character Survey, and the Learning Environment Survey.

Minimum Competency Assessment in the national assessment is a form of basic competency assessment to develop students' self-capacity and positive participation in society. The implementation of the Minimum Competency Assessment is not based on the ability of student to master the material according to the curriculum as in the "Ujian Nasional", but is designed to map and improve the quality of education as a whole (Rohim, Rahmawati, & Ganestri, 2021). There are two basic competencies measured by Minimum Competency Assessment, namely reading literacy and mathematical literacy (numbering) (Kemendikbud, 2020). The policy regarding Minimum Competency Assessment is not without reason, based on the PISA score, Indonesia is ranked 72 out of 77 countries, while the mathematics score is ranked 72 out of 78 countries. This condition is due to the lack of emphasis on development for literacy and numeracy.

In addition, based on the results of the Indonesian National Assessment Program (INAP) released by the Ministry of Education and Culture, (2020) it shows that in numeracy skills as many as 77.13% of Indonesian students are in the poor category. Meanwhile, in literacy skills as much as 46.83% of Indonesian students are in the poor category. The results of the (INAP) released by the Ministry of Education and Culture, (2020) further strengthen the fact that the literacy and numeracy abilities of Indonesian students need to be taken seriously. So with Minimum Competency Assessment, the learning process is expected will be more emphasized on literacy and numeracy to deal with these problems.

The Minimum Competency Assessment in elementary schools is divided into 3 levels, namely level 1 (grades 1 and 2), level 2 (grades 3 and 4) and level 3 (grades 5 and 6). Every policy, of course, requires readiness in its implementation. However, in reality, based on the results of interviews with fourth grade teachers at SDN Cikaso, it was stated that schools had never clearly known about Minimum Competency Assessment questions related to literacy and numeracy to be used when evaluating learning activities because this was a new policy that would be implemented. This condition will certainly cause various obstacles because its implementation will be carried out in 2021. Seeing this condition, the development of the Minimum Competency Assessment instrument cannot be avoided. In this case, the Minimum Competency Assessment instrument that has been developed is for level 2.

In developing an instrument, it is necessary to know how far the effectiveness of the instrument is. Effectiveness itself is the ability to carry out tasks, functions (operations, program activities or missions) of an organization or the like in which there is no pressure or tension between its implementation (Mingkit, Liando, & Lengkong, 2017). In the context of

an assessment instrument, the effectiveness of the instrument can be said as the ability to measure the subject according to the initial purpose of the instrument being developed.

However, there is no further information regarding the results of the effectiveness test of the minimum competency assessment instrument at level 2. Therefore, research will be carried out with the aim of knowing the minimum competency assessment instrument at level two that has been developed so that it can be applied to a wider scope.

2 Methodology

This research is part of the research and development of the Borg & Gall model. There are ten steps in the research and development of the Borg & Gall model, namely, 1) collecting information and preliminary research, 2) planning, 3) developing the initial product form, 4) conducting a limited trial of the initial product to produce the main product, 5) revising on the main product, 6) conduct a trial of the main product, 7) revise the main product to produce the final product, 8) conduct a field trial of the final product, 9) revise the final product, and 10) disseminate and implement the product (Borg & Gall, 1983). The development procedure used is a modified research and development procedure from Borg & Gall which groups the development research steps into three stages.

a. Preliminary Study
   This preliminary study includes an analysis of the readiness of schools and teachers in implementing the Minimum Competency Assessment policy, stages of student development, and school conditions. The analysis in the preliminary study was carried out by interviews, and literature study

b. Development
   At this stage, the initial product development or model draft was carried out with two categories of trials, namely preliminary trials, and main trials.

c. Testing and Dissemination
   At this stage testing the effectiveness of the product and product dissemination

Based on the three stages presented above. The effectiveness test enters the testing and dissemination stage. The method used to test the effectiveness of the minimum competency assessment instrument at level 2 is the experimental method. We assessed the psychometric properties of the new instrument in terms of its general characteristics, reliability, validity, and usefulness. The characteristics of psychometric measurements are comparisons between the measured attributes and the measuring instrument, the results are expressed quantitatively, and the results are descriptive. The approach used in measuring the effectiveness of this minimum competency assessment instrument is the item response theory approach.

