



Teacher Competence in The Preparation of Test and Non-Test Instruments

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Abstract

This research describes the problem-solving process for junior high school students with Polya steps in algebraic word problems. This study uses a qualitative descriptive approach with a test instrument. The test given is in the form of description questions on algebraic material. The subjects were three junior high school students who were taken randomly. The results of this study are that HR can carry out four stages of problem-solving in questions 1 and 2. S-RM and S-SDF can carry out a three-stage problem-solving process in item 1 and four locations in item 2. The steps that cannot be carried out in question 1 are the stage of checking again. In addition, the S-SDF carried out the wrong-solving process at the planning and problem-solving stages in problem 1.

Keywords: *Problem-solving, story problem, step Polya*

INTRODUCTION

The main issue in different countries around the world is about how to prepare for the challenges of society in the future and the role of education in providing the skills and competencies needed (Ahmed & Kumalasari, 2023). The teacher's task is to manage the learning process, which includes learning planning, implementing learning according to a predetermined plan, and evaluating the learning planned and implemented (Pradana & Uthman, 2023). Teachers as instructors define that teachers should help develop students to learn what they do not know, shape abilities, and understand the standards of the material learned (Lestari et al., 2023). Teacher competence is a set of knowledge, skills, and behaviors that must be possessed, lived, mastered, and actualized by teachers in carrying out professional duties (Government Regulation of the Republic of Indonesia Number 74 of 2008). The competencies of the teacher in question include pedagogic competence, personality competence, social competence, and professional competence (Nasiha et al., 2023). The competence and quality of teachers in teaching is a very complex activity because teaching is a social practice that occurs in a particular context (Triansyah et al., 2023).

One of the efforts to optimize learning is to improve teaching strongly influenced by teachers; since teaching is a system, improvement must include all education system components, including objectives, materials, support, and methods (Darmayanti et al., 2023). The skills possessed by the teacher help to master the material and process of the teaching and learning program; the teacher must also carry out assessments and administrative processes (Muhammad et al. et al., 2023). The importance of this evaluation is that a good class is not

enough to rely solely on learning planning (Muhammad et al., et al. 2023; Muhammad & Angraini, 2023); the capacity of the teacher to develop the learning process and mastery of teaching materials, and also not enough with the teacher's ability to master the material, without being balanced with the ability to assess student planning skills, which is very important to determine in the context of the plan or policy of subsequent treatment of students related to the concept of complete (Segara et al., 2023).

Instruments are tools that researchers choose and use in their activities to collect data so that these activities become thematic and facilitated by them (Sugianto, 2023). Evaluation tools or instruments can make it easier for a person to carry out tasks or achieve goals more efficiently. In conducting evaluation, the instruments used broadly have two forms, namely in the form of test instruments and non-test instruments (Mustakim & Ngaliyah, 2023). A test as a data collection instrument is a series of questions/exercises used to measure the skills of knowledge, intelligence, abilities, or talents possessed by individuals/groups (Arif et al., 2023). Meanwhile, non-test techniques generally play an important role in evaluating student learning outcomes in terms of the realm of attitudes (affective domain) and the realm of psychology (psychomotor domain) (Muhammad, Darmayanti, et al., 2023). Efforts to measure the extent to which learning objectives have been achieved can be made through assessment; in this case, assessment of learning outcomes using measuring instruments to assess learning outcomes are tested (Santiago, 2023).

Before knowing more about a test, you must first know the terms used next: test, testing, testee, and tester (Jayanti et al., 2023). A test is a tool or procedure used to find an atmosphere in a predetermined way or according to predetermined rules; testing is the time when the test is done; we can say that the test is the time when the test is performed, the testee is the respondent who takes the test, the tester is the person responsible for taking tests on respondents (Amany & Puteri, 2023). In addition, tests to measure learning objectives can be done using non-test assessments. Non-test techniques assess student learning outcomes without giving tests to students (Inganah et al., 2023). Chatterji distinguishes five means of providing responses that are commonly applied in the implementation of tasks in the context of assessing learning outcomes, namely: (1) written responses, (2) responses in the form of behaviors or processes, (3) product responses, (4) interview responses, and (5) portfolio responses (Cahyadi & Ariansyah, 2023). Based on this presentation, non-test instruments can be divided into five, namely; (1) written assessment (questionnaire or list of questions), (2) behavior-based assessment, (3) product-based assessment, (4) interview-based assessment, (5) based assessment portfolio (Rachmawati et al., 2023).

Given the importance of teacher competence in instrument preparation, the purpose of this research is how the teacher's competence in the preparation of test and non-test instruments, what obstacles are faced, and the efforts made by the teacher.

