Development of Performance Assessment Instrument in Thematic Learning of 4th Grader Elementary School

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WORD COUNT 5362 TIME SUBMITTED 04-MAR-2020 12:27PM
PAPER ID 56130236

Journal of Education and Practice
ISSN 2222-1735 (Paper) ISSN 2222-288X (Online)
Vol.9, No.26, 2018

Development of Performance Assessment Instrument in Thematic Learning of 4th Grader Elementary School

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bstract
This study aims to develop performance assesment instrument in thematic learning of 4th grader elementary school students. The type of research used is research and development that refers to Borg & Gall's theory. The population of this study is all fourth grade students from the Elementary School of Negeri Agung District, Way Kanan Regency. Samples were taken by using Random Sampling technique with total of 34 students of Public Elementary School 01 of Kalipapan. Data were collected through questionnaires and test questions. The results showed that the developed performance assesment instrument was theoretically valid and empirically reliable. This was proved from the resul f questionnaires by experts and teachers who stated that the developed product was theoretically valid and the result of reliability test obtained a score of 0.67 which proved that the performance assessment instrument was empirically valid.
Keywords: Performance assessment, Thematic Learning Instrument.

INTRODUCTION

Assesment in the curriculum 2013 (K13) or better known as authentic assessment has a strong relevance to the scientific approa of learning in accordance to K13 demands. That assessment was able to illustrate the improvement of student learning outcomes, in order to observes, reasons, tries, build networks, *etc.* Therefore, learning outcomes assesment must be conducted by starting from instrument determination, instrument preparation, instrument review, assessment implementation, assessment results analysis, and assessment results follow-up program. Student learning outcomes assesment in primary education and secondary education includes aspects of attitude (affective), knowledge (cognitive), and skills (psychomotor).

Attitude assessment can be conducted by observations, knowledge assessment through written tests, oral s, and assignments, as well as skills assessment through performance assesment. Performance assessment is an assessment that requires students to demonstrate a particular competence. Research result from Daniela Tuparova (2010) showed that performance assessment is a measure of assessment based on original tasks such as activities, exercises, or problems that require students to show what they usually do.

Performance assessment is a part of authentic assesment. On performance assesment, emphasis on the assessment can be conducted on the process or the product. Performance assesment involves students in activities that require demonstration of certain skills in terms of creating a product. This assessment method allows teachers to design a complex learning outcome that cannot be obtained just by giving regular tests. Performance assesment can observe students when they are performing/appearing or assessing the level of students' demonstration skills.

Regulations of Ministry of Education and Culture No. 23 r 2016 about Educational Assessment Standards states that: Learning activities in the curriculum 2013 are the process of gathering and processing information to measure the achievement of students' learning outcomes including authentic assessments, self-assessments, portfolio-based assessments, repetitions, daily tests, midterm tests, end-of-term tests, competency level tests, competency level quality exams, national exams, and school or madrasa exams.

Based on the results of needs analysis conducted on 9 teachers of class IV elementary school in November 8th, 2017, obtained a result that 66,67% teachers had been used an instrument to assess students' performances. Teachers use instruments from publishers to assess students' performance. There are 6 teachers (66,67%) who stated that the performance assessment used does not refer to each of the learning themes and sub-themes. But, in reality, only 33,33% teachers who have been already made their own instruments to assess students' performance. Total of 77,78% teachers stated that they had difficulties in making performance assessment instruments. This is because the teachers were still lack of knowledges about the instruments used to measure students' skills. The next analysis result, 100% of teachers need an instrument of performance assessment that is easier to implements. Moreover, the performance assessment instrument is able to measure the learning outcomes of students well.

Based on the description above, teachers are required to be creative and need to develop performance sessment, Learning Implementation Plan (RPP), and learning materials. These three things need to be developed so that the learning process can take place as expected. The goal is to improve student performance skills in conducting experimental activities and communicating in learning.

