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Application of Learning Management Using Non-test Instrument to Improve the Quality of Education

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Abstract

The quality of education is influenced by many factors in it. These factors include students, school managers, educational environment, quality of education, curriculum, learning materials and so on. A good learning system will produce good quality education, then a good assessment system will encourage teachers to determine good teaching strategies and motivate students to learn better. In connection with that, the learning needs of teachers who are not only able to teach well, but also able to evaluate well. Evaluation is not only based on the assessment of learning outcomes, but also an assessment of input, output and the quality of the learning itself. Research instruments can be interpreted as a tool for collecting research data. Basically the research instrument consisted of tests and non-tests. Non-test instruments are testing instruments in addition to learning achievement tests. Assessment tools that can be used include observation or observation sheets (such as diaries, portfolios, life skills), attitude test instruments, interests, interview techniques, questionnaires, sociometry, case studies, and so on. In the development of non-test instruments that need to be considered are the steps to develop the instrument, the preparation of the non-test instrument grid, and the rules for writing instrument items. In this study will be explained in detail about the preparation of non-test instruments, scoring techniques and also the rules of writing a portfolio.

Keywords*: Education, Non test instruments, Test instruments, Research*

1. Introduction

The quality of education is influenced by many factors in it. These factors include students, school managers, educational environment, quality of education, curriculum, learning materials and so on (Widoyoko, 2012) [1]. Efforts to improve education can be pursued by improving the quality of learning and good management of evaluation systems. Both the quality of learning and the evaluation system are both related to each other [2]. A good learning system will produce good quality education, then a good assessment system will encourage teachers to determine good teaching strategies and motivate students to learn better. So this is where the role of learning management will determine how the quality of education will be produced for students (Mardapi, 2003) [3].

In connection with that, the learning needs of teachers who are not only able to teach well, but also able to evaluate well. This evaluation activity is part of a learning management program that needs to be optimized. Evaluation is not only based on the assessment of learning outcomes, but also an assessment of input, output and the quality of learning is also needed [4]. Research instruments can be interpreted as a tool for collecting research data. Basically the research instrument consisted of tests and non-tests. Examples include test instruments namely learning outcomes, intelligence tests, or aptitude tests. As for examples of non-test instruments such as interview guidelines, questionnaires, observation guidelines, check list (check list),

rating scales (rating scale), and so forth. In relation to education management, non-test

instruments that are often used in educational research include checklists, interview guidelines, observation guides and rating scales. Non-test assessment is an assessment that measures students' abilities directly with real or real tasks. The advantages of non-test instruments when compared to test instruments are their more comprehensive nature, meaning that these non-test instruments can be used to assess various aspects of individual management so that they are not only judging from the cognitive aspects but also assessed from the effective and psychomotor aspects assessed during the process learning takes place [5].

Guidelines for interviews and observations arranged systematically have similarities to questionnaire instruments. The difference between the three lies in the party who filled the instrument. The instrument in the form of the questionnaire that filled in was the respondent, in the structured interview guide that filled the instrument was the interviewer (interviewer) based on the answers given by the respondents, while the systematic observation guide that filled the instruments was the observer based on his experience in the object of research (Widoyoko, 2012: 101) [6]. Observation guidelines are good for measuring learning outcomes that prioritize professional appearance or skills in education management. Because generally learning outcomes that are skillful are difficult to measure with tests, other measurement techniques are used that can provide more accurate results. Non-test instruments can be arranged in the form of a check list so that the respondent, interviewer and observer can only provide a check mark on the available column in accordance with the actual conditions, both the condition of the respondent and the object observed [7].

2. Research methods

In this study used the literature study method. That is a method that is carried out by collecting or gathering several theories in the form of science that are sourced from previous studies and are relevant to the research being discussed in this paper. The following are 6 (six) lists of literature reviews used in this study:

1. Research conducted by Ade Nur, Euis Eti Rohaeti and Rippi Maya in 2018 entitled "Improving the Ability of Mathematic Connection and Self Confidence's Student of Junior High School Through Problem Based Learning". In their research they discussed the achievement and improvement of mathematical connection skills and students' self-confidence applied through a problem-based learning model. The main instruments they used in this study consisted of 2 (two) types of instruments namely test instruments and non-test instruments. The instrument in the form of a test is a set of test questions to measure students' mathematical connection skills. While the non-test instruments are in the form of a scale regarding students 'self-confidence, and the scale of students' opinions on problem-based learning management. In the research they did, it was shown that the achievement and improvement of mathematical connection skills and self-confidence of students who learned using problem-based learning management models differed from those in the normal learning model when viewed from the students' initial ability level. There is no interaction between the problem-based learning management model and the initial level of students 'ability to produce mathematical connections and students' self-confidence [8].

