The Compatibility of Cognitive Questions with Indicators in the Teacher's RPP in Physics Lessons in SMA

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Abstract:

This study aims to determine the suitability of cognitive items with indicators in teacher-made lesson plans on physics material based on the rules of writing questions. The research subject is a physics teacher at SMA Negeri 6 North Gorontalo. The method used in this study is a qualitative approach following the concept given by Miles, Huberman and Spradley with data collection techniques in the form of item documents with lesson plans and interviews. The validity test used triangulation technique. Based on the assessment of the suitability of the items with the indicators in the teacher-made lesson plans, it was found that for all multiple choice questions from questions number 1 to question number 6, it was said to be less appropriate because the questions only included several rules for writing multiple choice questions

1. Introduction

Teachers play an important role in improving the quality of education. Permendikbud No 23 2017 concerning school days states that teachers are professional educators with the main task of educating, teaching, guiding, directing, training, assessing, and evaluate students in early childhood education

through formal education, primary education, and secondary education. Therefore, every teachers in education units are obliged to develop learning tools that takes place interactively, inspiring, fun, motivating students to participate actively (Poppy, et al, 2009).

Learning tools needed in managing the teaching and learning process can be in the form of: syllabus, Implementation Plan Learning (RPP), Student Activity Sheets (LKS) and modules. Device usageLearning planning is one of the media used by teachers in conducting learning. This device is important in the learning process because it is a guide that is used from the beginning to the end of the learning process. Therefore, in making learning tools, it must refer to basic competencies.

According to Boulter. (Rosidah, 2003), competence is a basic characteristic of someone who enables employees to deliver superior performance in her job.Basic competence is a benchmark for measuring student success in certain schools. Competence is also a reference for each stage in the learning implementation plan (RPP), especially in the cognitive assessment instrument that assesses the level of student success during learning. According to Trianto (2014) revealed that the instrumentis a tool that can be used to measure the level of achievement of competence. Assessment instruments can be in the form of test and non-test instruments. The form of the instrument   is   a   tool   used   in   conductin assessments/measurements/evaluations of the achievement of student competencies in the form of tests and non-tests. In making assessment instruments, teachers must be guided by basic competencies as well as making lesson plans, this is so that learning objectives are achieved.

The results of research conducted by Hidayah et al (2016) show that the consistency of the subject/material delivered during the learning process it can be said that it is consistent, this is because before teaching the teacher prepares the lesson plan first so that in learning the teacher is always guided by the lesson plan, but the consistency of basic competencies with indicators on teacher evaluation in learning is not consistent, because in the preparation of questions there are still many that do not reflect the basic competence with indicators so that teachers pay less attention to the content contained in the lesson plans.

The same research was also conducted by Fitri Sahara (2017) explaining that the data studied, contains several questions that are not appropriate. The discrepancy in some of the questions above is caused by the questions made by the teacher that are not in accordance with the indicators he made, so that the questions do not reach basic competence.

Based on the results of the research from several researchers above, that in the preparation of the questions must pay attention to the indicators in the lesson plans by analyzing each item that will be used to measure the level of student knowledge. Analysis the quality of the test items for learning outcomes that can be done in two ways, namely theoretical analysis (qualitative) and empirical analysis (quantitative) (Arifin, 2007).

According to (Djemari, 2008), the analysis of the suitability of the items with the lesson plans includes analysis of the questions in detail qualitative in terms of the material aspect and its suitability with the indicator. Analysis of items is defined by Nana Sudjana (2011) as an assessment of test questions in order to obtain a set of questions that have adequate quality.

2. Research methodology

This research uses a qualitative descriptive approach, this is done because the descriptive qualitative approach method is easier to make adjustments to the multiple-dimensional reality, it is easier to

present directly the nature of the relationship between the researcher and the research subject, has sensitivity and adaptability to many influences arising from value patterns encountered.