According to Hosnan (2014: 387), explained that assessment is teacher's activity that intended to measure certain competency or ability of an activity that have been conducted in learning activities. According to Mangiante (2013: 222), assessment is a tool to measure where students have improved their learning based on standards.

Whilst according to Harlen (2013: 6), assessment is defined as the process of collecting and using facts for a specific purpose about students' learning outcomes.

According to Subali (2010:114), the procedure for conducting an assessment consists of (a) composes a question lattice, (b) composes an instrument, (c) examine the quality of instrument qualitatively, (d) instrument measuring test, to investigate the feasibility and validity empirically, and (e) conduct the measurement.

Performance assessment is not only assesses the result but also assesses how students are actively involved in the learning process. The teacher will be more objective in assessing students with performance assessment. As revealed by (Popham, 1995: 139), that in assessing student performance, the teacher wants an "*authentic*" or original response in the form of observable activity. The tasks given can take the form of oral or written, which types of assignments are suiting the learning objectives.

Rufina (2015) stated that the usage of performance assessment provides an opportunity for teachers to learn to identify students' strengths and weaknesses, thereby monitoring their growth and development. Student performance must be monitored appropriately from time to time to ensure the growth process goes well (Zulkifli, 2016:67).

The tool in assessing student performance uses rubrics by observing students when they perform in the learning process. In accordance to the research conducted by Jonsson (2007) concluded that reliable performance scores, assessments can be enhanced by the use of rubrics, especially if they are analytic and specific. Validity is more comprehensive when validating rubrics. Rubrics have the potential to improve learning.

It is appropriate for teachers to understand and have skills in assessing their students' learning outcomes, making teachers are able to compile assessment instruments in accordance to certain rules. An assessment arranged in accordance to the preparation rules will produce valid and reliable assessments. Thereby it will produce data and information about the level of student achievement competencies in a valid and accurate manner.

In accordance to the above problems, the purpose of this research and development is to develop performance assessment instruments on thematic learning of theme 9 The Wealthiness of My Country subtheme 3 Preservation of Natural Resource Wealth in Indonesia in class IV of Elementary Scool which meets valid theoretical criteria and meets reliable empirical criteria.

METHODS

Research Type and Procedure

This research is *Research and Development (R&D)* type. Research and development is a research type that aims to produce certain product. The produced product then tested its validity and reliability. The research and development used was the Borg & Gall design model (2003: 569-575) which consists of 10 steps. The steps that must be followed to produce the product, *i.e.* : initial research and information collection, planning, development of initial product format, initial trial, product revision, field trial, product revision, operational field trial, final product revision, implementation. This study only carried out the first step up to the seventh step, namely the preliminary study step to the field trial step.

Population and sample

The population of this research and development is 4th grader elementary school students of Public Elementary School 01 of Kalipapan, Negeri Agung District, Way Kanan Regency which have implemented the curriculum 2013 with total of 34 students.

Samples were taken by using *Random sampling* technique. This sampling technique is used with the consideration that the characteristics of the school being sampled are almost the same, *i.e.* use the 2013 curriculum with the different school minimum completeness criteria achievement, therefore the sample in this study was 34 class IV students from Public Elementary School 01 of Kalipapan.

Data collection instruments are tools used to collect all data, which are needed in a research. Data collection instruments in this study were used to collect data from the preliminary study, product development and product trial. In the preliminary study phase, the used instruments were interview guide sheets, observation sheets, and questionnaire sheets for expert validation and teacher validation.

Data analysis used in this research activity is the analysis of qualitative descriptive and quantitative descriptive data. Analysis of qualitative descriptive data in this study was used to process data that sourced from comments and suggestions which obtained from material expert, language expert and evaluation expert which contained in the validation questionnaires, the initial trial to determine the validity and usability of the instrument. The results of the analysis of qualitative descriptive data will later be used as a condition to meet valid theoretical criteria.

Quantitative descriptive data analysis was used to analyze the data obtained in form of validation assessment scores from material expert, language expert and evaluation expert to assess contents validity of the developed instrument, the result of the teacher response questionnaire is to measure the usability and feasibility of the product. And also student test results to measure the level of instrument reliability.

