

The Development of Project Based Learning Based on Skills Assessment Instrument to Measure Students' Creativity in Fifth Grade of Elementary School

Ratnawati^{1*} Ag Bambang Setiyadi² Rochmiyati³ Nurlaksana Eko Rusminto⁴
Faculty of Teacher Training and Education, University of Lampung
St. Soemantri Brojonegoro No.1 Gedung Meneng Bandar Lampung 3514

Abstract

The purpose of this study is to produce a project skill assessment instrument product based on valid, reliable, and has tested its predictive validity on project based learning to measure students' creativity on the themes of animal and human motion organs. This type of research and development refers to Borg & Gall's theory. The study population was fifth grade students in elementary school in Gedong Tataan, Pesawaran. The research sample uses a purposive sampling technique, which consists of 87 students. Data analysis techniques were carried out in a mixed between qualitative and quantitative. The results showed that the project based learning based on skills assessment instrument was used to measure the creativity of fifth grade elementary school students. The feasibility is proven through the results of the expert validation of the material, language, and evaluation, as well as practitioner tests that show results in the category of "very good" and can be used. The validity test of the instrument for creativity test shows the category of "valid" based on the above test value on the r table value. Furthermore, the results of the questionnaire item reliability test to measure students' creative skills obtained a value of 0.619 indicating that all items are reliable because the value of r arithmetic (0.619) is at the level of significance of the "high" category.

Keywords: Assessment Instruments, Creativity, Project Based Learning.

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1. INTRODUCTION

Curriculum, learning and assessment are important components in learning activities. These components are interrelated with one another. The curriculum as a set of plans includes the objectives, content and learning materials as well as the methods used to guide the implementation of learning activities to achieve certain learning goals. Learning is carried out as an effort to achieve the competencies formulated in the curriculum. Meanwhile, assessment is closely related to student information and learning. When carrying out assessments, educators and education units must refer to the Educational Assessment Standards. Assessment is a series of systematic and continuous activities to obtain data and information about students' learning processes and outcomes. Assessment is also used to gather data and information about strengths and weaknesses in the learning process so that it can be used as a basis for decision making and improvement of the learning process.

The education curriculum in Indonesia currently uses the 2013 curriculum, the assessment used in the 2013 curriculum is an authentic assessment. Authentic assessment is a comprehensive assessment carried out to assess the start of the input (input), process and output (output). This is in line with the opinion of Majid A and Chaerul Rochman (2015: 7) stated that: "Authentic assessment is a comprehensive assessment carried out to assess starting from the input (input), process and output (output) learning includes the assessment of attitude (through observation / observation using journals, self-assessment / evaluation between friends); knowledge assessment (through written tests, oral tests and assignments); skills assessment (through practice tests, project assessments and portfolio assessments)." According to Merta et al (2015: 236) said that authentic assessment aims to measure a variety of skills in various contexts that reflect situations in the real world where skills are used. Authentic assessment emphasizes the ability of learners to demonstrate knowledge possessed in a real and meaningful way (Ngadip, 2010: 3). The scope of the assessment includes aspects of attitude, aspects of knowledge, and aspects of skills that are carried out in a planned and systematic manner. Specific aspects of skills have an important role in training the psychomotor of students. According to Hosnan (2014: 397) skills assessment through performance appraisal, namely assessments that require students to demonstrate a certain competency using practice tests, projects and portfolio assessments. The instrument used in the form of a checklist or rating scale equipped with a rubric. A similar opinion was expressed by Fadlillah (2014: 215) that skills assessment is an assessment related to the competency of students' skills in following the learning process, through performance evaluation using practice tests, projects and portfolios. Based on the assessment guidelines for the various skills assessment techniques above, the project assessment is an important assessment carried out, because the assessment process can cover all aspects of the assessment. In the aspect of attitude, project assessment can test the attitude of discipline, hard work and responsibility of students in completing tasks that must be completed. While in the aspect of project assessment

knowledge is a means for students to gather and integrate the new knowledge they have acquired in actual activities. Project assessments can be used to determine understanding, and the ability to apply knowledge of investigative abilities and the ability to clearly inform students.

