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The Development of A Project-Based Portfolio Assessment Instrument on The Material of Word Processing Application Program

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Abstract

The development of word processing assessment instrument on ICT in SMP is not in accordance with the rules of assessment instrument development yet, so that the quality is not guaranteed. This study aims to develop an instrument of project-based portfolio assessment on qualified (valid and reliable) word processing application material. The assessment instrument was tested on 31 students of grade VIII of SMP Negeri 1 Jekulo Kabupaten Kudus. This development of assessment instrument used Djemari Mardapi's development model. The methods used for data collection were interviews, validation sheet, assessment rubric and questionnaire. The data were analyzed through validity test of experts and inter rater reliability test with Ebel formula. The results showed that the development procedure of assessment instrument was able to produce a valid and reliable portfolio assessment instrument, product, presentation and assessment of the knowledge aspect. The results of validity test on the content, language, and presentation of the assessment instrument obtained an average percentage score of 83% (content), 81% (language) and 83% (presentation). The reliability test using Ebel formula showed that portfolio assessment instrument obtained r11 value of 0.81 (process), 0.80 (proposal), 0.94 (invitation), 0.89 (decoration), 0.95 (presentation) and coefficient value of Cronbach Alpha 0.759 on knowledge instrument. The result of this instrument assessment development was practical and had a positive response of 85%. Therefore, it can be implemented in other schools because its quality has been tested as a good instrument (valid and reliable). Through this assessment, teachers can use it as a guide to assess the student applicative capability on ICT word processing materials..

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INTRODUCTION

The material of word processing application program for SMP (Junior High School) should concerned with the various aspects in determining the right assessment method. The assessment of the material should be able to measure students' skills both theory and practice. Teachers are still having difficulties in developing it as well as measuring applicative capability as the 21st century generation should have. A smart generation in the 21st century needs to develop project-based learning with a portfolio assessment model. Miftari (2013) explained that project-based learning is the best way to cultivate the technology capabilities in the 21st century, and group work is a positive stimulation of project-based learning. Project-based learning applies theoretical and practical abilities, building group work, and collaborative skills. Research on the implementation of project-based learning on computer learning has been done by Asan and Haliloglu (2005) in Elementary School (SD) Koprubasi Turkey. Students' computer skills were assessed by using rubrics. Whereas, to measure the effectiveness of team work, communication, and social skills, they used personal and group evaluation sheets.

This research generated the students to maximize their computer skills including collaboration and communication skills. Breiter et al (2005) conducted a study of computer science for students by using a project-based model in learning. This model was effective to improve their social and technical skills. The model seemed more complex and expensive compared with conventional one, but it obtained maximum result. Students became more responsible with the project. The project-based portfolio assessment is one of the alternative solutions to solve the problems. Portfolio assessment allows teachers and students to know precisely the development of skills possessed by students from the beginning of learning. Students who understand the material either well or not can make them to study harder. Project-based learning is expected to make students not only understand the basic material, but also can apply to their everyday needs related to word processing application software.

Gulbahar and Tinmaz (2006) implemented project-based learning with portfolio assessment in the computer course due to students' inability to make software development. Then, the instructors tried to apply project-based learning. Students successfully created software development scenario. The portfolio assessment supported students to get weekly feedback and had the opportunity to redesign the task before evaluation, so that it obtained the best results when revised.

This research focused on developing project-based portfolio assessment related to word processing application material. This study is expected to create a standardized instrument of performance assessment that can provide a complete condition of the ability of SMP students to meet the demands and qualifications required. The capability here means that the students are able to use the word processing program/software to complete their school works. The aim of this research is to develop a valid and reliable portfolio assessment instrument. Through this instrument, it is expected to assist the teachers in assessing the ability of ICT authentically, especially the ability in using the word processing software in SMP.

METHOD

This research used a mixed method which is a combination of qualitative and quantitative. The mixed method was conducted sequentially through two stages. The first stage of qualitative research is conducted to reveal a preliminary study of factual data assessment in SMP on word processing application software. The second one is to develop a project-based portfolio assessment instrument of word processing application software as well as to test the quality and practicality by using the model of development stage of Djemari Mardapi's instrument. The population of this study were 31 eighth graders of SMP Negeri 1 Jekulo, Kudus regency. The methods used for data collection were interviews, expert validation sheet, assessment rubric and questionnaire. Data were analyzed quantitatively.

