

## The Teachers' Competencies to Develop Assessment for High School Students in Merauke

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### ABSTRACT

This research was conducted to mapping the percentage and criteria of high school teachers' competency in Merauke District in preparing and analyzing the items question. The research included quantitative research by survey method. The data were collected using questionnaires with Likert scale. The obtained data were then analyzed using the Ideal Standard Deviation. The analyzed results showed the percentage of competencies of high school teachers in Merauke District in preparing and analyzing the question items is 74.66% which are in the "good" category, and the criteria for the quality of high school teachers' competencies in Merauke District in preparing and analyzing the question items are on the "good" criteria with an average score of 93.33. The results of the analysis based on aspects, the average teacher competency score in arranging the question item is 55.11 which is in the category of "good" while the competence of teachers in analyzing the question item is 36.86 which is in the category of "sufficient". Based on this, it is necessary to follow up to improve the competence of high school teachers in Merauke district in analyzing items question.

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### 1. INTRODUCTION

Teachers as implementers of education have the task of educating and teaching learners. The purpose of education and teaching is to realize the educational objectives that are set per national education standards (Sulistya, 2012). The implementation of education under the 2013 curriculum imposes teachers to plan the learning and also carry out assessments. The implementation of assessment activities can be done during the learning process as well as after learning. Assessments given to learners must be based on techniques and instruments applicable to the 2013 curriculum (Mukarramah et al., 2015).

The implementation of the assessment aims to describe the achievement of a learning activity. Through assessment activities, teachers can monitor and control the development of learners (Yadiannur & Supahar, 2017). Information obtained from the assessment results can be used as a reference in determining the achievement of learning (Ali et al., 2018; Dinata et al., 2018) as well as to make decisions that affect learning (Walvoord, 2010). The assessment carried out by the teacher includes all competencies of learners such as character aspects and aspects of knowledge (Nyoman & Putu, 2014). The importance of assessment so that a teacher must be able to compile and analyze an assessment instrument so that through the assessment instrument used can describe the ability to learn appropriately (Riadi, 2017).

Teachers have difficulties in arranging daily replay questions (Anggraeni, 2016). Sometimes teachers are unaware of the questions given to learners when daily replays differ from the learning objectives and learning processes that have been implemented. However, this is not only caused by the competence of the teacher, but some teachers have difficulty in arranging the problem because the learners are passive and do not show their ability so that the teacher must develop a problem that is adjusted to the lowest ability of the learner (Dinata et al., 2020). It is a crucial consideration because the ability of high school students in Merauke District varies greatly.

The ability of varied learners becomes a challenge for teachers in developing question as an evaluation tool. The items of the question developed must be by the predetermined standards. Standards that must be met in order for an evaluation tool to be declared excellent and able to provide high information are valid, reliable and characteristic of each item (Mardapi, 2012; Retnawati, 2013; Sari, 2020a; Sari & Supahar, 2018). Validity relates to the accuracy of assessment instruments in measuring measurement objectives. Validity can be proven through the validity of contents, construction and criteria (Mardapi, 2012). Reliability is related to the reliability of instruments in providing information (Retnawati, 2014). Item characteristics relate to the response of items by learners. Questions have some characteristics of the grain, such as difficulty level, differentiating power, effectiveness distractor, and guessing factor (Santoso et al., 2019).

The assessment given by a teacher determines the future of the learner. The ability of teachers to develop (in this case, compose and analyze) an assessment instrument is part of the competence of pedagogy that must be possessed. Indonesian Law No. 14 of 2005 explain that a teacher is said to be eligible to teach in the classroom if he has pedagogical competencies, professional competencies, social competencies, and personality competencies. These four competencies can be obtained by following professional education, in this case, Teacher Professional Education.

There are still many high school teachers in Merauke district who have not participated in PPG (Pendidikan Profesi Guru). The contributing factor is due to the lack of PPG program in Merauke district, which is still small. The New Teacher Professional Education Program was implemented by State University in Merauke in 2020, but only for mathematics education courses. The targeted quota is only 50 participants. Therefore, this is a concern for the government and education practitioners in Merauke District because not all teachers can follow this Teacher Professional Education. The government and education practitioners can help by providing training to train competencies that must be possessed by teachers. Therefore, before being given government training and education practitioners need to know the picture of the initial competency level of teachers. The picture obtained can be used as a reference to plan the training that can be given to teachers to improve their competence.