Marhaeni (2007: 45) also states that project assessment is an in-depth investigation of a real topic, where students have the opportunity to apply their skills. Project implementation can be analogous to a story, which has a beginning, middle, and end of the project. This means that project assessments can be used to determine understanding, the ability to apply, the ability to investigate and the ability to inform students from subjects clearly. The concept is in accordance with 21st century education which requires students to process the information they learn through the activities of analyzing, assessing, and creating. According to Bialik (2015: 5) the abilities that students must have in the 21st century are Creativity, Critical Thinking, Communication, and Collaboration. Students must be able to use the information obtained to create something new, be able to make opinions that make sense, communicate the knowledge gained, and work together with other students to build more optimal abilities. The ability to think creatively is one of the abilities students must have to be able to solve various problems.

According to Susanto (2014: 109) creative thinking is richer than critical thinking. Critical thinking can only answer the problems or conditions faced, while creative thinking is able to enrich the way of thinking with diverse alternatives. Sambo (2012: 164) describes that *“creative person as individual who provide unique and unusual problem solution, which is different from other people. Therefore, creative thinking is the way of thinking which direct to generation of new ideas or view or new way in solving the project.”*

According to Bie (Ngalimun, 2013: 185) emphasizes project based learning, namely: "learning models that focus on the concepts and main principles (central) of a discipline, involve students in problem solving activities and other meaningful tasks, provide opportunities for students to work autonomously to construct their own learning, and ultimately produce student work that is valuable and realistic. The project based learning model can foster student learning attitudes that are more disciplined and can make students more active and creative in learning. The project based learning model also has enormous potential to make learning experiences more interesting and meaningful. In addition, project based learning also facilitates students to investigate, solve problems, be student centered, and produce tangible products in the form of project results.

This is supported by research conducted by Chiang (2016: 710-712) in Taiwan, that the project based learning model is a solution in improving students' problem solving abilities, so students will be able to improve their ability to solve problems in the future.

Based on the results of interviews and data from the needs analysis questionnaire, educators expect that the project assignment skills assessment instrument is clear, simple and easy to understand to be used by educators in conducting assessments. Educators realize that project skills assessment can foster students' creativity in completing their assignments and express their agreement to develop Project Performance Based Project learning skills assessment instruments that can measure students' creativity and help educators to carry out assessments in the form of project assignments.

Skills assessment through project based learning based on instruments is expected to be an appropriate measurement tool to see students' creativity when learning takes place. By combining problem solving in project skills, it can arouse enthusiasm for learning and self-confidence which will lead to an increase in students' creative thinking abilities. This is supported by a study from Runiash (2016: 347) creative thinking skills is higher order thinking skills. Based on this, we need an assessment instrument that can measure students' creativity in solving problems through project skills. Studying these problems, researchers became interested in improving student performance appraisal through the development of project based learning based on assessment instruments.

2. RESEARCH METHOD

This type of research using research and development refers to Borg & Gall's theory (1989: 782) about Reasearch-Based-Development according to the research objectives, namely research procedures with the aim to develop and validate the educational products developed. Research and development are carried out only not until all stages, because of limited resources.

This research development was carried out in odd semester 2019/2020 Academic Year. The population in this study were all educators and students in the fifth grade of the Public Elementary School with members of the 8th and 9th Regional Teachers Working Group of Gedong Tataan consisting of 9 Public Elementary Schools. The subjects of this study were Public Elementary School 21 Gedong Tataan, Public Elementary School 43 Gedong Tataan, Public Elementary School 34 Gedong Tataan, and Public Elementary School 62 Gedong Tataan. The data collection tool used for the development of projectbased learning based on skills assessment instruments uses a questionnaire, that are material expert validation, evaluation, and language.

The results of creativity skills were obtained from the results of a questionnaire using a Likert scale, the test instruments used were valid and reliable. The construct validity is needed for test instruments that have several indicators in measuring one aspect or construct (Setiyadi, 2013: 25). Data analysis techniques to see the predictive between the results of skills and creativity is done by simple linear regression analysis.

3. RESEARCH RESULTS AND DISCUSSION

3.1 Research Results of Development of Project Based Learning Based on Skills Assessment Instrument.

The results of research and development of Project Based Learning Based on Skills Assessment Instrument, obtained the following results.

3.1.1 Research and Information Collecting

The results of observations through preliminary research obtained data that: (1) Project assessment instruments in the teacher's book are still unclear and difficult to use. (2) The project appraisal instrument in the teacher's book does not yet contain clear assessment and scoring guidelines. (3) the teacher has never conducted an assessment using the project assessment. (4) Assessment of student learning outcomes is still focused on results not on the process so that students are still passive and less creative. (5) The skills assessment process carried out by teachers is only in the form of practices and products. Based on the explanation above shows that there are potentials and conditions that support the development of project based learning based on skills assessment instrument to measure students' creativity in fifth grade of elementary school.