The type of research used in this research is qualitative research. Evaluation of the instrument was carried out by assessing tests on cognitive learning outcomes at SMA Negeri 6 Gorontalo Utara, which included objective tests of true-false, multiple-choice, matchmaking, short-choice and essay types.

2.1 Research Place

This research was conducted at SMA Negeri 6 Gorontalo Utara which is located in North Gorontalo Regency, Gorontalo Province. This research was conducted in October - November 2019

2.2 Research Instruments

The research instrument was the researcher himself, but after the focus of the research became clear, a simple research instrument was developed, which could sharpen and complement the observed data. There are two instruments that were made, namely an instrument for assessing items based on the rules of writing questions and interviews with related sources.

2.3 Data collection technique

To obtain the data needed in this study, the researcher used the following data collection techniques.

2.3.1 Interview

Interview is a technique of collecting data through direct interaction with sources. In this study, interviews with informants were carried out repeatedly and informally to get maximum answers and avoid making up answers or not according to facts. This interview was conducted with resource persons related to the focus of the research, namely the physics teacher at SMA N 6 North Gorontalo.

2.3.2 Documentation

In this study, researchers searched for data by collecting questions and indicators through the Lesson Plan (RPP) on Newton's law and work and energy material for class X for the 2019/2020 academic year at SMAN 6 North Gorontalo.

2.4 Data analysis technique

The data analysis technique used in this research is qualitative data analysis, following the concept given by Miles and Huberman and Spradley. According to Miles and Huberman in Sugiyono (2010) that activities in qualitative data analysis are carried out interactively and take place continuously until they are complete in analyzing the data of the activities carried out. Activities in data analysis are data reduction, data display, and conclusion drawing/verification data.

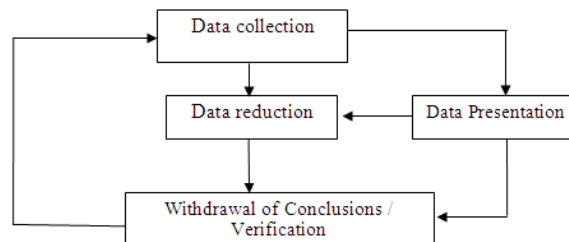The analysis steps are shown in the figure below.

Figure 1.1 Data analysis schema (Miles and Huberman, 1992)

2.4 Data Validity

Testing the validity of research data is done by triangulation. Triangulation is a testing technique that can determine whether the sources provide the same data or not. If the sources provide different data, then the data is not credible.

3. Research Results and Discussion

3.1 Research result

This research was conducted at SMA Negeri 6 Gorontalo Utara for the 2019/2020 academic year. This research was conducted on November 29, 2019, the purpose of this research was to determine the suitability of teacher-made questions in RPP on Newton's law material and work and energy including the suitability of teacher-made questions with indicators, material aspects and to determine the quality of questions from a qualitative perspective. The results of the research on the suitability of the teacher-made items in the lesson plans on Newton's law of work and energy were obtained by analyzing the teacher-made items with indicators and materials in the lesson plans given by the physics teacher at SMA Negeri 6 Gorontalo Utara.

3.1.1 Result of Analysis / Conclusion of Items with Indicators on Newton's Law Material

Based on the results of the Triangulation Method for each item (3 numbered questions) on Newton's Law material, it shows that the questions compiled by the teacher from the results of the analysis of each item with interviews that are guided by the rules of writing questions, it is found that the 3 question numbers are in the form of descriptions. it obtained 12 points or said to meet all points in the analysis of the suitability of the items, namely; questions according to indicators, limits of questions and expected answers is appropriate, the material asked is in accordance with the purpose of the measurement, the content of the material asked according to the level of the type of school or grade level, using the question word or orders that require a detailed answer, there are clear instructions on how to do the questions, there are scoring guidelines, tables, pictures, graphs, maps or the like presented clearly and legibly (applies to questions that have tables, pictures, graphs, maps or the like), the formulation of communicative questions, items using words/expressions that give rise to multiple interpretations or misunderstandings, no using locally applicable language / taboo, the question formulation does not contain words/phrases that can offend students.