Data or information can be said as valid if suitable to the actual situation (Arikonto, 2013: 72). Therefore, the instrument is said to be valid if the used instrument can measure what should be measured. Data from the validation sheets result, giving an overview or quality exposure of the developed assessment instrument. While, the usability level analysis was used to see the feasibility level of the developed product. The results of validation sheets data provide an overview or explanation to the quality of the instrument taken from the validation results of assessment expert, language expert, material expert and teachers, which is developed with the following formula.

$$V_{ah} = \frac{T_{Se}}{T_{Sh}} \times 100\%$$

Information:
V_{ah} = Expert Validation
T_{se} = Total of Empiric score
T_{sh} = Total of maximum score
(source: Akbar,2013:82)

Table 1. Criteria of Instrument Validity

Final Score	Criteria
80 % - 100%	Very valid, very complete, can be used
61% - 80%	Quite valid, quite effective, can be used
41% - 60%	Less valid, Less effective, not used
21% - 40%	Not valid, not effective, can not be used
00% - 20 %	Very invalid, can not be used

(Source : Akbar, 2013:182)

Empirical criteria are used to analyze question items. Question item analysis was used for testing the questions quality that tested in the main field trial. Quantitative data examine empirical criteria using reliability test.

The instrument is said to be reliable if it provides a static or consistent result after being tested multiple times. Reliability test in this research involves raters or experts called inter-rater agreement (inter-rater reliability).

This study involved two Raters, in this case, teachers as the assessors, therefore in this study using the agreement coefficient *Cohen Kappa*. This selection was based on the type of data analysis, which is non-parametric, and its usage stated by Widhiarso (2006:2) *i.e.*, " The use of *kappa* coefficient is appropriate when (a) not many raters used, usually one subject is assessed by two raters, (b) the assessment results score was categorized, usually only two categories encoded with 0 or 1. To find the *Cohen Kappa* coefficient, can use this following formula:

$$k = \frac{Pa - Pc}{1 - Pc}$$

Widhiarso(2006:15)

Information:
k = Coefficient of *Cohen Kappa*
Pa = Proportion of observed agreement
Pc = Proportion of expected agreement
1 = Constant

Widhiarso, (2006:15) categorized reliability levels between raters, *i.e.*:
- Kappa < 0,4 : Bad
- Kappa 0,4 – 0,60 : Fair
- Kappa 0,60 – 0,75 : Good
- Kappa > 0,75 : Very Good

RESULT AND DISCUSSION

Research Results

The results of this research and development are student performance assessment instrument that meets valid theoretical criteria and reliable empirical criteria, 4th grader student of Elementary School on even semester. Theme 9 The Wealthiness of My Country, sub-theme 3 Preservation of Natural Resource Wealth in Indonesia.

The procedure used in this study refers to the development model of Borg & Gall which contains the following main steps of the research:

Research and Information Collection Step.

Information gathering and needs analysis was conducted by observations, interviews and questionnaires distribution to teachers from Cluster II Ki Hajar Dewantara who have been applied the 2013 curriculum. After that, researcher conducted a literature study to examines theories and results of previous research related to the

developed product. The developed product will have a theoretical basis and be supported by strong empirical facts. Field surveys were conducted to collect data related to needs.

Based on a series of research and development literature studies and obtained information from needs analysis, real conditions that present in Cluster II Ki Hajar Dewantara of Negeri Agung District, Way Kanan Regency are: 1) Teachers, in conducting assessments, are only based on teacher's books and student's books, there is no development in performance and learning assessment; 2) Teachers have difficulty to making performance assessment instruments with the 2013 curriculum integrated learning; 3) The assessment in the teacher's book is not specific to measuring some particular skills, especially performance assessment; 4) Learning activities are still widely conducted in the classroom, not using the surrounding environment as a learning medium.