LITERATURE REVIEW

Research on "Teacher Competence in Test and Non-test Instrument Preparation" is an essential topic in the educational context. Teachers are competent in designing test and non-test instruments and are critical in effectively assessing and measuring students' abilities. In a study conducted by Angraini et al. (2023), it was found that teachers with competence in the preparation of test instruments have a deep understanding of the learning objectives, assessment criteria, and the context of the instruments they use. They can design questions and assignments relevant to the learning material and integrate cognitive, affective, and psychomotor aspects in their instruments. In addition, competent teachers also pay attention to the validity and reliability of the instruments they use. They can analyze test results objectively to provide meaningful feedback to students.

On the other hand, several studies have also highlighted the importance of teacher competence in designing non-test instruments. Non-test instruments include various assessment methods such as projects, presentations, and portfolios. A study conducted by Maryanto et al. (2023) found that teachers who are competent in designing non-test instruments can create learning situations that are interesting, interactive, and empower students. They choose an assessment method that fits the learning objectives, develop clear and measurable scoring rubrics, and provide students with appropriate guidance in non-test assignments. Competent teachers can also comprehensively evaluate students' work and provide constructive feedback to help students improve their skills.

Overall, the research on teacher competency in test and non-test instrument preparation highlights the critical role of teachers in assessing and measuring students' abilities. Teachers competent in designing test and non-test instruments can create better learning experiences, support student development, and provide meaningful feedback. Further research could provide deeper insight into best practices in designing effective assessment instruments and strengthening teacher competencies.

RESEARCH METHODS

This research uses a descriptive type of research with a qualitative approach. The subjects in this study were two mathematics teachers in junior high school. The data collection techniques used in this study were interviews and documentation. The documentation method in this study was used to collect data on test and non-test instrument preparation techniques in each school, as well as data on the use of non-test evaluation techniques, which could be in the form of a learning implementation plan or app, or it could be about the learning process in the school.

Data collection techniques use questionnaires and interviews that are carried out in-depth using google forms. Interviews are used to collect data on test and non-test techniques that teachers perform in the learning evaluation process. The interviews provided contain statements regarding the use and obstacles of test and non-test techniques conducted by teachers in the learning evaluation process. Interview guidelines for teachers help disclose teacher preparation for compiling a thorough assessment instrument starting from planning, implementing, and following up on the assessment results.

The data analysis technique in this study is an ongoing process that requires continuous reflection on the data, asking analytical questions, and writing short notes throughout the research. The data analysis technique in this study uses the techniques of (Marchy et al., 2022), namely data reduction, data presentation, and conclusion adjustment. Data reduction takes place during field research activities. All data obtained from data collection, either through interviews or documentation, is then described in detail in the critical section. Reports are reduced, then simplified and organized so that conclusions can be drawn.

This research was conducted using an instrument for the description of algebraic material. The questions used are two, each representing each stage of problem-solving. The subjects of the study numbered three students. This research was conducted using a descriptive qualitative approach. Descriptive qualitative research is carried out by describing and analyzing the data obtained during the study. Data collection techniques use the test method. Data analysis is carried out during and after data collection. Data analysis is intended to achieve research objectives. Data reduction, presentation, and conclusion are the data analysis techniques used.

RESULTS AND DISCUSSION

The results were in the form of answers from subjects related to questionnaires distributed through google forms due to distance constraints and covid-19 conditions. The results of the questionnaire or closed statement are presented in Table 1.

Table 1. The results of the subject's answers

Question item or statement	Subject Answers				
	S1	S2	S3	S4	S5
Are the test and non-test techniques used easily understood by students?	Yes	yes	yes	yes	Yes
Do you need help in using test and non-test techniques?	not	Not	Not	Not	Not
Do you use the same assessment techniques without variation?	not	Not	not	Not	Not
Before carrying out the assessment, do you make an assessment plan first?	Yes	Yes	yes	Yes	Yes
Do you always make a grid of questions before they are tested on students?	not	yes	yes	yes	Yes

The results in Table 2 were obtained based on the five respondents' answers.

Table 2. Summary results of the five subjects

Items	Answer Yes	Answer No
1	5	0
2	0	5
3	0	5
4	5	0
5	4	1
Total	14	11
Average	2,8	2,2

Calculation of the "yes" answer from the questionnaire:

$$\text{Average "yes" answer: } \frac{2,8}{5} \times 100\% = 56\%$$

So, the teacher's competence in compiling test and non-test techniques is close to good, with a percentage of 56%.

Furthermore, the interview that is carried out is open, and the questions given are also spread through Google Forms. The interview can be seen in the text below.

Research: What do you consider in choosing and using test and non-test techniques?

S1: Material and desired results

S2: Non-test techniques generally play an important role in evaluating student learning outcomes in terms of attitudes and skill domains, while test techniques are more widely used to evaluate student learning outcomes in terms of the realm of the thinking process.