Following Indonesian Government Regulation No. 19 of 2005, one of the indicators of pedagogical competence that a teacher must have is the ability to evaluate learning outcomes. It requires teachers to be able to compile and analyze the details of the problem (Astuti, 2016). This competency can help teachers to map students' abilities appropriately. The focus of the research is directed to determine teachers' competency in preparing and analyzing the details of the questions. Respondents focused on high school teachers. The results of this research activity can be used as a reference to plan the training for the preparation of appropriate assessment instruments and under the needs of high school teachers in Merauke District.

## 2. METHODS

Research carried out is a type of quantitative research. The results of this study are described based on percentages and categories of ability to compile and analyze questions obtained from the results of the analysis. The aim is to map the competence level of physics teachers in arranging and analyzing the question items. Descriptive survey methods conducted the research. This method was intended to obtain responses from respondents to the given poll. The data analyzed came from the respondents involved in the study. The high schools located in Merauke District were the sources of data collection. All high school teachers in Merauke District were the population in this study. The samples were determined using random sampling techniques. The questionnaires were distributed to State High School in Merauke. The results of this teacher response questionnaire are then analyzed to determine the percentage and quality category of teacher competence in constructing and analyzing the problem items. There were 52 respondents involved in the study which came from various sample schools.

The data in this study were collected using the non-test technique with instruments in the form of questionnaires developed by researchers by existing indicators. The questionnaire is a competency questionnaire in constructing and analyzing the question items. The instruments used were adjusted to the situation of respondents in Merauke. The questionnaire developed was adjusted to the competency indicators of constructing and analyzing the question items (Sari et al., 2019). Indicators for constructing and analyzing question items are presented in Table 1. Based on the existing indicators then developed into a questionnaire containing 25 statements representing the competence of teachers in preparing and analyzing the details of the problem.

**Table 1.** Indicators to constructing and analyzing question items

No	Aspect	Indicator
1.	Constructing question items	Determine objectives of constructing test instrument
		Search the appropriate theory
		Arranging the indicator of test instrument items
		Arranging the test instrument items
		Content validation
2.	Analyzing question items	Revise based on validator's suggestions
		Try out the items
		Analyzing the items
		Assemble test instrument

The assessment criteria used in this questionnaire was a Likert scale with 5 (five) scales. The data of the research results were analyzed using simple statistics to obtain the percentage of teacher competence in arranging and analyzing the problem items. Interpretation of the percentage results used is presented in Table 2.

**Table 2.** Percentage category

Percentage (%)	Category
81-100	Excellence
61-80	Good
41-60	Sufficient
21-40	Bad
0-20	Poor

Also, the data were analyzed to obtain categories of competency levels measured by the categories in Table 3 before interpreting the data obtained analyzed using Ideal Standard Deviation (Sari, 2020b; Widoyoko, 2009). The results of the analysis obtained are then described and then inference based on the data of the analysis results.

**Table 3.** Interval to classified teachers' competencies

Interval	Criteria
$\bar{X} \geq X_i + 1.8 SB_i$	Excellence
$X_i + 0.6 SB_i \leq \bar{X} \leq X_i + 1.8 SB_i$	Good
$X_i - 0.6 SB_i \leq \bar{X} \leq X_i + 0.6 SB_i$	Sufficient
$X_i - 1.8 SB_i \leq \bar{X} \leq X_i + 0.6 SB_i$	Bad
$\bar{X} \geq X_i - 1.8 SB_i$	Poor

### 3. FINDINGS AND DISCUSSION

This research began with an initial observation. The result of the initial observation is that one of the schools chosen as a sample is not willing to conduct research. Due to the COVID-19 pandemic, the activities in schools were restricted. Therefore, the questionnaires given to teachers were left to the school. Then when the whole questionnaire was filled out, the school contacted the research team to retrieve the questionnaire that had been distributed.

