

Date : 10/09/2020

Manuscript ID: IJMPERD-REG.01.03.00021

Manuscript Title:

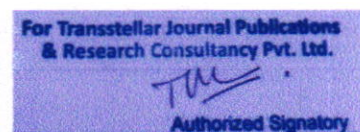
"ASSESSMENT PRACTICES IN LEARNING MATHEMATICS"

AUTHORS: Ellis Mardiana^{1*}, Feri Haryati¹, Sri Wahyuni²

has been accepted for publication in "International Journal of Mechanical and Production Engineering Research and Development (IJMPERD) Journal with ISSN (Print): 2249-6890; ISSN(Online): 2249-8001; Impact Factor (JCC): 8.8746; NAAS Rating: 3.11; IBI Factor: 3.2; ICV 2015:60.6. Your paper will be published in a forthcoming 2020 edition.

ACCEPT WITH MINOR REVISIONS	REVISIONS REQUIRED	REJECTED
--------------------------------	--------------------	----------

With Warm Regards,



Associate Editor
TJPRC Pvt Ltd.

International Marketing and Distribution Offices:

International Journal of
Mechanical and Production...



Mr. Jean, Lori,
Regional Director - West USA (Marketing),
701 Gibson Drive,
Apt. No. 1912,
Roseville,
CA - 95678
U.S.A

ASSESSMENT PRACTICES IN LEARNING MATHEMATICS

ELLIS MARDIANA, FERI HARYATI & SRI WAHYUNI

Mathematics Education Study Program, Faculty of Teacher Training and Education Universitas Muhammadiyah Sumatera Utara

ABSTRACT

As part of learning mathematics, assessment provides a very significant contribution to the quality of learning. Assessment provides information about the progress that students have made. This moment is an opportunity for students to show what they know and what students can do. This study aims to describe the mathematics learning assessment conducted by lecturers in the Mathematics Education Study Program. This study will reveal the forms and types of mathematics learning assessment instruments prepared by mathematics education study program lecturers, the appropriateness of the assessment with ideal mathematics learning assessment principles and the factors that influence the lecturer in assessing mathematics learning. For this reason, a descriptive exploratory research method is used which is pursued with qualitative assistance with quantitative descriptive statistics. The research subjects were lecturers who taught at the mathematics education study program. The data collection techniques used were documentation and in-depth interviews.

KEYWORDS: *Assessment & Mathematics learning*

INTRODUCTION

As part of assessment learning mathematics provides a very significant contribution to the quality of learning

Assessment provides information about student progress, how and to what extent the mastery and abilities students acquire after studying a mathematical material. From the student side, this assessment activity is an opportunity to show what is known and what can be done.

Therefore, the content and form of the mathematics learning assessment instrument must directly communicate to students, learning activities and learning outcomes that are important and valuable. This means, how learning is assessed must be congruent with the method and emphasis of learning. If the assessment includes a variety of forms and the information gathered comes from different sources, then the concept of convergence of information appears to be more applicable than

The concept of reliability. If the assessment includes a variety of forms and the information gathered comes from different sources, then the concept of convergence of information appears to be more applicable than the concept of reliability. This means that the assessment uses a number of techniques to measure the achievement of their understanding, such as tests, homework, assignments, interviews and observations, student writing and others.

Assessment of mathematics learning involves activities based on appropriate and important mathematics. Activities that give students the opportunity to formulate problems, think mathematically such as problems, communication, reasoning and analysis of concepts and procedures. Students are also involved in solving realistic problems using the information available in everyday life.

Assessment has not been integrated into the overall education quality development process. The mismatch between the measurements carried out by the teachers in the ideal classroom is demanded by the curriculum. This is supported by Wagiran (2013) that

"Lecturers have to expand their conception of results. That there are a large number of important types of student learning that are not measurable through written tests that have been widely practiced so far".

Many lecturers view the role of assessment in learning as a separate activity. The assessment is carried out at the end of the learning activity and is only associated with measuring learning outcomes and is carried out uniformly. Such a measurement perspective is currently incompatible with learning activities. The findings of Pantiwati (2013) regarding the profile of the assessment system by lecturers show that the objective form of written tests dominates the instrument of measuring learning outcomes. Another finding, student responses support the form of written tests compared to other forms of assessment, students do not like assessment through critical analysis of articles which require students to think at a higher level and do not like assessment in the form of portfolios.

writing skills are not relevant to the topic to be measured. It is different if writing is an aspect of assessment.