Quantitative analysis is intended to test the validity and reliability of assessment instruments. The validity test of construction was done by the expert validation and the reliability test was done by using inter rater reliability with Ebel Formula.

RESULT AND DISCUSSION

The results and discussion of research consisted of three parts: (1) prototype development of project-based portfolio assessment instrument, (2) quality test of developed project-based portfolio assessment instrument, (3) practicability test of assessment instrument, and (4) students responses on developed project-based portfolio assessment instrument.

Prototype Development of Project-based Portfolio Assessment Instruments on the Material of Word Processing Application Software in SMP

The procedures of this development refers to model development of assessment instrument according to Mardapi modified by researcher by adding preliminary studies. Therefore, it contains eleven steps. They are preliminary study, compiling instrument specification, writing instrument, determining instrument scales, determining scoring system, analyzing instruments, conducting trials, analyzing instrument, assembling instrument, conducting assessments, and interpreting assessment results. Based on the results of the recapitulation of portfolio by using the project-based portfolio assessment instrument on word processing application software material, it showed that 71% or 22 students had passed the KKM and 29% of them did not pass. The data in this study showed the achievement of each aspect of project assessment at least on good criteria that was above 70%. The acquisition of these values indicated that all students were active at all stages of learning. It occurred because all students were interested in joining the learning process. The implementation of a fun project assessment will make students enjoy their activities and be motivated by the learning (Andreea & Stancuna, 2014). In addition, the use of project assessment will increase students' interest to explore the learning materials (Holm, 2011). Project assessment also provides some opportunities for students to perform some interesting and useful tasks, and also relevant to students' life (Wijayanti, 2014).

The stages of the detailed development of assessment instruments obtained a standardized project-based portfolio assessment that can measure the students' ability effectively and practically. The project-based portfolio assessment of word processing application program is the final product of what developed. It is expected to help teachers assess students' abilities according to their own capabilities. This is more valuable instrument which is developed in this study, because by using qualified portfolio-based assessment, teachers and students can get great benefits. This is in line with Chapman, Pettway and White (2001: 295) that stated that the reason for using a portfolio as a means of assessment is portfolio can be used to collect and present the data and the evidence related to the quality of teaching and student learning.

The Quality Test of Developed Project-based Portfolio Assessment Instrument

To obtain the best information results on learning outcomes, it was implemented by using qualified assessment instruments. "Qualified" means the description and overall characteristics of the assessment instrument that is developed in this study are able to refer to the terms of requirement as good instrument. A good assessment of instrument is an instrument that meets certain requirements or rules which can provide accurate data in accordance with its function, and only measure the sample of a particular behavior. Characteristics of good assessment instrument are valid, reliable, relevant, representative, practical, descriptive, specific and proportional (Arifin, 2009: 69). "Valid" means that if the instruments are able to measure what to be measured appropriately. The instrument can be said as "reliable" if the instrument has consistent results. "Relevant" means that assessment instruments must comply with the standard competence, basic competence, and determined indicators. Assessment instrument should be in accordance with learning result domains, such as cognitive, affective, and

psychomotor. Based on the result of the quality test of developed project-based portfolios assessment instrument, it had good quality and fulfilled the quality criteria as good instrument.

The expert validation results on the developed assessment instrument showed that validation of the feasibility aspects of the contents obtained an average score of 83%. The study of the language aspect earned an average score of 81% and from the presentation aspect obtained the average percentage of the feasibility score of the presentation also 83%.