All respondents who filled out the research questionnaire came from various subject teachers and gave a very varied response. Based on the response results, the highest score obtained by teachers was 125 with a maximum score of 125, while the lowest score was 75. The data obtained were then analyzed, and obtained information that 74.66% of high school teachers in Merauke district are competent in constructing and analyzing problem items. It means that there are still around 25.34% of teachers who have not reached this target. Based on its aspects, the percentage of teacher competence in constructing the question items is 79.31%, while the percentage of teacher competence in analyzing the question item is 58.17%. Following the percentage interpretation (Bahri et al., 2020), it is obtained information that the competence of high school teachers in Merauke district in arranging and analyzing the problem is in the "good" category. There are some criteria to determine the teacher's competence based on percentages. Therefore, it is continued to analyze the teacher's competence in preparing and analyzing question items using the ideal standard.

The average score obtained from all respondents involved was 93.33, with an ideal standard deviation of 16.67. The results of the calculation are presented in Table 4.

**Table 4.** Calculation analysis by the ideal standard deviation

Sample	result
Total Mean	93.33
Ideal Mean	75
Ideal Standard Deviation	16.67

The results of the analysis are then interpreted into the ideal standard deviation to determine the criteria for the quality of teacher competence in preparing and analyzing the problem items. The quality criteria used are presented in Table 5

**Table 5.** Interval to classified teachers' competencies

Interval	Criteria
$\bar{X} \geq 105.01$	Excellence
$85.00 \leq \bar{X} \leq 105.01$	Good
$65.00 \leq \bar{X} \leq 85.00$	Sufficient
$45.00 \leq \bar{X} \leq 65.00$	Bad
$\bar{X} \geq 45.00$	Poor

Based on the quality criteria in Table 5, it is known that the overall competence of high school teachers in Merauke District in constructing and analyzing the question items is in the "good" category.

After being compared with the results of the analysis using percentages, the results obtained are in the same category. Although there is no difference in the results of the analysis, if it is analyzed more based on its aspects, there are visible differences. Based on its aspects, the data were then analyzed into 2 (two) aspects, namely constructing the question items and analyzing the questions items. Fourteen statements represent each aspect of the matter. The percentage of competence of high school teachers in Merauke district in constructing the question item is 79.31% which is in the "good" category. The average score of teacher competence in constructing the question item is 55.11. The criteria for the quality of teacher competence in preparing the question items are presented in Table 6.

**Table 6.** Criteria of competency to constructing question items

Interval	Criteria
$\bar{X} \geq 58.78$	Excellence
$47.60 \leq \bar{X} \leq 58.79$	Good
$36.40 \leq \bar{X} \leq 47.60$	Sufficient
$25.21 \leq \bar{X} \leq 36.40$	Bad
$\bar{X} \geq 25.21$	Poor

Following Table 6, obtained information that the competence of teachers in arranging the question items are in the category of "good" with a score of 55.11. Overall, the competence of teachers in the sample school in constructing the question items can be declared "good". Furthermore, the competence of teachers in analyzing the question items is represented by 13 statements on the questionnaire. The percentage of competence of high school teachers in Merauke district in constructing and analyzing the question items is 58.17% which is in the "sufficient" category. The average score of teacher competence in arranging the question item is 36.87. The criteria for the quality of teacher competence in preparing the question items are presented in Table 7.

**Table 7.** Criteria of competency to analyzing question items

Interval	Criteria
$\bar{X} \geq 54.61$	Excellence
$44.20 \leq \bar{X} \leq 54.61$	Good
$33.80 \leq \bar{X} \leq 44.20$	Sufficient
$23.39 \leq \bar{X} \leq 33.80$	Bad
$\bar{X} \geq 23.39$	Poor

Based on Table 7, it is known that the competence of teachers in analyzing the question items is in the category of "sufficient" with a score of 36.86. Besides, teachers' competencies are also analyzed in constructing question items based on sample schools.