The next step is to evaluate the psychomotor domain of assessment instrument in the 2013 curriculum teacher's book, the rubric in the teacher's book is still general and has not been developed into an easy assessment instrument with suitable indicators to performance assessments and there are no usage instructions. In teacher's book and 4th grade students' 2013 curriculum semester book.

Based on the analysis results, the potential to develop student performance assessment can be a solution for the faced problems. Researcher develops a performance assessment rubric that can assists teachers to carrying out the assessment process when students perform.

Planning

This step was conducted by designing a prototype of student performance assessment based on the suitability of Core Competency (CC), Basic Competency (BC) and Indicators in teachers' book that used for learning.

Drafting the Initial Product

Researcher develops performance assessment rubric according to the steps to make a performance assessment from Harsiati (2011: 200) with the following descriptions. 1) Analysis of CC/BC to determine CC characteristics; 2) Determine the description of skills or behaviors that should be conducted in order to be able to make a product that required in CC; 3) Determine product indicators, *i.e* determine indicators of performance skills; 4) Determine techniques or assessment tools; 5) Determine the indicators of problem, in the question indicator skills is a statement that describes in detail required students' responses, response types and criteria; 6) Develop contextual tasks that show mastery of student skills; 7) Prepare assessment rubrics / guidelines.

Initial Trial

This initial trial is to find out the validity of the instrument theoretically. Theoretical validation includes the assessment from experts and practitioners (teachers). The assessment of experts was used as a basis to revises and refines the prototype. Expert assessment was done by submitting the assessment instrument lattices, student performance assignments, assessment rubrics, assessment instruments, and scoring guidelines. Then, the expert was asked to assess the instrument suitability with the indicators on validation sheet. Aspects assessed include 4 things, namely: (1) material; (2) evaluation; (3) language; and (4) usability by teachers.

Table 2. Validation results by Experts

Validators	**Score**
Material Expert	100,00
Language Expert	100,00
Evaluation Expert	100,00
Average	**100,00**

Table 3. Validation Results by Experts

Validators	**Score**
Ketut Dian, S.Pd	100,00
M. Rizal, M.Pd	100,00
Rohim, S.Pd	100,00
Hendro Utomo, S.Pd	100,00
Arliyana, S.Pd	100,00
Rosmida, S.Pd	100,00
Average	**100,00**

The validation results by validators were used to revise the developed performance assessment instrument product which will then be used for the main field trial

Revision

Instrument revisions were conducted based on input from experts / validators. Generally, input advices obtained

during the validation process from the experts are the compatibility between the assessment instrument with CC, noticing more about the usage of punctuation, between assessment instruments and scoring guidelines must be separated, font size must be appropriate and color selection in the assignment section must be appropriate.

The results of validation by the validators are used to revise the product of the developed performance assessment instrument which will then be used for main field trial

Main Field Trial

The main field trial was conducted on 2 teachers as rater and 34 students in class IV of Public Elementary School 01 of Kalipapan from May 21st, 2018 to May 30th, 2018. The main field trial was conducted to measure reliability level of the product's instruments to meet the empirical product validation criteria. Reliability measurement uses *Cohen Kappa* consistency by Widhiarso (2006:2). If in the Self-report case the reliability is indicated by the involved internal consistency between one item and another has a high correlation, then in this case of reliability between raters, the consistency is tested by the raters themselves. So the position of item is replaced by person (rater).

Based on data analysis, it shows that the developed instrument in this study obtained the reliability test result of 0,67 with consistency criteria of realiability level as good category. The result of validity and reliability test shows a result that in accordance to the testing criteria, and states that the assessment of the developed performance of students is valid empirically in a reliable level. This is in line with Suwaibah's research (2015:8) that the reliability test results are obtained from a high coefficient in the assessment process of performance instruments.

Product Revision

The final product revision was conducted based on the results of field trial and findings when the product was tested. Based on the results of this theoretical and empirical validation, the developed instrument product was not revised and feasible to be implemented.