Psychometric characteristics using the item response theory approach consist of 1) reliability, 2) undimensionality, 3) item difficulty index, 4) differential item functioning and 5) item fit order. The population of this study were all fourth grade students at SDN Cikaso.

3 Result and Discussion

Evaluation is an important component in the implementation of education. Through the results of the evaluation, it can be seen the level of achievement of the educational goals. Therefore, evaluation can be used as a recommendation in overcoming a problem encountered

in the education process or the education system that is being implemented (Purnomo & Wulandari, 2019). Evaluation cannot be separated from the use of instruments. An instrument will be said to be good if it is effective.

The effectiveness of the Minimum Competency Assessment Instrument level 2 is measured through 5 stages, namely 1) reliability, 2) undimensionality, 3) item difficulty index, 4) differential item functioning and 5) item fit order. The following is a discussion of each stage of measuring the effectiveness of the Minimum Competency Assessment Instrument level 2.

a. Reliability

An instrument is said to be reliable if the instrument is reliable, consistent or steady and productive (Purwanto, 2010). So that the reliability test is intended to determine the consistency of the measuring instrument in its use. The following are the results of instrument reliability tests on literacy questions presented in table 1.

Table 1. Results of Reliability Analysis of Literacy Questions

R	Information	Decision
0,72	High coefficient	Reliable

Based on table 1, it can be seen that the results of the reliability test of the Minimum Competency Assessment level 2 instrument on the literacy get a reliability score of 0.72 because the range of reliability scores is between 0.70 to 0.90, the number 0.72 can be interpreted as a high coefficient in the instrument. Furthermore, the reliability test of the numeration questions Minimum Competency Assessment level 2, was also carried out in table 2.

Table 2. Results of Reliability Analysis of Numeracy Questions

R	Information	Decision
0,81	Tinggi	Reliabel

Based on table 2, the results of the reliability test of the Minimum Competency Assessment level 2 instrument on the numeric charge got a reliability score of 0.81, because the range of reliability scores is between 0.70 to 0.90, the number 0.81 can be interpreted as a high coefficient.

b. Unidimensionality

Unidimensionality is an important measure to evaluate whether the instrument developed is able to measure what it is supposed to measure (Suminto & Widhiarso, 2015). The Minimum Competency Assessment level 2 instrument is able to fulfill the purpose of the Minimum Competency Assessment instrument, which is to provide information about the literacy and numeracy abilities of students into four criteria for the level of competence of students. The four criteria are presented in table 3

Table 3. Criteria for Minimum Competency Assessment Competency Level

Competency Level	Criteria
0 – 12	Need Special Intervention (PIK)
13 – 24	Basic
25 – 36	Competent
37 – 48	Profisient

The results of the literacy measurement of the Minimum Competency Assessment level 2 instrument that have been tested show that the maximum score obtained in the trial of the AKM instrument for literacy content is 32, the minimum score is 9, and the average score is 19. The results of the measurement of the Minimum Competency Assessment level 2 instrument on literacy content can be it was concluded that there were 3 students who needed special intervention (14%), 15 students were at the basic competency level (68%), and 4 students were at the proficient competence level (18%).

Furthermore, the results of the numerical measurement of the Minimum Competency Assessment level 2 instrument show that the maximum score is 28, the minimum score is 4, and the average score is 13. The results of the measurement of the Minimum Competency Assessment level 2 numeration instrument can be concluded that there are 8 students who need special intervention (36%), as many as 12 people are at the basic competency level (55%), and 2 students are included in the proficient competency level (9%).

c. Index Difficulty Item

The calculation of the difficulty level of the question is a measurement of how big the degree of difficulty of the question is. Furthermore, the results of the analysis of the level of difficulty of literacy questions are presented in table 4.

Table 4. Results of the Analysis of the Difficulty Level of Literacy Questions

Question Category	Question Number	Number of Questions	Percentage (%)
Easy	9,15.	2	4%
Medium	1,2,3,4,5,6,7,10,11,12, 13,14,17,18,19,20,21, 22,24,26,28,29,30,32, 35,41,43,47.	28	58%
Difficult	8,16,23,25,27,31,33, 34,36,37,38,39,40,42, 44,45,46,48.	18	38%
			100%

Based on table 4. the results of the analysis of the difficulty level of the Minimum Competency Assessment instrument on literacy content, it can be concluded that there are 2 items in the easy category (4%), as many as 28 items in the medium category (58%), and 18 items in the difficult category (38%). Furthermore, the results of the analysis of the difficulty level of numeracy questions are presented in table 5.