2. Research conducted by Herlina Ahmad in 2018 entitled "The Effectiveness of the Use of Kodama Teaching Aids in Working on Mathematical Problems in Material of Straight-Line Equations. In his research he discussed one form of method that is able to increase students' learning motivation by using props. Teaching aids or learning media are considered capable of training students in completing the responsibilities given by the teacher. When viewed from its role, the media or teaching aids in learning are to help the process of understanding concepts, to strengthen students 'memory of the concepts they learn, and to increase students' interest and appreciation of the concepts learned especially towards mathematics. In this study the data analyzed were data from test instruments that used descriptive statistical analysis techniques and inferential statistical analysis techniques [9]. While data from non-test instruments using questionnaire data analysis techniques responses of students and techniques of data analysis observation sheet activities of students.

Research conducted by Laela Vina Hari, Luvy Sylviana Zanthy and Heris Hendriana in 2018 entitled "The Effect of Self Efficacy on Mathematical Students' Critical Thinking Ability". The purpose of this study was to analyze and examine in depth about the effect of self efficacy on mathematical critical thinking skills of middle school students. The method in this study uses correlational with a quantitative approach that aims to find out by analyzing and examining in depth about the effect of self efficacy on the mathematical thinking ability of middle school students in the circle material. The instruments in this study used tests and non-tests. The test instrument was based on an assessment of mathematical critical thinking skills, while non-test instruments were based on evaluating students' self efficacy [10].

3.   Research conducted by Nerru Pranuta Murnaka and Sri Ratna Dewi in 2018 entitled "Application of Guided Inquiry Learning Methods to Improve Mathematical Concept Understanding Capabilities". In this study discusses the ability to understand mathematical concepts which is one of the abilities that must be possessed by students. This is because a concept that is understood will lead students to a meaningful learning management system process. The purpose of this study was to find out whether the average increase in understanding ability of mathematical concepts between students using the guided inquiry learning method was higher compared to students who used conventional learning methods. The instruments used in this study are test instruments and non-test instruments. The test instrument in the form of test questions about the ability to understand mathematical concepts and non-test instruments in the form of observation and documentation sheets [11].

4.   Research conducted by Nasution Annisa Nur Sholihat, Wahyu Hidayat and Euis Eti Rohaeti in 2018 entitled "Self-Esteem and Mathematical Reasoning of MTs Students". In their research they aim to analyze and examine in depth about mathematical reasoning abilities that are influenced by self-esteem of MTs students. The instruments in this study used test and non-test instruments. The test instrument is based on the assessment of good characteristics of mathematical reasoning abilities, while the non-test instrument is based on a good assessment of characteristics of student self-esteem. The test of mathematical critical thinking ability is 5 (five) items and the student's self-esteem scale is 30 (thirty) scale statements. The research data was processed and analyzed using regression statistical tests [12].

5.   The research conducted by Alek Pujiono and Ismet Basuki in 2018 entitled "Development of Learning Devices for Electric Motor Installation Problem Learning Model Base Learning Assisted by Electrical Control Techniques Simulator (EKTS) Software at Driyorejo Vocational High School 1". In their research they discussed the need for a strategy in the form of a practical and effective learning management tool in the implementation of the teaching and learning process, so as to improve the competence of students in the attitudes, knowledge and skills. This study aims to develop and determine the feasibility of the electric motorbike installation (IML) learning model (PBL) model assisted by electrical control techniques simulator (EKTS) software. In assessing competency students need instruments to measure competencies to be assessed. The instrument is divided into test instruments and non-test instruments [13].

