

# Rubric Assessment on Science and Creative Thinking Skills of Students

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**Abstract.** The result of the monitoring and evaluation of the latest Indonesian curriculum (the 2013 curriculum) implementation at junior high school level year of 2014 showed that one of the difficult things that learners had in implementation 2013 curriculum is doing the result. The characteristic of applying the 2013 curriculum is to emphasize the modern pedagogic dimension of learning, which is using scientific approach, which requires learners to have high-level thinking skills, one of which is creative thinking skills. The aims of this research is to implement performance assessment in measuring the creative thinking of junior high school students on subject Prakarya. The form of the main performance assessment is the task and assessment criteria. The experimental method that been used is the Quasi Experiment with Non-Equivalent Design Group Research. Population in this study is the students of VIII class of junior high school in Bandung, Indonesia which consists of six classes. And two classes are selected for the sample from that six classes and VIII A class were chosen, while VIII F class has been chosen as control class. The result of this research showed that the rubrics of performance assessment can be measure or identify the creative thinking skill, its prove by the result of pre-test dan post-test are more dominant. In material of identification student's creative thinking skills are reached an average 85 compare 79 with the control class. while in the presentation the experimental class got an average of 85 bigger than the control class which only reached 79.

## 1. Introduction

The result of monitoring and evaluation of the implementation of junior high school 2013 curriculum in year of 2014 shows that one of the difficulties of educators in implementing the 2013 curriculum is in carrying the assessment. More less about 60% from the total of the educators who become respondent said that they have not been able to design, implement, processing, report and utilize the result of the assessment, they have not fully understood how to prepare the instrument and rubric skills assessment [1]. Assessments that been measured in the 2013 curriculum are not only in cognitive domain, but also to measuring the sphere of attitude and skill. Aspect skills in the 2013 curriculum are expressed in KI-4. Student's ability can be seen by the teacher through an assessment of the skills aspect. An assessment that can be used to measure the skill aspect is the performance appraisal [2]. Performance assessment is a valuation technique that ask the students to demonstrate and applying the knowledge into real context [2]. The Assessment is used on student performance, behaviour or interaction.

The existence of the 2013 curriculum has change the old paradigm, which is learning that been centered to the teacher (teacher centered) to the new paradigm which is learning that been centered to



the student (student centered). The characteristic of applying the 2013 curriculum is to emphasize the modern pedagogic dimension of learning, which is using scientific approach, which requires learners to have high level thinking skills, one of which is creative thinking skills. Creative thinking is a mental activity to develop original, aesthetic, constructive ideas related to conceptual views, and emphasize the rational aspects of thinking [3]. Creative thinking in a learning demands something new created.

Several studies have been conducted with the performance assessment and creative thinking skills such those that have been done by [4] the result of the research showed that the performance assessment instrument or skills can help the teacher to identify student's creative thinking skills. Other study that been done by [5] the result showed that student's opinions about the use of instruments and rubric of skills based on creative thinking in consumer education learning included in the very well category

Prakarya is not a new subject in 2013 curriculum. In 2006 curriculum the name of this is Skills. Broadly speaking the principle between the subjects of skills and workshops is the same, the difference in the workshops has the purposes and basis of "education" to cultivate the sensitivity for the local wisdom products, technological developments and the development of entrepreneurial spirit in accordance with the orientation and 2013 curriculum mission.

The aim of this research is to implemented the performance assessment in measuring the junior high skill creative thinking skill on the skill subject. The main form of this assessment is task and assessment criteria (rubrics).

## 2. Research Methods

The research method that been used is quasi experiment research with the design of research is Non-equivalent group design. The design of this research is been draw like below

**Table 1.** Non equivalent control group design.

	<b>Pre-test</b>	<b>Treatment</b>	<b>Post-test</b>
Experiment Class	O <sub>1</sub>	X	O <sub>2</sub>
Control Class	O <sub>1</sub>		O <sub>2</sub>

Information

- O<sub>1</sub> : The beginning test of creative thinking ability and scientific attitude before being given treatment in experimental group and control group
- O<sub>2</sub> : The final test of creative thinking ability and scientific attitude before being given treatment in experimental group and control group
- X : Applying performance assessment

The location of this research was conducted in SMP Negeri 2 Pameungpeuk kabupaten Bandung. The population in this research is all of the student of clas VIII spread in 6 study group. The sample in this research is 82 people consist of 44 students as the experiment class and 38 students as the control class. The sampling technic used purposive sampling technique, with the criteria of class VIII A and VIII E have the same cognitive abillity. Techniques and instruments of data collection in this research are : (1) giving the test and task; (2) observation; (3) quetionnaire distribution, and (4) documentation.

This instrument is used to measure student's affective and psychomotor aspects with the direct observation. The affetive aspect that been observed were liveliness, critically (asking / answering), cooperation, responbility, discipline, neatness, and cleanliness, while the psychomotr aspect that been observed are skill of using / assembling tools, performing experiments, and observing / recording data. Cognitive teste are performed using a tes method which consist of pre-test and post-test.

### 3. Results and Discussion

As has been pointed, the principle performance assessment consists of two parts, namely task and criteria (rubrics). Performance tasks can be project, exhibits, portfolios and task that requires the students to demonstrate the ability to handle complex things through the application of knowledge and skills about something in the most real (real-world application). Criteria or rubrics are guidelines for scoring, must be clear and agreed by the students and the educators.