Atkin, Black, & Coffey (in Pantiwati, 2013) that "there are several priorities in educational reform, such as a) scientific inquiry in the content and learning approach, b) assessment to improve the learning process, c) the role of technology in the curriculum, d) selection and identification of effective learning materials in accordance with established standards, and e) developing a coherent educational program for all levels of education".

In the context of mathematics, Webb (1992; 662) defines mathematics assessment as "the process of obtaining information about students' understanding of mathematical concepts, determining student attitudes and beliefs as long as students generally have a willingness to do mathematics". So, mathematics assessment can be defined as the process of gathering information about students' understanding of mathematical concepts and based on these facts to make conclusions.

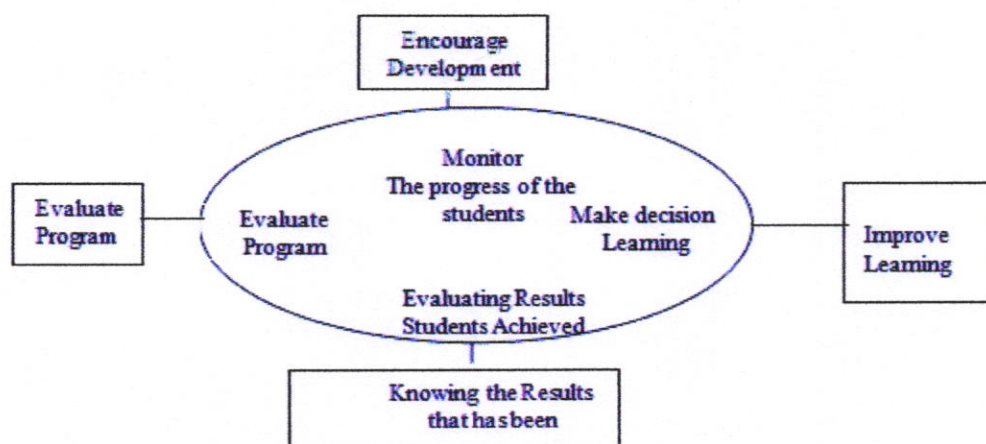


Figure 1: Assessment Objectives and Results(NCTM,1995: 25)

The importance of constructing a good test was stated by Popham (1995: 1) that "teachers who can make good tests will be better teachers and even effective tests enhance the effectiveness of learning". In the teaching and learning process,

a valid or valid form of assessment is one that measures what should be measured, for example: 1) If what must be measured is problem solving, do not measure memory and vice versa; 2) Do not judge someone about the quality of their writing, if

The focus of obtaining evidence and making conclusions emphasizes the process that describes what mathematics is known, valued and can be done by students. In the assessment, there is also a consideration to grading.

Webb (1992: 663) states various assessment objectives as previous.

The first is to be used as a tool for teachers to provide guidance and feedback on what students know and can do. Second, to describe what is valued with regard to what students know and believe. Third, provide information to decision makers and others. Fourth, provide information about the effectiveness of the education system as a whole.

The above objectives along with the activities that result from the assessment data associated with each assessment objective, can be described as follows.

If students feel that the exam will require problems or analysis, they will practice these skills. Second, clues hints to students about which topics or skills they have not mastered and which they should reveal. Tests help teachers find mistakes and misunderstandings of students and adapt them to improve learning. Fourth, exams help teachers document whether students learn what they are expected to do.

Exams or tests as a form of assessment, can be given at the beginning of learning. One of the goals is to determine the readiness of students needed in the learning that will take place. This test is no different from the test used to measure learning outcomes. While tests are designed to measure the final outcome in a lesson, the equivalent can be given at the beginning of the lesson to measure how far students have achieved learning goals.

The tests given during the lesson are the basis for the midterm assessment. The goal is to monitor learning progress, detect errors in learning and provide feedback to lecturers and students. This objective indicates that assessment becomes a form of communication that conveys messages from lecturers to students about what needs to be known. Such tests are usually referred to as exercises, quizzes, subject-to-matter tests and so on. A combination of tests and other forms of assessment should be chosen to ensure that the overall learning objectives are assessed. Ideally, assessments and tests are structured so that they can be used as correction material for unattainable goals.

