

The Effect of the Assessment Model and Assessment Method at State Junior High School Bula I, II, III, East Seram District

Adam Rumbalifar, IGN Agung, Burhanudin Tolla

Abstract: - This research objective is to analyze the effect of the assessment (Self assessment, Peer assessment, Written test, and Summative test) model and the assessment (Holistic rubrics and Analytical rubrics) method toward the science learning achievement and the controlling the students' previous knowledge of mathematics. This research was conducted at State Junior High School Bula I, II, III (SMP) of the East Seram district with the population of 295 students and number of respondent is 102 student. The research method using experimental design or one way classification. The research result are the null hypothesis is rejected or the assessment (Self assessment, Peer assessment, and Written test) model are different significantly at the level 5% and the null hypothesis is rejected or the Summative test models are different significantly at the level 5%. This paper is a part of the dissertation.

Keywords: Assessment model, Self assessment, Peer assessment, Written test, Summative test, Assessment method.

I. INTRODUCTION

Education is one of the vehicles for family, government and society building that must be done in integrated method to improve and to change the behaviour also to improve the quality of Indonesia human resources. The low quality of education at every level and educational unit starting from Elementary School (SD or Sekolah Dasar) till Senior High School (SMA or Sekolah Menengah Atas) levels is one of the educational problems faced by the Indonesian today, especially the achievement of the science subjects matter. The quality of education is determined by the ability of educational units in managing the learning process, especially in the assessment process.

Assessment is the most important part of learning process. The assessment of students' science learning achievement is not only about the cognitive aspect but also about the psychomotoric aspect. The affective aspect assess about the attitude and internalization of values that need to be studied and implanted through science subjects matter. Therefore, in order to improve the quality of education, in the process of assessment the teacher can assess by modifying an assessment model through assessment method.

II. LITERATURE REVIEW

The assessment models selected are a peer assessment and a self-assessment model while the assessment method selected are analytic assessment method (analytic rubrics) and holistic assessment method (holistic rubrics).

Revised Manuscript Received on April 15, 2019.

Adam Rumbalifar, State University of Jakarta, Indonesia. E-mail: garikikit77@gmail.com.)

IGN Agung, State University of Jakarta, Indonesia.

Burhanudin Tolla, State University of Jakarta, Indonesia.



Table 1. Previous Research

Year	Researcher	Statement
2010	Craig A. Mertler [1]	<ol style="list-style-type: none"> 1. A holistic rubric requires the teacher to score the over all learning process as a whole, without judging the component parts separately. 2. An analytic rubric: <ol style="list-style-type: none"> a. requires the teacher to define a list of important components to be assessed. b. used in the assessment process of learning achievement is better than the holistic rubrics used in the assessment process of learning achievement. c. is an assessment method, which the teacher scores individual parts of the product or performance first, and then sums the individual scores to obtain a total score. d. usually prefer a value of a fairly focused type of response is required, for performance tasks in which there may be one or two acceptable responses and creativity is not an essential feature of the students' responses.
2012	Idris Mustamin [2]	<ol style="list-style-type: none"> 1. The learning process have to an assessment, a teacher makes an assessment at the classroom level with peer assessment and self-assessment. 2. A classroom self-assessment is an assessment conducted by a teacher or student concerned for the benefit of managing learning activities in the classroom. 3. The learning achievement in the group assessed by the analytic rubrics is higher than the learning achievement in the group assessed by the holistic rubrics. 4. The analytic rubric is an assessment method, which requires the teacher to define a list of important components assessed.
2016	Burhanuddin Tolla [3]	<ol style="list-style-type: none"> 1. The opportunity of a student and teacher to be able to reflect and assess themselves is the basis for encouraging themselves, namely: <ol style="list-style-type: none"> a. to be responsible for learning and teaching, b. to promote critical thinking, and c. to help students become actively involved in their education process. 2. Peer assessment requires participation of fellow learning groups to assess each other.
2010	Bostock [4]	<ol style="list-style-type: none"> 1. Peer assessment: <ol style="list-style-type: none"> a. is an assessment of students by other students, both formative reviews to provide feedback, and b. helps students to take responsibility by involving in the judgements, encourages students to be critical in researching the performance of other students, gives feedback for students, practises the transferable skills needed for students for life-long learning which the group do the assessment, decreases teacher's burden, improves students' motivation because students feel a sense of ownership of the assessment process, and developes students as autonomous learners because peer assessment encourages them to care more about their own learning. 2. Summative grading to improve the quality of learning and empower students to be able to judge. 3. The judging the work of others makes students gain insight into their own performance and helps students develop the ability to make judgements.
2012	Sri Wahyuni [6]	<ol style="list-style-type: none"> 1. Peer assessment: <ol style="list-style-type: none"> a. is an assessment model conducted by asking the role of learners to provide an assessment to other learners by expressing the other's strengths and weaknesses in various matters relating to the learning process. b. can also educate the students about the criteria used in the judgements. c. can also be used to determine the value of students' performance for both formative and summative purpose. 2. Involving the students in the assessment process can develop their abilities to work together, and them to be critical of the other students' performance, and recieve criticism and feedback from others on their own performance.