Table 5. Results of the Analysis of the Difficulty Level of Numeracy Questions

Question Category	Question Number	Number of Questions	Percentage (%)
Easy	1	1	2%
Medium	4,6,14,19,20,23,25,29 ,30,34,35,37,38,40,42 ,44,46	17	35%
Difficult	2,3,5,7,8,9,10,11,12, 13,15,16,17,18,21,22, 24,26,27,28,31,32,33, 36,39,41, 43,45,47,48	30	63%
			100%

Based on table 5 the results of the analysis of the difficulty level of the Minimum Competency Assessment instrument on numeric content, it can be concluded that there is 1 item in the easy category (2%), as many as 17 items in the medium category (35%), and 30 items in the difficult category (63%). In general, an item evaluation of learning outcomes is declared good if the item is not too difficult and not too easy. Therefore, items that cannot be answered correctly by all training participants (because they are too difficult) can be declared as bad items. On the other hand, items that all of the training participants can answer correctly (because they are too easy) can also be declared as bad items.

Considering the purpose of the Minimum Competency Assessment is to obtain information about the literacy and numeracy abilities of students, it can be said that the proportion of the number of items that are difficult, medium and easy can still be used.

d. **Differential Item Functioning**

The distinguishing power according to Arifin (2012) is the ability of questions to distinguish between smart students and less intelligent students. The following are the results of the analysis of differentiating power on literacy questions which will be presented in table 6.

Table 6. Results of the Distinguishing Power of Literacy Questions

Question Category	Question Number	Number of Questions	Percentage (%)
Very Good	1,13.	2	4%
Good	2,6,11,12,17,21,23,24,25,26,30,32,33,34,38, 40.	16	33%
Sufficient	7,18,19,20,27,28,35,36,42,43.	10	21%
Bad	3,4,5,8,9,10,18,19,20,22,29,31,37,39,41,44,45,46,47,48.	20	42%
			100%

Based on table 6 the results of the analysis of the distinguishing power of the Minimum Competency Assessment instrument on literacy content can show that there are 2 items in the very good category (4%), as many as 16 items in the good category (33%), 10 items in the sufficient category (21%) and 20 items in the bad category (42%). Further, for the analysis of the power of difference in numeracy questions, it is presented in table 7 below.

Table 7. Results of the Distinguishing Power of Numeracy Questions

Question Category	Question Number	Number of Questions	Percentage (%)
Very Good	29,38,40,46.	4	8%
Good	4,6,17,18,20,23,30,33,34,35,37,43,44,48	14	29%
Sufficient	1,8,19,21,25,26,31,36	8	17%
Bad	2,3,5,7,9,10,11,12,13,14,15,16,22,24,27,28,32,39,41,42,45,47.	22	46%
			100%

Based on table 7. the results of the analysis of the distinguishing power of the Minimum Competency Assessment instrument on numeric content can show that there are 4 items in the very good category (8%), as many as 14 items in the good category (29%), 8 items in the sufficient category (17%) and 22 items in the bad category (46%).

Based on the results of the analysis of discriminatory power, because the scores of literacy and numeracy abilities of Indonesia nationally and internationally get low percentage results. So, the number of bad categories in the level 2 Minimum Competency Assessment instrument discriminatory test is normal. In addition, based on the results of follow-up interviews, it is known that students have never encountered the types of questions in the Minimum Competency Assessment questions such as complex multiple choice. In addition, when the product is used. Most of the teachers admitted that it was the first time they had seen firsthand

the types of questions that the Ministry of Education and Culture wanted in the Minimum Competency Assessment. This condition of course affects the results of the measurement of the different power of the product. Furthermore, for items fit order in this study can be known through the results of undimensionality.