At the end of the lesson, the main concern is measuring the learning outcomes that have been achieved. Another function of the final test is as feedback for students, providing remedials and grading. In fact, it can also function well as a pre-test for the next unit of discussion (if the next subject is advanced). The use of assessments and tests for grading, provides information to evaluate the effectiveness of learning. Even the results of these assessments are used as a basis for making decisions about the effectiveness of education programs in general.

A well-designed test or exam has four functions (Davis: 381). First, the test can motivate students and help them organize their academic endeavors. Martinez at all (in Davis: 381) states that students learn in ways that reflect their thoughts about how they will be tested. If they feel that the exam will focus on facts, then they will memorize the details.

The principle of assessment in mathematics learning, stated by Billstein (1998: 282) is as follows.

- Assessment should enhance learning as the main goal,
- Making student achievement documents should be an integral part of the learning process, not just as an addition.

- Assessment should involve the active participation of students in open problems.
- Assessment should reflect real-world applications.
- The assessment should allow the use of technology.
- Assessment should use a variety of methods.

Several forms of mathematics learning assessment used are tests, homework, investigations, interviews and observations, student writing and student portfolios.

Tests can be a reliable source of information for making decisions about learning. This relates to the usefulness of the test, namely determining how far students have learned, identifying students with special needs, selecting students for special programs or opportunities, determining the effectiveness of learning and making learning easier. For mathematics tests, Silver and Kilpatrick (in Owens, 1993: 301) recommends using tests that (a) measure the ability to recognize problems similar to the structure of mathematics, (b) open questions and which require students to generate conjectures, and (c) want students to develop a mathematical model suitable for expressing a situation. Tests like this can be, asking students to analyze, explain and make assumptions, not only solving, finding or calculating.

Mc Greal & Walberg (in Kauchak & Eggen, 1993: 412) in their research found that the use of homework as an assessment instrument has a positive effect on learning. Therefore, in learning mathematics students need to be given the responsibility of doing homework and given an understanding that homework is important to hone their understanding of mathematical concepts or principles that they already have.

Investigative techniques involve students as a group to work on various math tasks. This type is suitable for measuring how students can help each other to achieve learning goals.

The teacher's task in this investigation is more complex, not only giving a score based on the correct answer but also planning a form of observation list that can record student work information. This form can be in the form of anecdotal notes of observations regarding the ability to work together, the depth of understanding key mathematical concepts, the feasibility of group conclusions, the strengths and weaknesses of student presentations, and others.

Understanding mathematics can be obtained by conducting formal interviews with students or observing them in individual or group work situations. In this interview activity, a math assignment is given and students are asked to complete the task. Questions related to the assignment can be given and the workings observed. This description of students' understanding of mathematics can be written and placed in an archive.

Student writing is another technique for assessing students' mathematical understanding is writing. Students can be asked to write math journals regularly. Through this collection of journals, a broader understanding of what and how individual students think about mathematics can be obtained. Another advantage is whether there is a misconception in the class that needs to be resolved.

A student portfolio is a collection of student work, namely a series of performances or their work from time to time. A portfolio is more than just a folder where your work is stored. The portfolio contains selected examples of student work to show their progress in achieving certain curriculum goals (Arisian, 1994: 263). Meanwhile, Popham (1995: 163) states that a portfolio is a systematic collection of one's work results. Its use is intended to show broader results regarding the

understanding of mathematics that students have and show the growth of their understanding over time.

There are characteristics and categories of questions compiled by Senk and friends which are based on the Evaluation Standards and School Mathematics Curriculum by NCTM. The characteristics stated were (a) the format of the test items with the answer category given and the answer not given; (b) skills with yes and no categories; (c) low category level and others; (d) realistic context with yes and no categories; (e) requires reasoning with yes and no categories; (g) the role of diagrams with interpretive categories, redundant (not required to answer questions), making and non-existent; (h) use of technology that is categorized as active, neutral and inactive.