3.1.2 Planning

Planning is done by analyzing the results of information gathering. The product to be developed is a learning tool consisting of syllabus, lesson plans, and assessment instruments. Furthermore, the authors systematically compile the basic competencies, indicators, and learning objectives developed in this study. The theme and sub-theme determined is 'animal and human organ of movement' in Class V.

3.1.3 Develop Preliminary Form of Product

The results of the product design developed in this study are the steps of preparation from 2 experts according to Subali (2010: 114) and Nurgiyanto (2011: 30). The result of this research activity is a prototype of the skills assessment instrument. The initial stages of preparing the draft assessment instrument are 5 steps, as follows. (a) mapping the instrument, (b) arranging the grid, (c) compiling the instrument, (d) analyzing the quality of the instrument qualitatively, (e) testing the measuring instrument, (f) carrying out the measurement.

a. Validation of material experts, evaluation experts, and linguists

Judging from the feasibility of the material, every aspect assessed in the developed instrument is good enough to meet the eligibility criteria because the material used is based on Core Competency and Basic Competency, the linguistic aspect is considered to have met the good linguistic criteria. Furthermore, in the aspect of presenting the rubric that is used according to the level of understanding of students, attracting students' interest, the cover used also represents the theme taken. Based on the analysis of the results of the validation of the evaluation experts, the instruments developed can be said to be valid and can be implemented, although there are still a number of things that must be revised in accordance with expert advice. Questionnaire data filled in by students were then analyzed descriptively using a qualitative approach based on the percentage of not good, good enough, good and very good given. The results of the questionnaire showed the level of eligibility "very high".

3.1.4 Preliminary Trial

Initial preliminary trials were conducted after expert validation, this stage was to determine the appropriateness based on scientific of performance assessment instruments on thematic learning based on the responses of grade teachers and fifth grade students of Public Elementary School 43 Gedong Tataan and Public Elementary School 52 Gedong Tataan. The number of respondents was two educators of fifth grade. While the number of students consisted of 6 people consisting of students in the high category, medium category, and low category in each school based on data from the educator concerned. The aspects assessed by students are the appropriateness of the content and the appropriateness of the language, while those assessed by the educator are the aspects of the appropriateness of construction, the appropriateness of the language, and the appropriateness of the writing conventions. Usability test results by educators, obtained an average value of 2 educators is 4.6 with a percentage of 90.5% included in the category of "very feasible". The readability test results of students, obtained an average value of 6 students from high, medium, and low ability is the percentage included in the "decent" category.

3.1.5 Initial Product Revision

Based on the results of the validation by the material, evaluation, and language experts, there are some parts of the product that are developed that must be improved. The following explanation of the improvement process developed.

1. Experts The revised material includes the objectives of the instrument in accordance with the indicators, revising the indicators must be adjusted to the indicators on the BC, Revising the indicators must include the contents of existing basic Competencies, revising the material adjusted to the assignment of performance.
2. The Evaluation Expert includes revising the items of the scoring made from complete to very complete, revising the instrument indicators with operational verbs, revising the instrument usage instructions must be clear in the instrument in order to facilitate the user.
3. Linguists revise punctuation in performance assessment instruments, revise capital letters in every aspect of assessment, add description in the rubric of performance assessment instruments so that the assessment is more specific to the materials and experimental devices, as well as the steps of experimental work, revise the writing of

performance assessment instruments, adjusted with the correct grammar, revise the instructions and instructions on the instrument to make the project work process more visible.

3.1.6 Main Field Testing

The main field trials were carried out at Public Elementary School 21 Gedong Tataan, Public Elementary School 34 Gedong Tataan, Public Elementary School 43 Gedong Tataan, and Public Elementary School 52 Gedong Tataan in Pesawaran, there are four educators of fifth grade students, with a total number of 87 students. The main field trial was conducted on November 4 to November 16, 2019. The main field trial was carried out to measure the validity, reliability, and predictive level of validity of the correlation between scores on skills and the creativity level of students. Then after that it is tested on the level of creativity of students after doing project activities.

