

## **ANALYSIS RUBRICS CONSTRUCTION OF SCIENCE CONTENT THEMATIC BOOKS GRADE VI**

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### **Abstract**

Rubric is an integral part of the assessment. The advantage of using the rubric of teachers more focused in giving reciprocity to student learning outcomes. Principal component within the rubric are the criteria and levels of achievement. Both components must be written in language that is operational and free ambiguous. The criteria should be limited in number to efficient use. Still found a section with a lot number of criteria and operational bias in sixth grade teacher books , especially science payload. Rubric integrated with Indonesian charge less to accommodate the ability of science. The necessary simplification of the construction section in the book. Simplification was related to the teacher as a user maind set.

**Keywords:** *Rubric, construction, teacher*

### **1. Introduction**

The assessment activities needed to run directional reference. The reference in question should load any aspect assessed and level the scores with a description. Rubric, the reference is usually termed. Sections must be adapted to the learning objectives. It was solely to adjust between what would be measured by determining the criteria for student achievement that can be achieved. So that rubric will be able to distinguish the level of the students said to be capable and incapable. This is similar to writing Nurgiyantoro (2008) that the rubric is the subject of a reference in determining achievement of students. Determination of criteria achievement, aiming to facilitate teachers to provide treatment to ythe students concerned.

Rubric many forms. There is a list of checks, spreadsheet, and others as needed. Main things that must exist within a rubric are: 1) the criteria, and 2) the level of achievement with its description (Mueller, 2010). According Nurgiyantoro (2008), can be understood as a rubric scoring scale (scoring scale) were used to assess student performance on each criterion to specific tasks. Description of the level of achievement is usually limited by a sentence which is termed the degree. Degree

created should not double, to avoid confusion when the process of use. The criteria set should also not contain 2 competence, because it also gets confusing when the process of use. As defined by Nurgiyantoro (2008), contains the criteria essential matters of competency to measure the level of achievement and performance is concrete and operational.

Dilemma use of rubrics for now is still centered on the user or teacher. The mindset that is still growing in assessing just rely on 'paper and pencil test' (paper and pencil test). Rarely found the questions that have open answers. Teachers only create an answer key that is single. It directs the conclusion that most of the problems created by the teacher still memorizing. A matter which requires students to analyze very less favored by reason teachers take a lot of time in the correction process. The reason could be justified because of the students' answers to the type of analysis would be highly heterogeneous matter. This requires teachers to spend more time in the correction process of having to understand every word written by the students.

The above constraints can be minimized with the rubric. Rubric good will facilitate scoring teachers in students' answers. It also will familiarize students to megerjakan about this type of analysis. Problem analysis will train high-level thinking skills of students (High Order Thinking). Teachers will also be trained to make the problem better, so the problems are not monotonous annually.

Research that is directly rubric as the object of study is still rare. A discussion of the sections in the study, usually a complement in the study of the assessment. The existence of a section is a marker that an assessment can be said to be authentic (Rustaman 2010; Nurgiyantoro, 2008; Muller, 2010). Authentic assessment types classified by Kemdikbud (2013), namely, 1) portfolio, 2) performance, 3) projects, and 4) writing (analysis).

## **2. Theoretical Background**

Rubric is paraphernalia score that lists the criteria for a job or task (Andrade in Zainul, 2001: 19). Furthermore, according to the American Association for the Advancement of Science : rubrics is a scoring guide that differentiates, on an

articulated scale, Among a group of simple behavior, or Evidences of thought that are responding to the same prompt (available: <http://stone.web.brevard.k12.fl.us/html/comprubric.html>).

Briefly scoring rubrics consist of several components, namely: the dimension (i), definitions and examples (ii), scale (iii), and standard (iv). Dimension will be used as the basis of assessing student performance. Definitions and examples of an explanation of each dimension. The scale is set it will be used to assess the dimensions, whereas the standard specified for each category of performance.

Although a rubric or scoring rubrics has been prepared as best as possible, but it must be realized that there may be sections that are constructed it is perfect or the only criterion for assessing the performance of students in a particular field. From one task could have been drafted more than one section. Therefore it is necessary to also develop tools to assess a rubric. The following questions can be used as a benchmark for assessing a rubric (Zainul, 2001: 29-30).