From the six literature reviews above, it can be concluded that the use of test instruments and non-test instruments has now been widely used in testing in the world of education. The use of non-test instruments such as questionnaires, observation sheets (observation guidelines), as well as interview guidelines in research activities, especially education are widely used by students of educational departments, teachers, lecturers, and other education practitioners. Moreover, if the research done is qualitative research such as descriptive research, surveys, or classroom action research. In conducting good research, of course, you must use good and valid instruments. Good instrument preparation needs to be considered the validity of the instruments produced. Therefore, in the development process instrument validation is an activity step that must be considered by the researcher before using the instrument. It is expected that later when researchers understand in depth about the validation of non-test instruments, then when conducting research activities, especially in the field of education, the instruments used to explore the data are truly valid so that scientific data will be obtained.

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3. Result and Analysis

A. Preparation of Non Test Instruments

Non-test instruments are instruments other than learning achievement tests. Assessment tools that can be used in compiling these non-test instruments include observation or observation sheets (such as diaries, portfolios, life skills) and attitude, interest and other test instruments. In principle, the management procedure for writing items for non-test instruments is the same as the procedure for writing tests on the learning achievement test, namely compiling the test grid, writing items based on the content, reviewing, validating the test items, improving the items based on the results of the experiment. However, in the initial process before compiling the test grid there are differences in determining the validity of the content or construct. In textbooks, but for non-test the validity of the content or construct is obtained through "theory". Theory is an opinion expressed as an explanation of an event or event.

Observation is an assessment tool that is carried out by educators on the basis of observing the behavior of students in accordance with the competencies to be measured. Observations can be made using, among others, observation sheets for portfolio assessments and life skills assessments [14]. The implementation of attitude observations can be done by the educator before teaching, while teaching, and after teaching. Minimal behavior that can be assessed by observing behavior or character such as students, for example, obedience to religious teachings, tolerance, discipline, responsibility, love, mutual cooperation, solidarity, respect, courtesy and honesty (Wahidmurni, 2010) [15].

Basically in a particular study, researchers must follow the steps of management of instrument development which include (1) defining variables, (2) describing variables into more detailed indicators, (3) compiling points, (4) conducting trials , and (5) analyze validity (validity) and reliability (reliability). The explanation is more detailed about the steps for the preparation and development of instruments which include (1) synthesis of theories in accordance with the concept of variables to be measured and constructing variable constructs, (2) developing variable dimensions and indicators according to the formulation of variable constructs, (3) make an instrument grid in the form of a specification table containing dimensions, indicators, item numbers and number of items for each dimension and indicator, (4) determine the quantity or parameters that move within a continuum range from one pole to the other opposite pole, (5) writing instrument items both in the form of questions and statements, (6) items written theoretically validated and empirically, (7) the first validation is theoretical validation taken through examination of experts or panelists who assess how far the accuracy of dimensions is as a description of the construct , an indicator as a description of dimensions and an item as a description of the indicator, (8) revised instrument based on expert advice or panelist assessment, (9) after the instrument concept is considered valid theoretically, it is continued with limited multiplication of instruments for testing purposes, (10) the second validation is the testing of instruments in the field that are part of the empirical validation process. The instrument is given to a number of respondents as samples that have the same characteristics as the population you want to measure. Respondents' answers are empirical data which are then analyzed to test empirical validity or criteria validity of the instruments developed, (11) testing the validity of criteria or empirical validity can be done using internal criteria and external criteria, (12) based on these criteria which items can be obtained valid and which items are invalid, (13) for the validity of internal criteria, based on the results of analysis of invalid items issued or revised to be tested again so as to produce all valid items, (14) calculated reliability coefficients that have a range of 0-1, the more the high coefficient of instrument reliability means that the quality of the instrument is getting better and (15) assembling all the items that have been made into the final instrument.

B. Preparation of Non Test Instrument Grids

In a non-test grid, the format usually contains indicator dimensions, number of items per indicator and item number. The format is like in the following table.

Table 14.1. Format of Preparation of Non Test Instrument Grids

No	Dimension	Indicator	Number of Questions per Indicator	Question Number

To fill in the dimensions and indicator columns, the question writer must know in advance the construct validity that is compiled or formulated through theory. The easiest way to get a theory is to read several books, research results, or look for other information related to the desired variable or test purpose [16]. Therefore, students or respondents who want to do this test (non-test instruments) do not need to prepare or study the material they want to test beforehand such as on the learning achievement test.