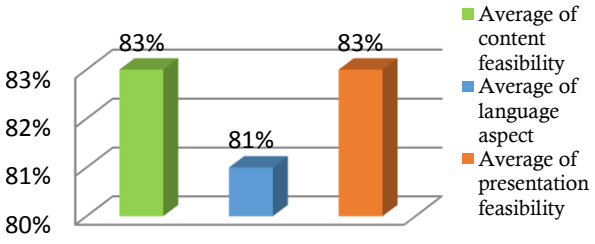

Figure 1. Experiment Validation Test Results

The results of the reliability test of the project-based portfolio assessment instruments showed that all the items of the instrument are reliable. The reliability test of instrument used Ebel formula obtained r_{11} value of 0.81. Based on the results showed that the instrument of portfolio assessment to assess the process aspects met the good and very good category. It can be said that the developed instrument was reliable and qualified. In addition, besides the expert validation and reliability test of the quality, it was also tested through the process of calculating the percentage of each students' value portfolio classically, the indicators achievement, and the calculation of portfolio items that had the smallest and the highest score. The calculation is as follows:

Table 1. The Score of Portfolio Process Classically

Criteria of portfolio score	Observer I	Observer II	Average of All Observers
Good	38%	25%	31%
Fair	63%	63%	63%
Poor	0%	13%	6%
Total	100%	100%	100%

Table 2. The Indicator Achievement of Portfolio Process

	Observer I%	Observer II%	Average%
1	75	71	73
2	75	71	73
3	83	83	83
4	75	71	73
5	67	63	65

Table 3. The Portfolio Items with the Smallest and the Highest Score

Observer	The number of item with the smallest score	The smallest score	The number of item with the highest score	The highest score
Observer1	5	16	3	20
Observer2	5	15	3	20

The calculation results of the inter rater reliability test of the portfolio assessment instrument on activity proposal product obtained r_{11} of 0.80, r_{11} value of 0,94 on invitation product and r_{11} value of 0.89 on portfolio of decoration product. Based on the results below showed that the instrument of portfolio assessment to assess the aspects of the product met the good and excellent criteria. It means that the developed instruments are reliable and qualified instruments. Besides the expert validation and reliability test of the quality, it was also tested through the process of calculating the percentage of each students' value portfolio classically, the indicators achievement, and the calculation of

portfolio items that had the smallest and the highest score. The calculation is as follows:

Table 4. The Portfolio Score of Activity Proposal Product Classically

Criteria of portfolio score	Observer I %	Observer II %	Average of All Observers %
Good	37.5	50.0	43.8
Fair	50.0	37.5	43.8
Poor	12.5	12.5	12.5
Total	100	100	100

Table 5. The portfolio Indicator Achievement of Activity Proposal Product

No.	Observer I %	Observer II %	Average %
1	75	67	71
2	58	75	67
3	63	63	63
4	83	67	75
5	75	88	81
6	71	71	71

Table 6. The Portfolio Items of Activity Proposal Product with the Smallest and the Highest Score

Observer	The number of item with the smallest score	The smallest score	The number of item with the highest score	The highest score
Observer1	2	14	4	20
Observer2	3	15	5	21

Table 7. The Portfolio Score of Activity Invitation Product Classically

Criteria of portfolio score	Observer I %	Observer II %	Average of All Observers %
Good	50	62.5	56.3
Fair	25	25.0	25.0
Poor	25	12.5	18.8
Total	100	100	100%

Table 8. The Portfolio indicator achievement of activity invitation product

	Observer I %	Observer II %	Average %
1	75	79	77
2	83	79	81
3	67	71	69
4	71	71	71
5	75	75	75
6	67	67	67

Table 9. The Portfolio Items of Activity Invitation Product with the Smallest and the Highest Score

Observer	The number of item with the smallest score	The smallest score	The number of item with the highest score	The highest score
Observer1	6	16	2	20
Observer2	6	16	2	19

Table 10. The Portfolio Score of Decoration Product Classically

Criteria of portfolio score	Observer I %	Observer II %	Average of All Observers %
Good	25	50	38
Fair	50	25	38
Poor	25	25	25
Total	100	100	100

Table 11. The Portfolio Indicator Achievement of Decoration Product

	Observer I %	Observer II %	Average %
1	71	71	71
2	63	71	67
3	67	67	67
4	75	75	75

Table 12. The Portfolio Items of Decoration Product with the Smallest and the Highest Score

Observer	The number of item with the smallest score	The smallest score	The number of item with the highest score	The highest score
Observer1	2	15	4	18
Observer2	3	16	4	18