- i. How far these sections (obviously) relates directly to the criteria assessed?
- ii. How far these sections covers all dimensions of performance assessed?
- iii. What criteria have been used standards generally applicable in the field of performance assessed?
- iv. The extent to which the dimensions and scales used well-defined?
- v. If using a numeric scale the extent to which the figures used were indeed justly have described the differences of each category of performance?
- vi. How much difference scores generated by the different rater?
- vii. Do rubric used understood by the students?
- viii. Do rubric fair and free from bias?
- ix. Do rubric easy to use, practical and easy enough diadministrasikannya?

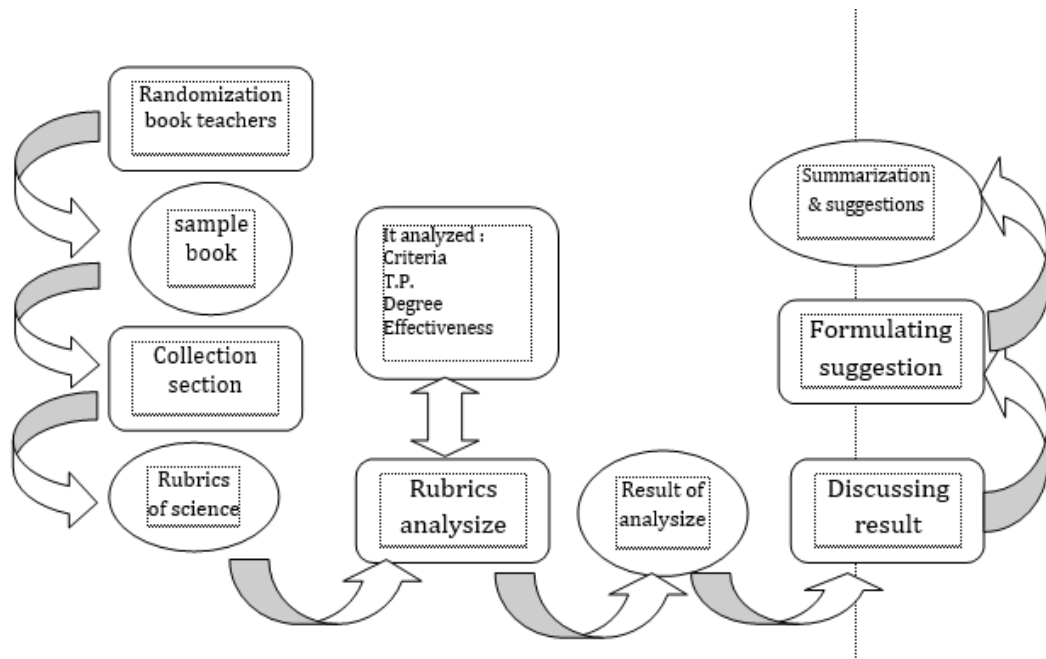
Rubric also involves descriptors. Descriptors explicit the performance level of students at each level of an appearance. Examples such as the formulation of minimum standards in the formulation of specific learning objectives. Descriptors used to clarify expectations or aspects assessed. In addition descriptor also help an evaluator (rater) more consistent and objective. For teachers who are implementing authentic assessment, feedback descriptors help obtain better.

### **3. Method**

This study uses the description. According Sugiyono (2008) study of this kind is intended to describe in detail the construction rubric IPA charge contained in a book the teacher. Descriptive data retrieval is done through collecting section IPA charge on the books teachers selected as research subjects. Researchers will make a descriptive account of the results of the analysis of the data that has been collected. The data collected is the science payload section contained in the book of teachers. There are 9 themes taught in the sixth grade. Each theme is made in one book. Selection of books that will be analyzed columns been done randomly. By using the principle of representation, obtained five themes to be analyzed, the theme of 1, 2, 3, 6 and 9.

Research carried out through the following stages:

1. randomization of the book that will be analyzed columns. Randomization follow the principle of representativeness of the study results. Obtained theme 1, 2, 3, 6, and 9 or 5 books from 9 theme yangg there.
2. Books that have been grouped into special sections samples were then collected for scientific payloads. Found 24 rubric for science payloads in 5 sample books.
3. Sections that have been collected are then analyzed. The analysis is limited to: 1) determination of the criteria, 2) hubugannya with learning objectives, 3) degree is used, and 4) the effectiveness of the use of grammar.
4. The results of the analysis are then discussed. The discussion will link point-point analysis is expected to produce a full understanding.
5. The last step is to formulate constructive suggestions based on the results of the discussion. Suggestions are made are expected to completely contextual and led directly to the problems found. Here is a chart of the steps of research has been carried out. Here is a chart of the steps of research has been carried out.