The result of the student creative thinking ability in the subject of workshop for cognitive test obtained that the data from the pretest and posttest result. The data on student's pretest and posttest values shown in table 2 below.

**Table 2.** Distribution of student value acquisition on pretest and posttest.

No	Interval value	category	Experiment class				Control class			
			Pre Test		Post Test		Pre Test		Post Test	
			F	P	F	P	F	P	F	P
1	50 - 74	Low	21	48 %	5	11%	17	45%	16	42%
2	75 - 87	Medium	23	52 %	35	77%	21	55%	20	53%
3	88 -100	High	0	0%	4	11%	0	0%	2	5%
<b>Result</b>			<b>44</b>	<b>100%</b>	<b>44</b>	<b>100%</b>	<b>38</b>	<b>100%</b>	<b>38</b>	<b>100%</b>

From the table 2 above, it shows that the result for cognitive tests in the application of performance assessment on pretest and posttest show the different result between the experiment class with the control class, and we can see that the student's categories in control class and experimental class are mostly in the 75-78 interval in average category dan its completely done, because the studying object of KKM is 75.

Performance assessment is also conducted on the learner's activity in the implementation based on the criteria that have been set, next are the rubrics for performance appraisal to create products on aspects of processing.

**Table 3.** Assessment rubrics creating products on processing aspects.

	Rated Aspect	Items Rated	Assessment Guidelines
<b>I. Planning</b>	A. Identification of Needs	Conformity with needs	Range of scores per item Rated 0-10.  Final Value = $\frac{\text{Total score of } x \times 10}{\text{Number of grains assessed}}$
	B. Idea	Learners original (own idea)	
<b>II. Implementation / preparation</b>	A. Preparation of material	Complete material	
	B. Completeness of tool fittings	Complete tools	
<b>III. Presentation</b>	The process of making	The method used	
	A. Product	level of fineness	
	B. Packaging	packing material conformity	

Aspects assessed in the performance appraisal rubric (table 3) include planning, implementation and presentation. Assessment of product that have been done to the product creating by the learners based on the criteria that been set. Next are the average result of the product assessment for the workshop lesson by the processing aspects. The results of material identification, including planning, execution and presentation are outlined in the following table 4 below.

**Table 4.** Recapitulation of average acquisition of student value on material identification.

No	Description	Experiment class	Control class
1	Planning	85	78
2	Implementation/ Preparation	87	80
3	Presentation	89	78
<b>Average score</b>		87	79

From the table 4 it can be seen that the average score in creating product in the experimental class obtained 87 and the control class obtained 79, so we can say that in creating product the experimental class has the higher average score than the control class, its mean that the experimental class is more creative than the control class. Performance appraisal is also being done to the activities of learners on the presentation of practicum reporting. Rubrics assessment can be seen in the table 5 below

**Table 5.** Examples of class presentation check list.

No	Student Name	Aspect Assessed										$\Sigma$
		1	2	3	4	5	6	7	8	9	10	
1	Ahmad	√	√	√	√	√	√	√	√	√	√	10
2	Agil											
3	Budi											
Etc	...											

Score = total result

Description for table 5:

- 1) The issues discussed clearly formulated
- 2) There is relevance of the description with the issues discussed.
- 3) The description is broad and deep
- 4) The description is clear and not wrong concept
- 5) The description is delivered smoothly
- 6) Disclaimer / argumentation is logical and strong
- 7) Language is good and right
- 8) Clothes are neat and complete
- 9) Not Emotional
- 10) Accepting Opinions of Others

Recapitulation of the average value of the presentation can be seen in table 6 on the next page.

**Table 6.** Recapitulation of average acquisition of student value in presentation/reporting results of practice/project.

No	Description	Experimental Class	Control Class
1	The issues discussed clearly	80	76
2	There is a relevance description with the issues discussed.	85	76
3	Descriptions are clearly	87	75
4	The description is right without wrong concept	85	79
5	The description is delivered smoothly by the students	90	78
6	Disclaimer / argumentation is logical and strong	80	75
7	Using good and right language	80	80
8	Clothes are neat and complete	87	88
9	Not emotional	85	80
10	Accept others argue	88	80
<b>Average score</b>		85	79

Based on table 6, it can be concluded that the average score for the experimental class presentation is 85 dan control class is 79, so we can have concluded that the experimental class has the higher score than the control class. The experimental class has the higher score at report submission which is 90, meanwhile the control class has the higher score at the clothing level which is 88. The lowest score in experimental class is in the clarity of the formulation problem, the rebuttal and the language usage is 80, while the lowest score for the control class is in the description of the report and the refutation is equal; to 75

#### 4. Conclusion

Based on the results of the study, it can be concluded that the implementation rubrics of performance assessments significantly influence the ability of teachers in identifying creative thinking skills and the result of the student that have been learned. This result is then supported by the average value of some activities, which shows the experimental class gets an average value greater than the control class. The results of pre-test and post-test show the result is more dominant. In the creating product, student's creative thinking skills reached an average of 87 to 79 with the control class, in the experimental class presentation having an average of 85 more bigger than the control class which only reached 79.

#### References

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