So that the purpose of this study is

- Exploring the forms and types of assessment instruments prepared by the lecturers of the mathematics education study program in assessing mathematics and learning, and
- Exploring the factors that become the background of the lecturer in conducting the assessment

METHOD

The approach taken is a qualitative approach assisted by a quantitative approach. A qualitative approach was taken to describe the form and type of assessment instruments prepared by the lecturers of the mathematics education study program in assessing mathematics learning and the factors that influence the lecturers in assessing mathematics learning. A quantitative approach was taken to describe the percentage of item usage based on the characteristics and category of the test item format based on Senk.

RESULTS

Characteristics of Assessment Instruments

The summary of the results of the identification of test items at mid-semester and at the end of the semester compiled and used by lecturers during the 2018/2019 academic year to 2019/2020 is identified and arranged in a table. The tests that are identified are those that are compiled and used in the middle and end of semester examinations for the 4 semesters. Because it includes a midterm test, there are 8 documents for each course that each lecturer can identify during the semester. On average, lecturers manage more than two courses.

The characteristics of the test item format found were overall in the category of not given answers. For all subjects, the test items used for 4 semesters (8 times in midterm and final semester exams) are consistent in the form of descriptions. Some of them require long answers.

Most of the questions on the test are in the low order thinking level. If it is related to Bloom's Taxonomy, the cognitive level in general is at C1 to C3.

Very few questions in realistic contexts are found. There are almost no questions that relate mathematics to contexts in fields outside mathematics.

Very few test items ask students to prove a theorem or ask students to provide arguments in support of the truth of a statement. Tests that ask students to prove propositions or theorems or tests that fall into high-level categories are found in highly abstract subjects such as real analysis, algebraic structures and advanced linear algebra.

The findings also show that the effect of technology on assessment is very less. The use of technology such as calculators is found in test items for several subjects such as statistics, numerical methods, evaluation of mathematics learning and computer application programs. Also, the use of Geogebra in field analytic geometry in drawing graphs of parabolas, ellipses and hyperboles.

Questions that are open in form (open response) are hardly found in mathematics courses. The use of this question is only found in mathematics education research subjects, curriculum studies and mathematics learning planning, mathematics learning strategies and mathematics education problem studies.

There were no test items found in the category of interpreting graphs or diagrams. For this characteristic, several test items by category create a graph or diagram. Visual representations, in particular making graphs, are found in the courses of economic mathematics, field analytic geometry and spatial analytic geometry

Forms of Assessment Used in Classroom

1. Test

The test referred to here is the initial test, quiz, midterm and final test.

In general, the initial test is used to determine the student's initial ability before lecturing for the purpose of learning to be carried out. Related to this, several lecturers said something similar as follows.

"The initial test is important to determine the extent to which students know the mathematical material to be discussed"

"I started the lecture by telling the students the learning objectives. Then ask them directly or verbally, what they know about the concepts to be discussed. This will immediately tell where to start the discussion about the mathematical concepts to be discussed".

"The purpose of giving the initial test is important. This test aims to determine whether there are misconceptions among students".

Regarding the quiz, which is a very short exam, the results of an interview with a lecturer stated the following.

"To motivate students in understanding the lecture material, at the end of each material one subject is completed, a quiz is held in class. The duration is quite short, which is 15 minutes. This quiz aims to find out whether students have correctly understood the concepts discussed in the lecture session".

2. Student's Journal

The student journal referred to is the assignment report, report material, journal report and mini research. This form of assessment is the form required by the University. Each task contains a learning objective, a description of the tasks that must be done and the criteria used to score the assignment. Some of these tasks are done independently or in groups. However, researchers wanted to know how and why these tasks were used. The following are the results of the interview.

"This is a mandate from the University, so it must be done. I assign students to do mini research".

"At the first meeting of lectures, I submitted assignments that students had to do in one semester. Some of these tasks are done individually and some are done in groups. These assignments are designed before the semester lectures take

place ”.

“Journal report train students to find information, train accuracy and hone students' critical thinking skills in reviewing a journal ”.

“The report material aims to develop students' literacy skills. In this assignment students can convey information on the results of systematic observations and analysis. Students explain the details of an object including the description of the object, both physical and non-physical, from scientific facts about the object ”.

When asked about the purpose of using this form of assessment, one of the lecturers stated the following.

“With this report material, it can be seen whether there is a misconception in class that needs to be resolved. If this misconception occurs then it can be corrected at the next meeting ”.