The results of the validity testing of items on the questionnaire of creative thinking to measure the validity of the creativity assessment instrument of students consisted of 15 items, all of which were valid because the r count value was greater than the r table value (0.312). The reliability test results of questionnaire items to measure the creativity of students obtained a reliability value of 0.619 indicating that all items are reliable because the value of r arithmetic (0.619) is at the level of significance of the category (high) and can be used in this study.

Based on the results of testing the validity and reliability of the data obtained that all instruments to measure the creativity of students are valid and reliable, so that it can be used to measure the creativity of students in this study. Thus after being tested, the project skills assessment instrument with a project based learning approach can be used to measure students' creativity. Next is to test the level of predictive validity, based on the results of the test data from 87 respondents obtained the results of calculations with simple linear regression to see predictive.

3.1.7 Operational Product Revision

Based on the results of testing the usefulness of teachers and readability by students who are the subject of small trials and main field trials, the developed instrument products are not revised and feasible to implement, because the instruments that have been developed have referred to generalizations, authentic in the sense of the results real work of students, can be applied in learning in the classroom, because based on the results of the students themselves either individually or in groups, practical, in the sense of being able to assess several aspects of knowledge at the time of assessment, and based on scores. With the score, students are more enthusiastic in carrying out the task because they already know the score that they will get from their work.

3.2 Discussion of Research Results

Based on research that has been done shows that the results of the study show valid, and reliable skills instruments in small group trials, and main field trials. These are the results of research on the project skills assessment instrument.

3.2.1 Realization of Project Based Learning Based on Skills Instrument for Measuring the Creativity of Valid Students.

The development of the project skills assessment instrument is based on the theory of performance appraisal instruments so that the products produced are more meaningful for students and educators in terms of understanding the project skills assessment instrument, because this instrument is an alternative assessment carried out to assess students authentically.

The product produced on the project skills assessment instrument consists of activities, students' work, experiments, observations, which can be used as a guide for educators in terms of understanding the project skills assessment instrument. The development of the project skills assessment instrument is expected to improve the students' skills in performing performance as an implementation of the assessment in project learning that is adjusted to the learning steps available in the teacher's book and student books used at school. or the original in the form of observed activity. Assignments given can be in the form of oral or written, the type of assignment is adjusted to the learning objectives.

The development of the project skills assessment instrument consists of several parts, that are: (a) cover which is the initial appearance of the performance instrument and as the identity of the contents of the performance assessment instrument, (b) the introduction contains remarks from the author on the completion of the preparation of the performance assessment instrument product, (c) rational contains the importance of performance assessments in assessments in class, (d) assumptions that contain opinions of experts about skills assessment, (e) steps that contain how to develop skills assessments, (f) examples of the results of developing performance assessments, (g) closing that contains the expectations and benefits of the assessment of skills, (h) bibliography which contains the sources of product writing.

The process of developing a project skills assessment instrument goes through a validation stage by experts before the instrument is piloted. This aims to determine whether the quality of the instrument is appropriate or not. Design validation was carried out by 3 lecturers as material, evaluation, and language experts who assessed three aspects: each aspect of the assessment was then interpreted into 5 categories, which include the excellent category getting a score of 5, the good category getting a score of 4, the category getting enough score of 3, less categories get less scores, and very less categories with a score of 1.

Validation sheets from validator 1, validator 2, and validator 3, and expert practitioners show that the performance assessment instruments on thematic learning that are developed are appropriate to be used as instruments in learning and revision, so that revisions must be made according to the suggestions and comments of each validator first first before moving to the next stage. The validity of the project skills assessment instrument can be seen from each validator with the percentage of assessments showing a percentage with an average of >80%. The percentage results indicate that each validator gives a value with the criteria "very feasible". The score from the subject matter experts was 83.05%, linguists were 89.09%, evaluation experts were 84.20%, and those from practitioners were 100%.

After the validation test, eligibility can also be seen in small group trials, based on the response of the teacher and students, the number of respondents is two teachers of fifth grade students. There are 6 students consisting of 2 students in the high category, 2 students in the medium category, and 2 students in the low category. A small group trial was conducted to assess the developed instrument in the form of instruments and teaching materials. The aspects assessed by students are the content and language, while those assessed by the teacher are the aspects of the appropriateness of the content, the feasibility of the language, and the feasibility of the presentation. The results of testing the usefulness of two educators and the readability of 6 students, in this test the results were obtained in the "very feasible" category.