DISCUSSION

Based on a series of research and development literature studies and needs analysis obtained information that, real conditions that present in Cluster II Ki Hajar Dewantara, Negeri Agung District, Way Kanan Regency are 1) Teachers, in conducting assessments, are only based on teacher's books and student's books, there is no development in performance and learning assessment; 2) Teachers have difficulty to making performance assessment instruments with the 2013 curriculum integrated learning; 3) The assessment in the teacher's book is not specific to measuring some particular skills, especially performance assessment; 4) Learning activities are still widely conducted in the classroom, not using the surrounding environment as a learning medium.

The development of student performance assessment was intended to improve student performance skills in conducting experiments or activities to try and communicate in scientific learning by providing a number of material assistance and instructions to students. Therefore, the teacher can develop an authentic assessment which is feasible and meet certain criteria in accordance to the response assessment of students, teachers and two expert validators.

That is in accordance to Vygotsky's learning theory namely *Scaffolding. Scaffolding* it means giving a large amount of assistance to a student during the initial stages of learning and then taking over increasingly large responsibilities as soon as he can do the basic. The assistance can be in the form of instructions, warnings, a motivation, solving problems into steps, giving examples, or others to enable students to grow independently. (in Trianto. 2013: 76-77).

Performance assessment of Fourth grader students was applied to learning in schools that have implemented the 2013 Curriculum. The curriculum uses integrated thematic learning. The point is integrated teaching was intended as a teaching activity by combining several subject materials in the same theme and time. Learning process in the 2013 curriculum uses a scientific approach that consists of seeing, asking, trying, reasoning, and communicating, This is in line with Dyers's theory in Maryanti (2015: 1) that creativity ability can be obtained through observing, asking, trying, reasoning, and networking.

The development level of elementary students always starts with the real thinking stage. In everyday life, they do not see subjects as independent thing. They see it as objects or events which contain a number of concepts/materials in several lessons.

The development of student performance assessment instrument was also based on the advantages possessed by performance assessment. Performance assessment can be used as an alternative to the tests that have been widely used to measure the success of student learning in school. Therefore, the usage of performance assessment is important in the learning process because it can provide more information about students' abilities. In the process or product, it is not just getting information about the right or wrong answers. Students are more capable of theorizing, but are less skilled to do that theory. This is in line with Stiggins' statement (1994: 161) who states that there are several reasons why performance assessment needs to be conducted: 1) To give teachers more

opportunities to fully recognize students skills because, in reality, not all students who are less successful in objective tests or essays can automatically be stated as unskilled or uncreative. Thus, the student performance assessment complements other assessment methods, 2) The ability of students who are difficult to know or detect only by looking at the final results of their work, or only through written tests in terms of skills and creativity.

This study refers to skills competency assessment, according to Kunandar (2015 : 259), in the realm of skills, there are five levels of thought processes: (1) imitation, (2) manipulation, (3) precision, (4) articulation, and (5) naturalization. The development of this assessment was at the level of imitation and manipulation thinking. Imitation is the ability to do simple activities and exactly the same as what was seen or noticed before, and manipulation is the ability to do simple activities that have never been seen before, but only based on instructions or guidelines.

This performance assessment instrument can be used as an alternative assessment of the one that has been used to measures student learning success. Therefore, the usage of performance assessment instrument was important to be conducted in order to know the students' abilities, not only the results, but also the learning process, so there is no subjective tendency of judgment. Teachers do not only judge the right and wrong answers without reason, but teachers must also assess students' skills when doing practices. In line with Cabrera's research (2001), this study shows that the developed instrument meets several requirements recommended by the assessment literature (1) meaningful to users, (2) reliable and valid, and (3) observable index behavior avoids subjective impressions.

The developed instrument had gone through several steps, ranging from fulfilling the instrument writing rules, theoretical validation and empirical validation. This validity results were in line with the research conducted by Budhiwaluyo (2016), in their research, the result of field trial showed that the product must have a high score of validity and reliability to measure student practice performance.