The quality of the portfolio assessment instrument on development result presentation in this research showed that through inter rater test, it was obtained r_{11} of 0.95. Based on this results, it means that the instrument of portfolio assessment to assess the aspects of presentation met the good criteria. It also means that the developed instruments are reliable and qualified. Besides the expert validation and reliability test of the quality, it was also tested through the process of calculating the percentage of each students' portfolio value classically, the indicators achievement, and the calculation of portfolio items that had the smallest and the highest score. The calculation is as follows:

Table 13. The Portfolio Score of Presentation Classically

Criteria of portfolio score	Observer I	Observer II	Average of All Observers
	%	%	%
Good	25	12.5	19
Fair	50	62.5	56
Poor	25	25.0	25
Total	100	100	100

Table 14. The Portfolio Indicator Achievement of Presentation

	Observer I	Observer II	Average
	%	%	%
1	63	58	60
2	71	63	67
3	63	63	63
4	58	54	56
5	75	79	77
6	63	79	71
7	88	58	73

Table 15. The Portfolio Items of Presentation with the Smallest and the Highest Score

Observer	The number of item with the smallest score	The smallest score	The number of item with the highest score	The highest score
Observer1	4	14	7	21
Observer2	4	13	7	21

On the other hand, validity test of knowledge assessment instrument using moment product test showed that ten items of questions obtained $r_{count} > r_{table}$, n = 31. Thus, this research proved that this assessment instrument is valid. While the results of instrument reliability test by using Alpha Cronbach test assisted SPSS 16.0 obtained coefficient value of Alpha Cronbach 0.759 with high reliability level. Therefore, the results of validity and reliability tests for students' knowledge assessment instrument are valid and reliable. It can be said that the portfolio instrument which is to assess the students' knowledge is qualified because it has fulfilled the requirements of being valid and reliable instrument. The recapitulation result of portfolio score showed that 90.32% of students were in good category and 9.68% were in good enough category. The results of this study are relevant to the research conducted by Latifah, Cahyono., & Ningsih, R.K (2008: 250-240) which stated that there is an increase in student learning outcomes with assignment and portfolio assessment with 95% classical learning completeness.

Table 16. The Results of Validity Test on Knowledge Assessment Instrument

No. items	r_{count}	Requirement (r_{tabel})	Note
1	0.367	> 0.355	Valid
2	0.434	> 0.355	Valid
3	0.485	> 0.355	Valid
4	0.634	> 0.355	Valid
5	0.564	> 0.355	Valid
6	0.558	> 0.355	Valid
7	0.619	> 0.355	Valid
8	0.549	> 0.355	Valid
9	0.621	> 0.355	Valid
10	0.725	> 0.355	Valid

Table 17. The Results of Reliability Test on Knowledge Assessment Instrument

Reliability Statistics	
Cronbach's Alpha	N of Items
.759	10

Test of Practicality of Assessment Instrument

Based on the results of the developmental research on the project-based portfolio assessment instruments that have been developed showed it was practical to be used in the assessment of learning outcomes on word processing application program in SMP. The word "practical" means that the assessment instrument is easy to use. Practicality is not only seen from the technique of instrument compiling, but also for everyone who wants to use it (Arifin, 2009: 69). Meanwhile, according to Kunandar (2014), it means that the assessment instrument is easy to use both administratively and technically. Administratively means the use of such instruments is not complicated/ easy to be administered. The results of this study indicated that the teacher's response showed 85% stated that the developed assessment instrument was very practical in terms of clarity of instruction, implementation and use of time. The practicality provides an opportunity that the instrument can be easily used by other teachers without causing usage problems.