3.2.2 Realization of Project Based Learning Based on Skill Instrument Assessment to Measure Reliable Student Creativity

The next stage is to assess whether the results of the development of the project skills assessment instrument produced have a level of reliability in accordance with research expectations. Reliable instruments are not necessarily valid. Reliable instruments are instruments which, when used several times to measure the same object, will produce the same data. Reliability shows that the instrument can be trusted as a data collection tool.

Instrument reliability testing in this research development was conducted to test the reliability of measuring instruments. To test the reliability of these heterogeneous instrument creative thinking skills using the ALPA coefficient formula. According to Sidijono (2013: 253) the formula is to calculate the reliability of heterogeneous learning outcomes.

Based on data analysis, the instrument developed in this study obtained a reliability test result of 0.619 with the criteria for consistency of the level of reliability in the High category. The results of the validity and reliability tests showed results that were in accordance with the testing criteria, and stated that the student performance assessment instrument developed was valid and empirically balanced at a reliable level. This is in accordance with the principles that teachers must pay attention to in conducting assessments, according to Sudaryono (2012: 54): "The principles of validity and reliability."

3.3.3 The realization of the Project Skills Assessment Instrument that has been Tested for Its Predictive Validity Level of the Instrument Developed

Analysis of the data used is a simple linear regression analysis technique to predict value in the skills and creativity of students. Based on the results of the study it can be concluded that the higher the level of skills, the higher the level of creativity of students.

The relationship is based on data from 87 respondents who were tested to obtain results that are worth the value between the skills (X) and creativity (Y). This can be understood because skills are one of the driving factors of students in developing their creativity. This means that in general the average educators who are members of Teacher Working Group in Public Elementary School in Gedong Tataan consider the project based learning based on assessment instrument has a relationship between skill level and creativity and is very appropriate, very feasible, very easy to use and very useful in developing skills creative.

The results of this study are relevant to the results of Marwiyah's research (2015: 26) in the *Edu-Science Journal of Mathematics and Natural Sciences Education* at the University of Jambi also found that the development of project based learning based on assessment instruments can improve students' creative thinking skills. The results of research by Anggreadi (2015: 74) who found that (1) the application of the project based learning model by taking an authentic assessment system can be carried out effectively and efficiently, (2) teaching and learning process that is conducive and enthusiastic, (3) learning oriented towards participants students, and (4) the activeness of students has begun to increase for more innovative learning.

The results of other studies that found that project based learning by utilizing portfolio assessment is effective for use in developing students' process skills (Gulbahar and Tinmaz, 2006: 309). The similarity of this research with the relevant research in general can be concluded that project based learning can have a more or less impact on the creativity and activeness of students and in this study is evidenced by the level of predictive validity. Based on the results of the relevant research and research it is understood that the project skills assessment instrument with a project based learning approach is very appropriate, very feasible, very easy to use and very useful in measuring student creativity, then the third hypothesis of research is accepted namely "The realization of the assessment instrument that has been tested the level of predictive validity of the instruments developed".

3.3.4 Strengths and Weaknesses of the Research

Based on the results and findings of the study, there are several advantages and disadvantages in developing a Project Based Learning based on skills assessment instrument. its advantages include: The Project Based Learning based on skills assessment instrument developed is an instrument that is in line with the revised 2013 curriculum. The Project Based Learning based on skills assessment instrument was developed through steps with project learning in accordance with the 2013 curriculum. The Project Based Learning based on skills assessment instrument developed was presented in simple, clear and easy to understand language. Also equipped with images as a stimulus. The skills assessment instrument developed has met the rules of writing the instrument and fulfilled the validation criteria. While the shortcomings include: (Research is only limited to one sub-theme in several sub-themes presented in theme 1 "Animal and Human Motion Organs on projectbased on activities". Limitations in the preparation of instruments tested 1 time so that there may be errors and inconsistencies in filling out instruments: Educators must really observe students to be able to assess students' skills in carrying out project activities The use of this assessment rubik requires accuracy so that the time required is longer than the usual assessment Product trials are only carried out in 6 meetings, so that possible results learners learn less than the maximum.

4. CONCLUSION

Based on the results of the research report and discussion, the following conclusions can be drawn:

- 4.1 The realization of project based learning based on skills instrument to measure the creativity of valid students.
- 4.2 The realization of project based learning based on skills instrument to measure reliable student creativity.
- 4.3 The realization of project based learning based on skills instrument that has been tested for the level of predictive validity of the instrument developed.

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