#### 4. Result and Discussion

Components that are discussed in this article include; 1) criteria of competence, 2) the level of achievement, and 3) degree. The benchmark is based on the premise that the principal component within the rubric are three things (Mueller, 2010; Rustaman 2010; Wulan, 2008). Found 24 rubric charge IPA in 5 books (theme 1, 2, 3, 6 and 9) that the research sample. Rubric found can be grouped into three types. Grouping is based on the components contained in the section. Among the types rubric found is,

- 1) there is a component of criteria and levels of achievement with descriptors as many as 21 pieces,
- 2) there is a component criteria and stuffing (eg animals) only one section, and
- 3) there are criteria and selection yes/no 2 pieces numbered sections.

Also found a section that is integrated with the charge Indonesian (BI) as 6 pieces. Moreover, not all charge indicator IPA accompanied by rubric for assessing the guidelines. Found 3 times of learning where science indicator only assessed without scoring rubric. Also found are two sections in one lesson is on the theme 9 subthemes 3 learning I (first).

There are 10 basic competencies (KD) that learned in the five themes. The overall theme is a combination of three core competencies and core competencies 4 by the same amount. Basic competence of both KI above are presented as follows

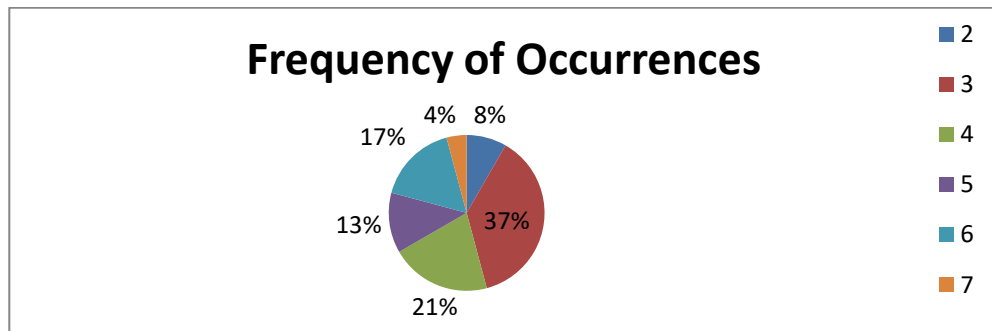
**Table. 1 Detils KI 3 and KI 4 in theme 1, 2, 3, 6 and 9**

KD	Explanation
<b>Core Competencies 3 (KI.3)</b>	
3.1	Identifying the usefulness of electric energy , electric energy conversion , transmission of electrical energy, and participates in the savings in everyday life. (T.3)
3.2	Describe the solar system, the sun as the center of the solar system, as well as the position and characteristics of the solar system. (T.9)
3.4	Distinguishing mixtures and solutions through observation (T.6)
3.6	Describing the proliferation of living beings. (T.1)
3.7	Identify how living things adapt to the environment. (T.2)
<b>Core Competencies 4 (KI 4)</b>	
4.1	Designing and conducting experiments to distinguish mixtures and solutions using materials known in everyday life. (T.6)
4.2	Carry out an experiment about conduction and body changes due to temperature effects , and to identify independent variables and the dependent variable in the experiment.(T.9)
4.4	Report the results of experiments on electrical conductivity which includes data collection , data presentation , and conclusion. (T.3)
4.6	Following the procedure of breeding plants and report the results in writing. (T.1)
4.7	Presenting the report on the results of observations about the adaptation of living things are found in the neighborhood . (T.2)

### Criteria

Criteria are statements that describe the level of achievement and tangible evidence of student learning outcomes with certain desirable qualities (Mueller, 2012). Criteria typically also been formulated before the implementation of learning. In the 2013 curriculum criteria better known as assessment indicators. Besides referring to the standard (KI and KD), the manufacture of the criteria should also refer to the provisions that have been expressed, both in the sense effective for the purposes of assessment of learning outcomes. The provisions, among others, (i) must be clearly defined; (ii) a concise; (iii) can be measured, and therefore must use the words of the operational work; (iv) refers to the behavior of learning outcomes, what to do and how quality is demanded; and (v) should be written in a language understood by the subject students (Kemdikbud, 2013).

It was found that the number of different criteria in each of his columns. The number of criteria on each section varies from 2 to 7 points. And details of the criteria in each section.



**Figure. 1** Variations Number of Criteria in each rubric

The number of criteria that often arises is third (37%), while the most rare is 7 (4%). This is quite reasonable because it involves the use of technical. Criteria in sections of three points is sufficient to represent the learning objectives will be measured achievement. When the number of points the criteria of more than 3, then the problem will arise is a reluctance to use the rubric because it is too much. In addition, teachers are less 'familiar' for use in the assessment rubric.