In general, this study was conducted with the aim to study the effect of assessment model factor and assessment method factor to the science learning

achievement by controlling the previous knowledge of students' mathematics.

III. RESEARCH OBJECTIVES

This research aimed to test the data on the effect of assessment model as follow:

1. To analyse the effect of Assessment (Self assessment, Peer assessment, Written test, and Summative test) model in improving the quality of learning.
2. To analyse the effect of Assessment (Holistic rubrics and Analytical rubrics) method in improving the quality of learning.

IV. RESEARCH METHOD

Research method are:

a. Mathematical Model

The research variables between State Junior High School Bula I, II, III (SMP or Sekolah Menengah Pertama) of the East Seram district, Holistic group, Analytic group as independent variables and the Assessment (Self assessment, Peer assessment, Written test, and Summative test) model as dependent variables. The mathematical model [7], [8] is

$$y_{ij} = \mu + HAG_i + \varepsilon_{ij} \quad (1)$$

This research applies quantitative approach using experimental design or one way classification. The variables are assessment method (Holistic group (rubrics), Analytic group), and assessment model (Self assessment, Peer assessment, Written test, and Summative test).

b. Tests of Hypotheses

The null hypotheses are accepted if the means of the variables data are not different significantly at the level 5% and the alternative hypotheses are rejected if the means of the variables data are different significantly at the level 5%.

V. RESEARCH RESULTS

The research results describe any differences between the science learning achievement of the group of students assessed by the analytic rubrics and the science learning achievement of the group of students assessed by the holistic rubrics with the peer assessment model and the self-assessment model by controlling the students' previous knowledge of mathematics.

Table 2 shows the assessment (Self assessment, Peer assessment, and Written test) model data.

Table 2. Assessment (Self assessment, Peer assessment, and Written test) model

Replication	Assessment Model					
	HG 1	AG 1	HG 2	AG 2	HG 3	AG 3
1	79,5	83,3	74,3	81,1	71,9	82,8
2	72,5	78,5	72,3	79,3	71,5	76,8
3	71,8	79,8	74,3	78,1	73,8	80
4	77,3	79,8	75,8	77,8	74,8	80,3
5	72,5	79,8	76,8	81,1	77,3	81,6
6	76,3	77,5	69,4	76,6	70,4	73,3
7	75,3	80,8	73	70,8	71,8	73,8
8	79	78	71,3	76,6	72,8	80,9
9	76,5	78,3	80,3	74,9	75,3	76,4
10	73,5	80	82,4	78,9	76,3	77,8
11	75,5	78	71,8	83,9	72,4	74,6
12	76	80	73,6	79	73,4	80,4
13	78,8	78,3	78,5	73,6	72	78,4
14	76,5	80	73,8	76,8	73,8	74,1
15	71	81	71,9	75,1	73,4	77
16	76,5	80,8	74,8	76,9	74,8	78
17	76,5	79,6	76,8	79,8	74,3	78,6
Totals	1.285,00	1.353,53	1.271,10	1.320,30	1.249,95	1.324,83
n	17,00	17,00	17,00	17,00	17,00	17,00
Mean	75,59	79,62	74,77	77,66	73,53	77,93