3.1.2 Result of Analysis / Conclusion of Items with Indicators on Work and Energy Materials

The results of the item analysis on the Business and Energy material consist of multiple-choice item analysis and item description analysis. The Business and Energy Material has a total of 11 questions with 6 multiple choice questions and 5 number essay questions.

Based on the results of the triangulation method for multiple choice questions, it is known that the results of the analysis are accepted, the validity of their implementation in the study is presented as follows:

The results show that the loyal items compiled by the teacher are partially fulfilled with the results of item analysis and interview results based on the rules of writing questions multiple choice obtained 13 points from a total of 14 point question writing rules, namely the appropriate question with indicators,

distractors, the answers work, each question is formulated explicitly and clear, the subject matter does not give a clue to the correct answer, the subject matter does not contains multiple negative statements, homogeneous and logical answer choices In terms of material, the answer choices in the form of numbers are arranged in sequence the size of the value of the numbers, pictures, graphs, tables, diagrams, and the like are contained on questions that are clear and functional (applies to questions that have pictures, graphs, tables, diagrams, and the like), the main formulation of the problem does not use expressions or words that meaning uncertain, such as: preferably, generally, sometimes, item not depending on the answers to the previous questions, the language used must be communicative, so that the statement is easily understood by students, does not use language that apply locally if the questions will be used for other regions or nationally, and choices the answer does not repeat words/phrases that are not a unity of understanding. put words/phrases in the subject matter.

Based on the results of the triangulation method for description questions, it is known that the results of the analysis are accepted, the validity of their implementation in the study is presented as follows:

The results show that each item compiled by the teacher is fulfilled with the results The analysis of items and the results of interviews based on the rules of writing description questions obtained 14 points, namely questions according to the indicator, limiting questions and answers is expected to be appropriate, the material asked is in accordance with the measurement objectives, content the material asked is in accordance with the type of school or grade level, using a question word or a command that demands a descriptive answer, there are clues that clear about how to do the questions, there are scoring guidelines, tables, pictures, graphs, maps or the like are presented clearly and legibly (applies to questions that have tables, pictures, graphs, maps or the like), formulation of communicative questions, questions using words/expressions that give rise to multiple interpretations or misunderstandings, does not use locally applicable language / taboo, the question formulation does not contain words/phrases that can offend students.

3.2 Discussion

Items made by a good teacher are items that are made based on rules writing questions that have been determined. Good questions must also be in accordance with achievement indicators that have been made. Items that match the indicators are items questions ask the behavior and material to be measured in accordance with the indicator formulation in the RPP. If an item contains elements of related questions, with indicators, the items can be said to be in accordance with the indicators. However if the item asks something that is not listed in the indicator, it can be it is said that the item does not match the indicator.

The results of the analysis of the suitability of the items show that in the matter of work and energy, for the form of multiple choice questions as many as 6 items, from 14 aspects of the rule assessment In the writing of questions proposed by Umar (1996) there are 2 aspects that have not been fulfilled, namely the aspect of distracting the answer and the aspect of the length of the formulation of the relative answer choices same. All of the six questions have not implemented the distracting aspect of answers function because the teacher feels that he does not need a distractor in making related questions with work and energy materials that use more form of calculation problems so that the answer choices do not serve as a distraction, but this is contrary This is behind the opinion of Umar (1996) and the Ministry of National Education (2008) which state that distractor answers serve to improve the ability of students. Two out of six The multiple choice items also do not meet the length

aspect of the choice formulation the answers are relatively the same, this can be seen in the answer choices provided by the teacher.