After the theory is obtained from various books, the next step is to conclude the management theory and formulate and define (i.e. definitions of concepts and operational definitions) by using their own words based on the opinions of experts obtained from several books that have been read. The definition of the theory formulated is what is called construct management. Based on the formulated construct, the next step is to determine the dimensions (the theme of the object or the main things that are the center of the theory review), indicators (description or details of the dimensions to be measured) and the writing of items based on the indicators [17].

(1) Rules of Question Writing
In writing questions on the method of this non-test instrument, the author of the item must pay attention to the provisions and rules of writing. The rule is like this:

a. Material
- The statement must be in accordance with the formulation of indicators in the grid.
- Aspects measured in each statement are in accordance with the demands in the grid (for example, for attitude tests: aspects of affective cognition or conjunction and positive or negative statements).

b. Construction
- The statement is formulated briefly (not exceeding 20 words) and is clear.
- The sentence is free from statements that are not relevant to the object in question or the sentence is just a statement that is needed.
- The sentence is free from multiple negative statements.
- The sentence is free from statements that refer to the past.
- The sentence is free from statements that can be interpreted as facts.
- The sentence is free from statements that can be interpreted in more than one way.
- The sentence is free from statements that may be approved or emptied by almost all respondents.
- Each statement contains only one complete idea
- The sentence is free from uncertain statements like all, as always, sometimes, none, never.
- Don't use a lot of words just, simply, just use them as needed.

c. Cultural Language
- The language written on the question must be communicative language and in accordance with the education level of students or respondents.
- The question must use standard and correct Indonesian.
- The question is not to use local or taboo language.

(2) Examples of Writing Non Test Lattices and Question Items

In this section, there are some examples of writing grid tests and writing simple items. The main goal is for these examples to be easily understood by educators in schools. Examples to be presented are writing grids and items for tests of attitude scale, interest in learning tests, achievement motivation tests and creativity tests [18]. For other non-test examples, educators can arrange themselves the turtle process the sunan is the same as the example here.

(3) Attitude Scale Test

Various definitions of management attitudes that have been put forward by experts, including Mueller who delivered 5 (five) definitions of the opinions of 5 (five) experts are as follows. Attitude is affection for or against, evaluation of, likes or dislikes, positive or negative responses to a psychological object (Thurstone). Attitude is the tendency to act in the direction of or against an environmental factor (Emory Bogardus). Attitude is mental or nerve preparedness (Goldon Allport). Attitude is consistency in response to social objects (Donald Cambell). Attitude is a hidden response caused by a value (Ralp Linton).

(4) Learning Interest Test

Interest is the awareness that arises that certain objects are very favored and give high attention to individuals to these objects. Besides that interest is also the ability to provide a stimulus that encourages someone to pay attention to activities carried out based on actual experience [19]. Therefore, the operational definition of learning interest is the choice of pleasure in carrying out activities and can arouse someone's passion to fulfill their willingness which can be measured through joy, interest, attention and involvement.

The following is an example of writing a grid and a matter of interest in learning Indonesian literature.

Table 14.2. Examples of Lattice Interests in Learning Indonesian Literature

No	Dimension	Indicator	Question Number
1.	Passions	Passion Initiative	8, 13 16, 17
2.	Interest	Responsive Immediacy	10, 15, 20 2, 6, 9
3.	Attention	Concentration Accuracy	7, 19 3, 10
4.	Involvement	Will Tenacity Hard work	4, 5 1, 18 12, 14

Table 14.3. Examples of Items About Interest in Learning Indonesian Literature

No.	Statement	SS	S	KK	J	TP
1.						
2.	I immediately did homework on literature before another job arrived.					

| 7.. | I am absorbed in my own thoughts when educators explain literature in | | | | | |

	class.					
16.	I like reading literature.					
20.	……….					

With Remarks:
SS = Very Often, S = Often, KK = Sometimes, J = Rarely, TP = Never.

(5) Achievement Motivation Test

The definition of management is the concept of achievement motivation is motivation that encourages students to do better than what has been made or achieved before and what others have made or achieved [20]. The definition of operational management achievement motivation is a motivation that encourages someone to do better than what was previously made or achieved or made by someone else that can be measured through: (a) trying to excel in the group, (b) completing the task well , (c) rational in achieving success, (d) likes challenges, (e) accepts personal responsibility for success and (f) likes work situations with personal responsibility, feedback, and intermediate risk.