The results of the analysis are based on the aspect of the teacher's pedagogic competence in compiling and analyzing the questions, it turns out that the teacher's competence in analyzing the questions is still in the "sufficient" category. This needs to be an important concern because the questions that have been analyzed can only be declared valid and reliable. While the quality questions are questions that have met the valid and reliable criteria. If assessed based on competency indicators to analyze the items, based on the result of the research, 88.5% of teachers developed the question items by themselves. Whereas the other teachers only used the question items of school textbooks and personal handbooks. Even though the question items in the textbook are not necessarily following the level of students' ability (Yadiannur & Supahar, 2017). Although most of the teachers developed the question items by themselves, only 42.30% of teachers validated the question items to their peers, in this case, the teachers were in the same subject area. The condition that most teachers only developed question items without reviewing the question items made. The developed question items were not checked again so the possibility of errors is greater. Teachers who implemented content validity on the questions developed were only 34.61% who carried out empirical validity to find out the valid, reliable criteria, and the level of difficulty of the questions for students. Teachers who carry out the advanced stage in

the form of analysis of empirical test results are only 25% of the total respondents. This is an important concern because the question items that were not tested before could not be used as a measuring tool that could map the students' abilities. It means that the question item used to measure the students' ability cannot be categorized as valid and reliable.

The results of the analysis based on indicators of teacher competence in compiling and analyzing questions turned out to be only 25% of teachers who carried out the development of questions following the development procedure. Other teachers also develop questions, but use incomplete stages. Some teachers develop questions without doing content validity. There are various obstacles such as the lack of teachers in the field of study to assist in carrying out this content validity. That way, the teacher directly conducts an empirical validity test to students. This test is not a difficult thing, but the obstacle that occurs is the limited time of the existing lesson hours so that the teacher cannot test the developed questions so that no data is obtained for analysis so that they obtain questions that are declared valid and reliable. Thus, based on the results of the research obtained, it is necessary to make efforts to improve the competence of teachers, especially in analyzing the question items. This competency is known for the pedagogical competencies that a teacher must have in order to become a professional teacher (Sari et al., 2021). This competency consists of the ability to understand learners, design and implement learning, evaluate learning outcomes and develop learners in actualizing their potential (Fitrianawati, 2015). Teachers are not only required to construct the question items but can also analyze the questions developed in order to be the right measuring instrument to determine the results of students' achievements in learning.

Evaluation tools developed by teachers need to be analyzed to do the function as a quality measuring tool for learning outcomes (Retnawati, 2014; Sari, 2020a). Using a quality evaluation tool can be a reference to know the learning achievement (Ali et al., 2018). The data obtained related to the teacher's knowledge of the software that can be used to analyze the questions is still low. Teachers who know about problem analysis software that uses classical test theory are only 40.38% of the total respondents. Meanwhile, teachers who know about problem analysis software using modern test theory are lower at 13.46%. Teachers often made their questions to use in learning activities, but not all teachers analyze the question first before use. The possibility that there is a lack of time in testing the problem, and also the analysis manually is still considered quite tricky. Therefore, to make it easier for teachers to analyze the details of future problems, it is necessary to conduct training related to analyzing problems using programs that make it easier for teachers such as Winstep, Quest, BilogMG, Parscale, and Multilog.

#### 4. CONCLUSION

The high school teachers' competence in Merauke district is in the 'good' category. However, it was analyzed based on the indicators, there were various deficiencies in procedures of developing question items. The fact, although most of the teachers developed the question items by themselves, not all the teachers did the content validity steps done with the teachers of the same subject area. Besides, some teachers developed question items through empiric validity without did content validity. In this case, the teacher developed the question items namely preparing and analyzing question items, but most teachers did not understand the stages in developing question items correctly. Therefore, in the future, it is expected that qualitative research can be implemented, to know the quality of the teachers' competence specifically to map the teacher competencies in preparing and analyzing question items appropriately. Thus, the teachers need to be introduced to various applications to assist in analyzing the question items. Also, it is necessary to provide the question bank as a standard evaluation tool that has been declared valid and reliable to measure the ability of learners in order to facilitate teachers in learning activities.

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