The suitability of the item questions can also be seen from each question formulated in detail firm and clear, the subject matter does not give clues to the correct answer, meaning on the subject matter, there should be no words, phrases or expressions that can give directions to the correct answer, the subject matter should not contain statements that double negative, meaning that there should not be two or more words in the subject matter which has a negative meaning. This is to prevent misinterpretation students to the meaning of the statement in question, homogeneous and logical answer choices This means that all answer choices must come from the same material as the question asked by the subject matter, the writing must be equivalent and all options must work, meaning one The question has only one answer key, if there are several correct answers, The answer key is the most correct answer, the answer choices are in the form of numbers or time must be arranged in order of the size of the numerical value or the chronology of time. The sorting of numbers is done from the smallest number value to the highest number value large or vice versa, and sorting time based on chronological time. Order This is intended to make it easier for students to see answer choices, pictures, graphs, tables, diagrams and the like contained in the questions must be clear and functional, what does it mean? What accompanies a question being asked must be clear, legible, understandable by student. If the question can be answered without looking at pictures, graphs, table diagrams and the like doesn't work, the questions don't depend on the answers to the questions Previously, dependence on previous questions caused students who could not Correctly answering the first question will not be able to correctly answer the next question, Don't using the language that applies locally (certain areas), if the question will used for several regions or nationally, and the answer choices do not repeat a word or phrase that is not a unified meaning, put the word or phage mentioned in the subject matter. Other aspects of the rules of writing questions must also be Note, both the rules for writing objective questions and the rules for writing descriptions.

Based on the results of research at SMA Negeri 6 Gorontalo Utara about the analysis of the suitability of the items based on the rules of writing questions, it is known that for conformity multiple choice items out of 6 questions, none of which meet the writing rules multiple choice questions. This is because of the 14 point indicator of the suitability of the selected items only 12 or 13 points that meet the criteria, while 1 or 2 points does not meet the criteria.

The results of the analysis show that the questions made by the teacher are only centered on some indicators or not all indicators have items this can be causes the learning achievement to be not distributed. While the results of the analysis of the suitability of the item descriptions are based on the rules of writing It is known that for the suitability of the item descriptions of the 5 existing questions. Five questions All of these have met the criteria for writing a description question, this is because the five questions have covered all the indicators of the suitability of the items specified description. Of the 8 question indicators, some of the questions are only distributed on 7 indicator with a total of 11 questions, while there is 1 indicator that does not have items about.

The results of this study were obtained from various methods, apart from analyzing the data as well using the interview method. According to Sugiyono (2013) interview is a technique collect data through direct interaction with resource persons. Apart from instruments the suitability of the items used as data collection, the researchers also conducted interview the teacher of the subject in question to obtain information additional related to the preparation of the question.

Results of interviews with informants by providing 14 question points it is known that the teacher in question stated clearly that in making Both multiple choice questions and description questions must pay close attention to the steps question preparation. The teacher said that the preparation of questions must pay attention to indicators of predetermined questions, in addition, questions are not satirical, optional the answer must be logical and there is only one answer choice. And for more description questions good if the cognitive level of the questions given is at level C4, C5 or C6, so that the teacher can assess how big the level of student knowledge about the material that has been studied.

Based on the two methods used, namely the results of data analysis and the results of from the interview, it was found that for Newton's Law and Work and Energy material in item essay questions fulfilled all aspects in the rules of writing questions, and on business and The energy in the multiple choice items is fulfilled. Some aspects of the rules for writing questions.

4. Conclusion

Based on the results of the research and discussion contained in chapter IV, it can be concluded that the assessment of the suitability of the items with the indicators in the Teacher-Made RPP showed that for all multiple-choice questions from question number 1 to question number 6, it was said to be less appropriate because the questions only included several rules. writing questions for multiple choice, namely the answer distractors function and the length of the answer choice formulations is relatively the same. For all the description questions, both the first material and the second material are said to be appropriate because these questions already cover all the rules of writing questions for descriptions.

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