The results of content validity was in line with the research conducted by Putri (2017), the results of their research showed that the developed performance assessment had fulfilled the content validity based on an evaluation by 3 experts and 3 practitioners. Reliability of all rubrics in performance assessment was categorized as very high. A similar research to get the content validity from experts was conducted by Kurniawaty (2017), the results showed that each item in a performance-based assessment instrument on thematic learning in 4th grade elementary school students that had been validated by a team of experts was declared as feasible to be used to measure the aspects of students' psychomotor or skills.

The feasibility of developing products was in line with the results of Ratnami's research (2016), concerning the feasibility of performance assessment, *i.e.* the quality of the development of performance assessment result according to the expert review, namely the content expert test was in very good qualification of 90.00%; Learning design expert test was at very good qualification of 92.00%; assessment expert test was at very good qualification of 90.00% and field trial was at very good qualification of 90,76%). Usman (2014) in their research, the teachers response data was categorized as very good.

Mardhapi (2004) based on the compiled articlse, it can be concluded that the assessment instrument is not always in a written test form, it can be an observation guide, but must have proof of validity and reliability.

Based on the data analysis, it shows that the instrument developed in this study has a high reliability criteria which proved with the *Kappa* consistency score of 0,67 with the consistency between raters categorized as good. In line with Retnowati's research (2009: 131), it was shown that the reliability of instrument gets the Cohen's Kappa coefficient score with good criteria.

This is in accordance to the principles that must be considered by the teacher in conducting an assessment, according to Sudaryono (2012: 54-55) which is: (1) Continuity principle *(continuity*), (2) Comprehensive principle (*comprehensive*), (3) Objectivity principle (*objectivity*), (4) Validity (*validity)* and reliability (*reliability*) principle, (5) Criteria measurement principle, (6) Usability principle.

Based on the research results presentation, the assessment of students' performance on learning the theme "always save energy" has many advantages when compared to the instrument of psychomotor aspects assessment contained in the teacher's book. The following are the differences between the developed product and the existing instruments:

Table 4. Differences Between The Developed Performance Assessment Instrument with The Performance Assessment Instruments on Teacher's Books

Performance Assessment Instruments on Teacher's Books	**Developed Performance Assessment Instrument**
Assessment still assesses in general, and had not detailed in assessing student's performance	Detailed assessment of student's performance
Usage Instructions are not clear	Clear usage instructions
Scoring guidelines are not clear	Scoring guidelines are clear
Criteria in assessment aspects are not clear	The criteria used are clear to assess student's performance, thus easy to use

Based on the differences found in the table above, it was clear about the advantages of the developed product. Therefore, it has the potential to continue to be developed and used as an instrument for performance assessment on learning. The developed instrument meets the requirements as a good evaluation tool, thus it is suitable to be used as an assessment instrument, in line with Pratiwi's research (2016) which sho that the developed performance assessment instrument has high validity and reliability score, thus it is good and feasible to be used as an assessment instrument to assess student's performance in practice and learning.

CONCLUSION

This research resulted in student performance assessment instrument that meets valid theoretical criteria and reliable empirical criteria, for 4th grader students of Elementary School in Even Semester. Theme 9 The Wealthiness of My Country, sub-theme 3 Preservation of Natural Resource Wealth in Indonesia which consists of 4 lesson contents, *i.e.* Civic Education, Indonesian Language, Natural Science, Cultural Arts and Crafts, and Social Science. Validity test result shows the level of content validity categorized as very good / very valid category. While the reliability test result shows that the assessment instrument has a level of reliability categorized in good category.

This performance assessment provides more opportunities for teachers to fully recognize students' skills because, in reality, not all students who are less successful in cognitive tests are not necessarily unskilled or not creative. This performance assessment also provides an opportunity for teachers to assess more objectively in accordance to the students' ability to perform a performance in the learning process, and answer the assessment demands in accordance to the 2013 curriculum, namely authentic assessment. Thus, the student performance assessment is an assessment of process to train student skills and support the assessment of student learning outcomes.

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