Notes:

HG 1 = Assessment model - Holistic Group - State Junior High School Bula I (Class VII B)

AG 1 = Assessment model - Analytic Group - State Junior High School Bula I (Class VII B)

HG 2 = Assessment model - Holistic Group - State Junior High School Bula II (Class VII C)

AG 2 = Assessment model - Analytic Group - State Junior High School Bula II (Class VII C)

HG 3 = Assessment model - Holistic Group - State Junior High School Bula III (Class VII B)

AG 3 = Assessment model - Analytic Group - State Junior High School Bula III (Class VII B)

Table 3 Analysis of Variance of assessment (Self assessment, Peer assessment, and Written test) model

Source of variation	degrees of freedom	Sum of squares	Mean square	F _{ratio}	F _{table}
Treatments	5	438,52	87,70	12,81	2,29
Error	96	657,13	6,85		
Total	101	1.095,65			

Table 2 and 3 shows the F_{ratio} exceed F_{table} (see Table 3) or 16.02 > 2.29, it means the null hypothesis is rejected or the assessment (Self assessment, Peer assessment, and Written test) model are different significantly at the level 5%. The highest value (average) is self assessment model for analytical rubrics (group) method and the average value is 79,62. The lowest value (average) is written test model for holistic rubrics (group) method and the average value is 73,53.



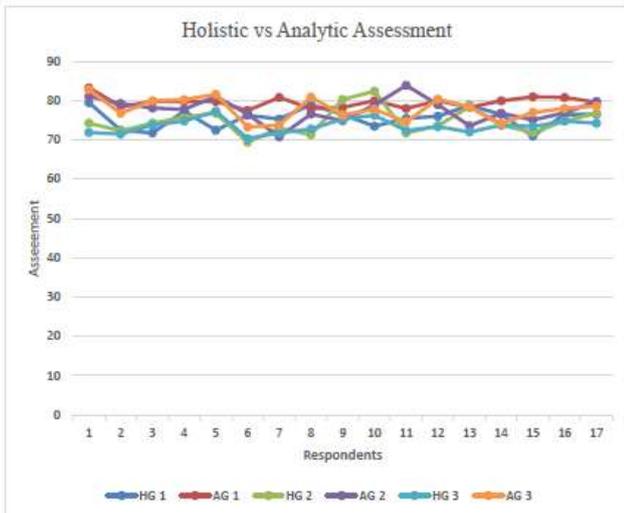


Figure 1. Assessment (Self assessment, Peer assessment, and Written test) model vs Respondents

Table 4. Assessment (Summative test) model

Replication	Assessment Model					
	SUM_HG 1	SUM_AG 1	SUM_HG 2	SUM_AG 2	SUM_HG 3	SUM_AG 3
1	90	94	80	94	80	94
2	80	90	80	91	80	90
3	72	76	80	82	84	90
4	80	82	82	82	80	92
5	70	94	81	94	86	87
6	72	84	70	81	82	82
7	76	84	82	72	80	84
8	86	80	71	81	82	92
9	78	78	90	80	90	84
10	76	86	90	82	86	82
11	84	82	82	94	82	87
12	80	74	80	94	80	94
13	86	78	90	72	82	82
14	82	80	79	81	80	80
15	78	82	82	80	83	82
16	84	82	80	81	83	87
17	84	86	80	92	76	80
Totals	1.358,00	1.412,00	1.379,00	1.433,00	1.396,00	1.469,00
n	17,00	17,00	17,00	17,00	17,00	17,00
Mean	79,88	83,06	81,12	84,29	82,12	86,41

Notes:

SUM_HG 1 = Summative test - Holistic Group - State Junior High School Bula I (Class VII B)

SUM_AG 1 = Summative test - Analytic Group - State Junior High School Bula I (Class VII B)

SUM_HG 2 = Summative test - Holistic Group - State Junior High School Bula II (Class VII C)