Table 14.4. Examples of Grid Preparation for Instrument Achievement Motivation Variables

No.	Indicator	Statement Positive	Statement Negative	total
1.	Trying to excel	1, 2, 3	4, 5, 6	6
2.	Complete the task well	7, 8, 9	10, 11, 12	6
3.	Rational in achieving success	13, 14, 15	16, 17, 18	6
4.	Likes a challenge	19, 20, 21	22, 23, 24	6
5.	e successful personal responsibility	25, 26, 27, 28	29, 30, 31, 32	8
6.	Love work situations with personal responsibility, feedback, and intermediate risk	33, 34, 35, 36	37, 38, 39, 40	8
	Number of Statements	20	20	40

(6) Creativity Test

Creativity is the management of thought processes that can be used to solve problems or answer questions correctly and beneficially. Besides that creativity is also a management ability of divergent thinking that reflects fluency, flexibility and originality in the thought process [21]. The characteristics of creativity are related to imaginas, originality, divergent thinking, the discovery of things that are new, intuition, things that involve change and exploration. The design of the creativity test consists of two sub tests, namely in the form of images and verbals, each of which has fluency, flexibility, originality, and elaboration. There are three uses of

creativity tests, namely to identify creative gifted students, for research purposes, and for counseling purposes [22]. Based on some opinions of experts, the conceptual definition of creativity is the management ability of divergent thinking that has properties (can be measured through) fluency, flexibility, authenticity, elaboration, and the results can be useful for certain

purposes. From the results of defining this construct, the grids can be arranged as in the example table below.

Table 14.7. Example of a Grid of Questions on Creativity Tests

No.	Test	Indicator	Question Number
1.	Verbal	a. Smoothness b. Flexibility c. Authenticity d. Collaboration	1,2,3,4,5,6,7,8,9,10 11,12,16,18,19,20 13,14,15,17,21 22,25,26,28,29
2.	Picture	a. Smoothness b. Flexibility c. Authenticity d. Collaboration	23,24,27,30,31,32 34,36,37,39,40 33,35,38,41,42,43 44,45,46,47,48,49,50

Scoring for each of the indicators above uses a scale of 0 - 4. For example the indicator of "fluency", score: 4 = very smooth, 3 = sufficiently smooth, 2 = substandard, 1 = not smooth, 0 = no answer. For the "flexibility" indicator, the score: 4 = very flexible, 3 = quite flexible, 2 = less flexible, 1 = inflexible, 0 = no answer, and so on.

(7) Learning Stress Tests Facing Exams
The definition of the concept of learning stress is a management of strength and response conditions as an interaction in a person as a result of being confronted with an opportunity, obstacle, or learning demands associated with what is highly desirable and the results perceived as something uncertain or important (Wahidmurni, 2010). The operational definition of stress learning is a condition of strength and response as an interaction in a person as a result of being confronted with an opportunity, obstacle, or learning demand that is associated with what is highly desirable and the results are perceived as something uncertain or important that can be measured through: (a) psychological responses such as feelings of anxiety, worry, fear, displeasure, feeling disturbed, and out of control. (b) physical responses such as fatigue, palpitations, pain, and disturbed blood pressure. (c) perceptual responses such as beliefs.

C. Accounting Technique
One of the management activities of writing items is scoring technique. Scoring is a process of measuring test results or instrument answers into numbers which are quantitative values of an answer to an item in the instrument. So it can be interpreted that scoring is a quantification of the answer to the instrument [23]. By giving a score a description of the value or price of a variable can be obtained for each unit of analysis in the study.

D. Sociometry Scale
Sociometry is the right tool for assessing social relationships and social behavior of students in a class, which includes the management structure of individual relationships, management arrangements between individuals and the direction of social relations [24]. So that a teacher can find out how the state of social relations of each child in a group or class. The steps taken by the teacher in sociometry are (1) the step of selecting friends. Here the teacher tells all students to choose their friends who are liked in sequence by one or two children. In

choosing his students, it is necessary to mention the reasons for choosing his friend. (2) steps for making pictures (sociogram). From the data we have made in sociometric metrics, we can also make a map or sociogram [25]. In making sociograms, try to have the most chosen children put in the middle so that they can easily find out who is the most chosen.