4 Conclusion

Based on the results and discussion above, some conclusions can be drawn as follows. Minimum Competency Assessment Instrument (AKM) level 2 is declared effective which is based on:

a. Based on the analysis of the reliability test of the AKM instrument, the literacy load that has been tested has a range of 0.72. While the analysis of the AKM instrument questions containing numeration has a number range of 0.81. This shows that the level 2 Minimum Competency Assessment (AKM) instrument product developed can be said to be very feasible to use

b. The AKM level 2 instrument is able to fulfill the purpose of the AKM instrument, which is to provide information about the literacy and numeracy abilities of students into 4 categories, namely special interventions, basic competencies, proficient and proficient. This is evidenced by the fact that 14% of students need Special Intervention (PIK), 68%, students are at the basic competency level, and 18% of students are at the competent competency level in literacy skills. Meanwhile, the results of the numeration measurement show that 36% of students are at the Special Intervention Requirement (PIK) competence, 55% of the students are at the Basic competency level, 9% of the students are at the competent competency level.

c. To test the quality of the items based on the analysis of the level of difficulty of the Minimum Competency Assessment Instrument at level 2 difficulty level of literacy questions with the criteria used, the results obtained are easy questions as many as 2 questions (4%), moderate questions 28 questions (58%), and difficult questions 18 questions (38%). Meanwhile, the difficulty level of numeracy questions with the criteria used resulted in 1 easy question (2%), medium questions 17 questions (35%), and difficult questions 30 questions (63%). Based on the quality test of the items on the results of the difficulty level analysis. This means that the question can still be used.

d. To test the quality of the items based on the calculation of the discriminatory power of literacy questions, there were 20 bad questions (42%), 10 questions enough (21%), 16 good questions (33%), and 2 very good questions (4%). Meanwhile, for the results of the analysis of the calculation of the discriminating power of numeracy questions with the criteria used, the results obtained are 22 questions (46%), only 8 questions (17%), good questions 14 questions (29%), and very good questions 4 questions (8%). So, it can be said that there are quite a number of items that are categorized either on the items of literacy or numeracy.

References

[1] Borg, W., & Gall, M. (1983). *Educational Research an Introduction (4 th ed.)* . New York: Longman inc.

[2] Kemendikbud. (2019). *Merdeka Belajar (Hasil Rapat Koordinasi dengan Kepala Dinas Pendidikan Seluruh Indonesia).* Jakarta: Kementrian Pendidikan dan Kebudayaan.

[3] Kemendikbud. (2020). *AKM dan Implikasinya pada Pembelajaran.* Jakarta: Badan Penelitian dan Pengembangan dan Perbukuan Kementrian dan Kebudayaan.

[4] Kemendikbud. (2020). *Buku Saku Merdeka Belajar.* Jakarta: Kementrian Pendidikan dan Kebudayaan.

[5] Kemendikbud. (2020). *Desain Pengembangan Soal AKM.* Jakarta: Badan Penelitian dan Pengembangan dan Perbukuan Kementrian dan Kebudayaan.

[6] Mingkit, G., Liando, D., & Lengkong, J. (2017). Efektivitas Penggunaan Dana Desa Dalam Peningkatan Pembangunan. *Jurnal Jurusan Ilmu Pemerintahan*, 1-11.

[7] Purnomo, H., & Wulandari, I. (2019). *Evaluasi Pembelajaran.* Yogyakarta: K-Media.

[8] Purwanto, N. (2010). *Prinsip-Prinsip Dan Teknik Evaluasi Pengajaran.* Bandung: Remaja Rosdakarya.

[9] Pusmenjar. (2021). *Asesmen Nasional. Lembar Tanya Tawab.* Jakarta: Pusat Asesmen dan Pembelajaran.

[10] Rohim, C., Rahmawati, S., & Ganestri, I. (2021). Konsep Asesmen Kompetensi Minimum untuk Meningkatkan Kemampuan Literasi Numerasi Siswa Sekolah Dasar . *JURNAL VARIDIKA*, 54-62.

[11] Sholihah, I., & Firdaus, Z. (2019). Peningkatan Kualitas Sumber Daya Manusia Melalui Pendidikan. *Jurnal Al-Hikmah, 7*(1), 33-46.

[12] Suminto, & Widhiarso. (2015). *Aplikasi pemodelan RASCH pada assessment pendidikan.* Cimahi: Tim Komunikata.

[13] Yamin, M., & Syahrir. (2020). Pembangunan Pendidikan Merdeka Belajar (Telaah Metode Pembelajaran). *Jurnal Ilmiah Mandala Education*, 126-136.