Determining the criteria of more than 3 points are found to be comparable to the learning objectives to be measured. Each learning objectives generally insert the competence to be covered to students. Competence in the learning objectives are then to be used as the basis for measuring student achievement. With reference to the new standard ratings that assess what is important not to assess what is assessed (NRC, 1996), then every teacher should be able to sort anything what an important achievement for assessment of a competency.

Number of criteria most rare is a 6-7 point. Usually to measure the charge IPA content is integrated with BI charge (Indonesian). Competence to charge BI focus of the report, so there are a lot of things that was suggested to be measured. Among the aspects that are measured are: 1) writing letters and punctuation, 2) grammar and vocabulary, 3) form and neatness of writing, 4) completeness of the information, 5) the truth of the information, and 6) attitudes.

Several aspects need to be simplified given the state of the user (teacher). Teachers practice should be facilitated in understanding the design of the rubric. Based on the research results Wiono (2014) piloting teachers still use rubrics in assessment. Many teachers who use the system "shoot" the value in measuring the competence nontes like domain skills and attitudes. This must be addressed wisely by education providers, given the importance of teachers' role in guarding the course curriculum.

Simplified form offered the author presented in tables 2 and 3. Table 2 outlines the aspects that form of simplification. Table 3 describes the limits of scoring and descriptor.

**Table 2. Simplification aspects of assessment**

Aspect (repair)	Aspects siplified
Writing	<ul style="list-style-type: none"> <li>- Capitalization and punstuation</li> <li>- Grammar &amp; vocabulary</li> <li>- Shape and neatness of handwriting</li> </ul>
Information	<ul style="list-style-type: none"> <li>- Completeness of information</li> <li>- The accuracy of information</li> </ul>
Attitude	- Is not necessary because the existing form its own assessment .

**Table 3. Descriptors criteria suggested**

Aspect	4	3	2	1
Writing	Error writing no more than 5 points	Error writing no more than 10 points	Error writing no more than 15 points	Error writing no more than 20 points
Information	The information includes the development of leaves, roots and stems of the day III , IV & V clearly.	Information is one of the criteria is not complete in the III , IV and V.	Information is two of the criteria is not complete in the III , IV and V.	Information is three of the criteria is not complete in the III , IV and V.

Simplification of form rubrics should be due attention to the suggestions of the expert assessment. Expert advice and then modified according to the needs of the field. The use of expert advice to be modified according to the conditions of teachers and classes have been advised by Wulan (2010) in making assessments of performance.



1. Level of achievement

Gradation level of achievement is the ability to subject students to the best level in a predetermined competence. The results showed that the level of achievement in section spanning a number of 1-4, each of which means: 1) less, 2) enough, 3) good, and 4) good. Each number has a meaning other than that is also accompanied by a corresponding description of the criteria specified. The size of the figure also shows the high and low achievement.

The focus of the study that the authors observe from the level of achievement of student performance are: 1) activity was measured, 2) assurance of competence is measured, and 3) use of the word. Rationale used is the principle of simplicity and effectiveness rubric for the user. It is undeniable that most elementary teachers are still rarely used in the assessment rubric. Recognizing that fact, it would need to streamline the sections in the book the teacher, even just an example.

Found some sections still omit more than one activity in one level of performance achievements. The activity in question is: "find and write", "describes and gives an example". To be seen whether it is really both of these activities are equally important or desirable in fact only one of them. If you want only one thing, it means there needs to be a correction in writing, for example, "scientific paper", "description using their own language and the right", "another example of the dibuku or the teacher's explanation"

There are also several sections that inserts competency measurement gauge attitudes in the competency skills. This is evident from the word "curious", "spirit", "passionate", "independent" and "confidence". This is a technical assessment of the overlap. Has made referrals that each competency has its own method of assessment (Kemdikbud, 2013 ).

The use of words that are common as well , including one of the obstacles the use of rubrics. meaningful words commonly found in some of the sections are: "all", "small part", "most", " partial" and "expected".



- a. Each of the themes/book is actually just membelajarkan competency knowledge and competency skills. Competencies dibelajarkan ie 1, 2, 4, 6, and 7.
- b. Found 24 sections in five selected themes. Sections were found three forms. From the number of sections that are found there are 6 units rubric integrated with the Indonesian cargo. Rubric integrated between the charge IPA with BI criteria between 6-7 points .
- c. The criteria in each section were found in number spans of 2-7 points.

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