Table 18. The Results of Questionnaire on Instrument Practicality by Teachers

Aspect	items	Assessment Criteria	Yes (%)	No (%)
The clarity of instruction	1	The formulation of the objectives and the test indicators are clearly stated	100	0
	2	The instructions of test instrument are clearly stated	100	0
	3	The instructions of test instrument assessment are clearly stated	100	0
Implementation	4	The steps for using guideline are clearly stated	50	50
	5	The guidelines of the use of the test are easy to apply	100	0
	6	The implementation steps of the test are easy to implement	100	0
	7	The guidelines of test instrument assessment are easy to use	100	0
	8	The guidelines of test items development are easy to use in general	50	50
	9	The test can be carried out in the learning process	100	0
Time usage	10	The proper allocation of time for the test	50	50
Total			850	150
Percentage			85%	15%

Table 19. The Questionnaire Result of Instrument Quality by teachers

Aspect	Items	Assessment Criteria	Yes (%)	No (%)
Material	1	The questions are suitable with the indicators	100	0
	2	All items have answers	100	0
	3	The subject matter is formulated briefly and clearly	50	50
Construction	4	The basic formulation does not give a clue to the key answer	100	0
	5	The subject matters are free from double negative statement	50	50
	6	Pictures/ graphs / tables are clear and working as well	50	50
	7	The items do not depend on the previous answers	50	50
Language	8	It uses the Indonesian formal language	100	0
	9	It uses communicative language	100	0
	10	It does not use word that has ambiguous meaning	100	0
Total			800	200
Percentage			80%	20%

Besides the test of practicality, the developed instrument also has been tested the quality of instrument from material, construction, and language aspect. Based on the results of the quality test of the instrument, it showed 80% of teachers stated that the developed assessment instrument was qualified one. It indicated that the project-based portfolio assessment instrument on word processing application program material had positive responses from the teachers. This study is in accordance with the results of research conducted by Hidayati, Susantini & Kuswanti (2016: 246) which showed the developed portfolio assessment instrument had 90% positive responses of teachers with very positive category.

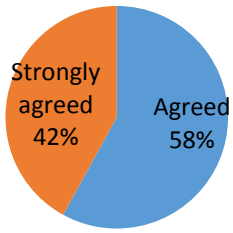

Figure 2. The Opportunity of Students Ability Performing

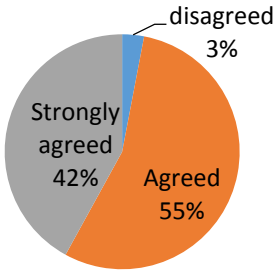

Figure 3. Student Responsibility Response in Completing the Project

Student Responses on Developed Project-based Portfolio Assessment Instrument

Response has the same meaning with comment, impression and so on. KBBI Indonesian Dictionary (Depdikbud, 1996) described that response is comment, reaction, and answer to a symptom or event that happened. Rachmat (1999) explained that response is an activity of organism, not merely a positive movement, and every kind of activity generated by stimulants can also be called response. Response or comment can be

interpreted as a result or impression gained from observation. Again, response is an experience of a subject, event or relationships obtained by inferring information and interpreting messages. Based on the questionnaire of the students response on the assessment instrument, it obtained data as much as 65% of students agreed that the project-based learning model could motivate them in learning and 35% of them stated strongly agree.

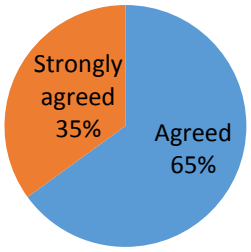

Figure 4. Student Motivation Response

This is in line with research conducted by Dewi (2012) on VIII E students in SMP Negeri 3 Singaraja in the academic year of 2011/2012. The results were the implementation of project-based learning model could improve the average students' motivation on ICT from 75.39 with standard deviation of 11.10 in the first cycle became 83.58 with standard deviation 9.65. Student responses on portfolio assessment capability illustrated the students' real ability during project learning process. There were 61% students agreed and 19% stated strongly agreed. While 20% stated they did not agree. In this research, it gained 29% students disagreed, 39% agreed and 32% stated strongly agree on the question whether the Portfolio assessment provided ease in performing group work or not. Next, 3% students stated disagree, 55% agreed and 42% stated strongly agree with full responsibility in completing project during the learning process The students' response on their opinion whether the portfolio assessment showed a fair assessment or not, it obtained 16% disagreed, 48% agreed and 35% strongly agreed. 58% of students agreed and 42% stated strongly agreed that project-based learning provided the students the opportunity to perform their abilities. This research is also able to reveal as many as 10% of students expressed disbelief when presenting their projects that have been done, 74% agreed and 16% stated strongly agree and feel confident.