SUM_AG 2 = Summative test - Analytic Group - State Junior High School Bula II (Class VII C)

SUM_HG 3 = Summative test - Holistic Group - State Junior High School Bula III (Class VII B)

SUM_AG 3 = Summative test - Analytic Group - State Junior High School Bula III (Class VII B)

Table 5 Analysis of Variance

Source of variation	degrees of freedom	Sum of squares	Mean square	F _{ratio}	F _{table}
Treatments	5	461,58	92,32	3,06	2,29
Error	96	2.899,88	30,21		
Total	101	3.361,46			

Table 4 and 5 shows the Fratio exceed Ftable (see Table 5) or $3,82 > 2,29$, it means the null hypothesis is rejected or the Summative test model are different significantly at the level 5%. The highest value (average) is Summative test for analytical rubrics (group) method

and the average value is 86,41. The lowest value (average) is Summative test for holistic rubrics (group) method and the average value is 79,88.

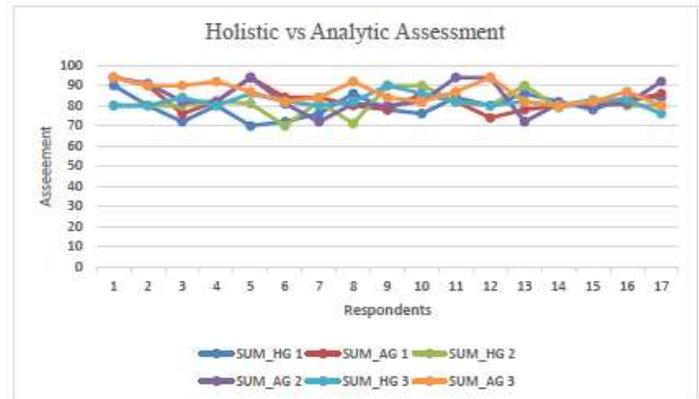


Figure 2. Assessment (Summative test) model vs Respondents

VI. CONCLUSION

Based on the research result, it can be conclude of this research as follow:

- The Self assessment, Peer assessment, and Written test models are different significantly at the level 5% between State Junior High School Bula I, II, III of the East Seram district.
 - The highest value (average) is self assessment model for analytical rubrics (group) method and the average value is 79,62.
 - The lowest value (average) is written test model for holistic rubrics (group) method and the average value is 73,53.
- The Summative test model are different significantly at the level 5% between State Junior High School Bula I, II, III of the East Seram district.
 - The highest value (average) is Summative test model for analytical rubrics (group) method and the average value is 86,41.
 - The lowest value (average) is Summative test model for holistic rubrics (group) method and the average value is 79,88.

ACKNOWLEDGMENT

The authors wish to express their gratitude to the Minister of Research, Technology and Higher Education – Republic of Indonesia, and Rector of State University of Jakarta, for their support.

REFERENCES

- Mertler, Craig A. Designing Scoring Rubrics for Your Classroom Practical. (accessed on October 18, 2010).
- Mustamin, Idris. "Pengaruh Penerapan Kriteria Penilaian, Model Pembelajaran dan Adversity Quotient Terhadap Hasil Belajar Matematika Siswa SMP Kota Palu." (Sinopsis Disertasi). Jakarta: PPs UNJ, 2012.



3. Tolla, Burhanuddin. Penilaian Diri. Jakarta: Badan Penelitian Pengembangan Departemen Pendidikan Nasional, 2006.
4. Bostock, Stephen. Student Peer Assessment. (<http://www.ukcle.ac.uk/resources/assessment/group.html>), (accessed on October 5, 2010).
5. Shiran, Alax. Meng-Evaluasi. Nien Bakti Sumanto's Translation. Jakarta: Grasindo, 2008.
6. Wahyuni, Sri. Assessment Penilaian Bahasa. Bandung: Refika Aditama, 2012.
7. Hicks, CR. Fundamental concept in the design of experiments. CBS College Publishing, New York: 1982.
8. Miller, I, and John E Freund. 1985. Probability and Statistics for Engineers. Prentice-Hall of India. New Delhi.