By looking at the results of sociometry we can find out how the position and social relations of each child in the group. So the results of this sociogram can be considered to assess the child's social attitudes and personality in a group. Sociometry can be said as a management of non-test assessment tools that are very useful for teachers in several ways, including (1) for group formation in determining work groups (division of tasks), (2) for directing group dynamics, and (3) for improving relationships individuals in groups and provide guidance to each child.

E. Portfolio Based Assessment

A portfolio is a collection of management work for students with specific and integrated intentions that are selected according to established guidelines. Portfolio assessment is a continuous assessment based on a collection of information that shows the development of students' abilities in a given period. The information in question can be in the form of students' work from the learning management process that is considered the best by students, test results (not values) or other forms of information related to certain competencies in one subject. Portfolio assessment basically assesses the work of students individually in one period for one subject. At the end of a period the results of the work are collected and assessed by the teacher and the students themselves. Based on information on these developments, teachers and students themselves can assess the development of students' abilities and continue to make improvements [26]. Thus, portfolios can show the development of learners' progress through their work, including essays, poems, letters, compositions of music, pictures, photographs, paintings, book reviews or literature, research reports, synopsis, and so forth.

In general, the assessment of this portfolio can be divided into 2 (two) forms, namely the process portfolio and product portfolio. Student portfolio for assessment is a collection of student productions that contain various types of students' own work such as the results of practice reported in writing, pictures or reports of student observations relating to subjects, situation analysis, description and diagram solving problems, solving questions , the results of homework assignments, group work reports, work results obtained using recording tools (video, audio, and computers), and stories about self-efforts in overcoming psychological barriers or self-improvement efforts in studying certain subjects and reports on student attitudes towards lesson. The portfolio contains a variety of management tasks, including: raw drafts, grades, papers, workpieces, criticisms and summaries, self reflection sheets, homework, journals, group responses, charts, note sheets and discussion notes. There are several things that need to be considered and used as guidelines in the use of portfolio assessments in schools including (1) student work is truly the work of the students themselves, (2) mutual trust between teachers and students, (3) shared confidentiality between teachers and students, (4) joint ownership, between students and teachers, (5) satisfaction, (6) conformity, (7) assessment of processes and results, **(8)** assessment and management of learning.

Portfolio assessment is inseparable from the learning management process. The main benefit of this assessment is a very meaningful diagnostic for teachers to see the advantages and disadvantages of students [27]. Benefits of portfolio assessment include (a) can provide a complete picture of the development of students' abilities, (b) is an authentic assessment, (c) is an assessment technique that can encourage students to achieve better and more perfect results, can learn optimally without feeling depressed, (d) fosters student learning motivation, and (e) encourages parents of students to be actively involved in the process of managing student learning. Furthermore, it is also said that the principles that must be considered in portfolio assessment include mutual trust, openness, confidentiality, shared property, satisfaction, suitability, culture of learning, reflection and process and outcome oriented.

4. Conclusion

Non-test instruments are test management instruments in addition to learning achievement tests. Assessment tools that can be used include observation or observation sheets (such as diaries, portfolios, life skills), attitude test instruments, interests, interview techniques, questionnaires, sociometry, case studies, and so on. In the development of non-test instruments that need to be considered are the steps to develop the instrument, the preparation

of the non-test instrument grid, and the rules for writing instrument items. Examples of writing non-test grids and items are tests of attitude scale, learning interest test, achievement motivation test, creativity test, learning stress test, and exam.

Scoring techniques a process of measuring instrument answers into numbers which are quantitative values of an answer item in the instrument. So the scoring is the quantification of the respondent's answer to the given instrument. Sociometry is the right tool for assessing social relationships and social behavior of students in a class, which includes the structure of individual relationships, the arrangement between individuals and the direction of social relations. So that a teacher can find out how the state of social relations of each child in a group or class.

Portfolios are a collection of work for specific and integrated students selected according to established guidelines. These guidelines vary depending on the subject matter and the purpose of the portfolio's own assessment. In general, portfolio valuation can be divided into 2 (two) forms, namely the process portfolio and product portfolio. As an assessment instrument, the portfolio is focused on productive student work documents, as evidence of what students can do. Non-test assessments are still rarely used in assessing teaching and learning outcomes, even though the results of the assessment data through these tools are no less meaningful compared to the assessment data obtained through learning outcomes tests.

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