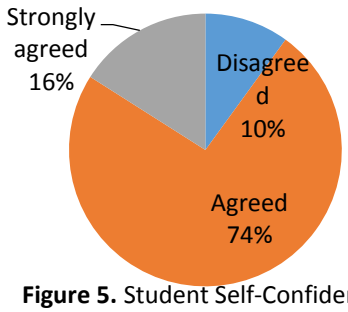

Figure 5. Student Self-Confidence When Doing Presentation

Relating to the satisfaction with the results of the project by using the portfolio assessment, this research data showed 20% of students were dissatisfied, 61% were satisfied, and 19% were very satisfied. From the aspect of the project result, the students can reach the maximum score because they know the portfolio assessment rubric. 13% respondents disagreed, 71% agreed, and 16% strongly agreed. From the aspects whether the portfolio assessment rubric was suitable with the group project assignment or not. This research indicated that 19% of respondents disagreed, 55% agreed and 26% strongly agreed.

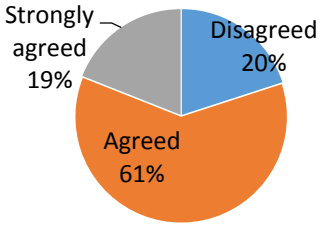

Figure 6. The Assessment Results of Satisfaction on Project-Based Portfolio

Student responses on the portfolio assessment rubric were appropriate for

assessing project-based ICT learning outcomes. 3% of students expressed disagreement, 42% agreed and 55% strongly agreed. It is also in accordance with the opinion that portfolio assessment is also feasible to use because it has been able to achieve learning completion (Setyandari et al., 2012).

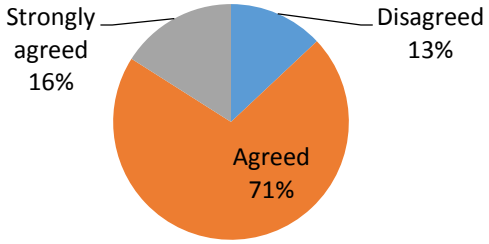

Figure 7. The Influence of the Portfolio Assessment Rubric to the Project Assessment Results

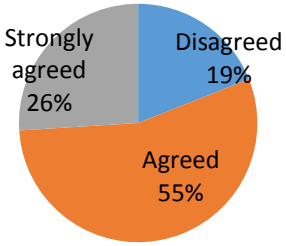

Figure 8. The compliance of the Portfolio Assessment Rubric with Group Project Assignment

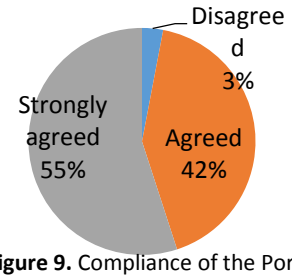

Figure 9. Compliance of the Portfolio Assessment Rubric for Assessing Project-Based ICT Learning Outcomes

Regarding to whether students can complete project assignment well or not, this research showed 61% stated agreed and 39% strongly agreed that students have finished the project well. Based on the results of this study, it is generally described that the developed

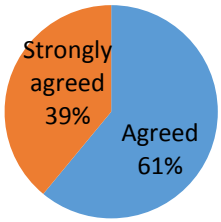

Figure 10. Student Ability in Completing the Project Well

project-based portfolio assessment instrument has received a positive response from the students. Therefore, this instrument was appropriate for use in other places/ schools. Positive response proved by the given project could make students became interested in learning because it was more fun and interesting. This is in accordance with research conducted by Ratnasari, Susatyo and Nurhayati (2017: 1) which stated that students' responses on learning showed that they loved the project-based learning worksheet because it was more fun, interesting, and made students more easily reach the usefulness of the material.

CONCLUSION

The project-based portfolio assessment on word processing application program materials in SMP has good quality as it is proved to be valid, reliable and practical. The expert validation results shows that validation of content feasibility aspects gained average score of 83%, linguistic aspect 81% and presentation aspect 83%. All items are reliable assessment instrument. Teacher responses show 85% of teachers stated that the developed assessment instruments were practical and 80% of them stated that the developed assessment instruments were qualified. The project-based portfolio assessment on word processing application program materials in SMP get positive response from students.

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