S3: Student ability

S4: To find out the level of understanding of the material that has been studied

S5: What is considered in using test and non-test techniques in learning for students? We as teachers must be able to know what techniques are suitable for learning

There are several opinions about considerations in choosing and using test and non-test techniques. The selection of test and non-test techniques can be based on the function of the test and non-test, the student's ability to use the desired material, and results. This means that

the selection and use of test and non-test techniques depend on the goals to be achieved. This follows Anas Sudijono (2006) that the steps to compile an assessment need to formulate its implementation objectives (Ramadhaniyati et al., 2023) as well as test techniques to find out the cognitive abilities of learners, while non-test techniques serve to evaluate the skills and attitudes of learners during learning. Students can easily understand the assessment techniques used.

Research: Before and after assessing test and non-test techniques, what steps do you use before and after?

S1: Preparing, planning, and evaluating.

S2: Assessment is not just to determine the achievement of student learning outcomes.

S3: Initial steps before taking a test or non-test

S4: Understanding the grasp of students so that all students can understand and the test

S5: Before compiling an assessment plan as well as possible

Before the assessment, the teacher makes an assessment plan that will be applied to learning. Based on the interview, the results were obtained that the steps taken were to prepare, draw up a plan, and evaluate. Understanding students' grasp first will make it easier for students to understand the test and non-test techniques used so that learning outcomes will be achieved well. However, according to Anas Sudijono (2006), The steps in the assessment are to compile a plan, collect data, verify data, process and analyze data, provide achievements and draw conclusions, and follow up on assessment results (Mayani et al., 2022).

Research: What are the supporting factors for maximizing the use of test and non-test techniques in learning?

S1: Learning media

S2: Factors that support tests and non-tests in learning are evaluated because of a process carried out to determine the assessment of individuals/learners to achieve positive changes.

S3: A test is said to be good as a measuring device; it must meet the requirements of a test that is to have validity, reliability, and objectivity

S4: Seriousness of students in learning

S5: Factors that support test techniques with cognitive aspects and non-test techniques by assessing the skills of learners

Supporting factors to maximize the use of tests with cognitive and non-test aspects by assessing students' skills. A test said to be good must have validity, reliability, and objectivity. Determining the media and conducting evaluations are also very influential in improving subsequent assessment techniques. In line with the opinion of (Sanusi et al., 2023), A good assessment test has characteristics and traits that are conditions that must be met; that is, the test must be valid or have a good level of validity. An assessment test is valid if it can accurately and correctly measure what is being measured. The validity here can be in content, predictive, and construct validity, so the test must be reliable, objective, practical, and economical.

Research: What assessment techniques do you often use during learning?

S1: Test and non-test

S2: Test techniques, namely Verbal Tests and Non-Verbal Tests. According to its purpose, namely Aptitude Tests, Intelligence Tests, Learning Achievement Tests, Diagnostic Tests, Attitude Tests, and Interest Tests,

S3: written test, oral or question and answer test, practice, task, observation of learner attitudes

S4: Description test

S5: By oral and written means

Assessment techniques that are often used from several subjects are test and non-test techniques. Written tests, oral or question-and-answer tests, assignments, attitude observation, and practice. In line with the opinion of experts (Muhammad, Elmawati, et al., 2023), metode tests and non-tests should be used because class results will vary. Learning outcomes can be theoretical knowledge, skills, and attitudes. Theoretical knowledge can be measured using the test method. Non-tests can measure skills. In psychology, the change and growth of student attitudes can only be measured by non-test methods such as observation and interviews.

Research: More often, where are you using assessment techniques? Test or non-test? Why?

S1 : test

S2: I use the test assessment more often because I can see the ability and understanding of my students

S3: Test questions have more specific and more suggestive questions in the subtest of the lesson to be discussed so that the measurement of students' abilities will be more effective

S4 : test

S5: Test, because when using assessment techniques in the form of tests, we can measure the knowledge of our students

Overall, subjects often use test techniques. The reason why the subject chose the assessment technique is that the test technique can see the student's ability and understanding. The questions are more specific and more directed to the learning to be discussed so that test techniques can be used to measure students' knowledge abilities effectively. The interview results are relevant to (Soraya et al., 2023); evaluation to evaluate student learning outcomes is generally expressed in the form of tests with various variants, although test techniques are used more often in practice.

CONCLUSION

Based on the explanation above, the teacher's competence in compiling test and non-test techniques is close to good, with a percentage of 56%. This finding is supported by the interviews conducted by researchers on five subjects obtaining conclusions on the selection and use of test and non-test techniques depending on the goals. Before carrying out the assessment, it is necessary to take steps such as preparation, drawing up a plan, and evaluation. The technique that is often used is the test technique because the test technique can see the ability and understanding of students.

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