“Mini research places social reality as the object of study and students are expected to be able to find the main issue and then formulate findings to formulate alternative solutions in addressing social problems. There are many realities related to mathematics education problems that can be used as study material by students ”.

All of these tasks can certainly be categorized as a question with a higher level than the questions given in the test. Some of them are questions in the open response category.

3. Observation

In general, lecturers said that observations were made throughout the learning process.

The following are the results of the interview with the lecturer

““To activate students, 15 minutes after lectures take place, I usually ask students

to answer questions or complete questions on the blackboard. Other students looked at the work process and results. Then the answer or solution to the problem is discussed together in class ”.

“During the lecture process, observations are always made. Given a math problem then students are asked to work on solving the problem on the blackboard. At that time, students' skills in applying the principles were directly observed ”.

“When students work on problems in class, I always observe how the students work and their participation in class. I wrote down the results (while showing the notes) ”.

4. Homework

In general, after learning each subject is completed, for reinforcement, students are asked to work on questions that have been compiled by the lecturer who teaches courses or questions that are sourced from the teaching materials used in lectures. The following is the reason for using this assessment instrument, which was stated by a lecturer.

““Homework really needs to be given to students. The goal is to reinforce the concepts that have been learned and discussed in class ”.

Factors Affecting Teachers to Conduct Assessments

The results of the analysis of the test items compiled by the lecturers showed that the nature of the subject matter in the subject matter greatly influenced the test items prepared by the lecturer. The test items prepared by the teachers are for highly

abstract subjects, the test items consistently demand higher-order thinking skills or are categorized as requiring reasoning. Other factors that influence the assessment are confidence and knowledge about the assessment and the time it takes to compile and review the results of the assessment.

1. Tests sourced from reference books

The lecturers were asked to identify the sources they used in compiling tests and other instruments. Some of them stated that the main source in compiling the test was the practice questions given in class. Five teachers stated that they were the main source in compiling the test and as far as possible saw the test from the reference book with some modifications. The other four states that the main source is from reference books. Some claim to take it from the internet.

The teacher who used the practice questions as the midterm and end of semester tests stated the reasons as follows
 “My time is limited. So I took the test from practice questions to be tested in the middle and end of the semester”.

Lecturers who modified the test from the book and who compiled the test themselves gave the following reasons.

“Maybe not all is done well. The emphasis of the assessment is still attempted with various assessment techniques. These techniques include written, spoken and others. We haven't done exactly this because of time constraints”.

“I feel that what I have done is enough, especially what the decision maker suggests. Although it still needs improvement. After this, it will be adjusted to the recommended things”.

“Indeed, the test items that I constructed need more variety. I have used too many text book-sourced tests”.

3. Time

“For the initial test, I compiled the same problem as the one in the text book”.

“For midterm and semester exam items, I quote from text book. Some were modified from the questions that had been their assignment, there were difficult items aimed at smart students with a small percentage. That way most students will be able to answer it”.

When asked whether the same test items were used in previous years, the lecturers stated “no”.

2. Philosophy and Knowledge About Assessment

All lecturers know and understand assessment techniques. Some stated that they had attended training related to mathematics learning assessment.

Actually, all lecturers are familiar with the assessment aspects well. Regardless of that introduction, when it was shown several things in the mathematics learning assessment that might be updated and things that needed to be minimized, each lecturer supported the recommendation.

When asked to describe the assessment activities carried out in class, they answered that some progress was made toward implementing these recommendations as stated by several lecturers.

The lecturers were asked about the time required to construct midterm exam questions and final semester exam questions. Most answered by giving time intervals of 1 to 3 days per course. In general, lecturers take a long time to assess and score. Meanwhile, the Faculty gives a time limit for that for 1 (one) week after the course is tested. Some lecturers report

that the time needed to grade assignments takes 1 to 2 weeks. Scoring the tasks takes longer than constructing the test.

DISCUSSIONS

The fact is that all tests constructed by the lecturers are in the form of descriptions. This is an option because it can better show the depth of student understanding so that lecturers can observe students' thinking steps in solving test questions. Besides having advantages, the essay exam has the limitation that it only covers a few questions. This can lead to low content validity. Reliability can also be reduced if there is subjectivity or inconsistency in the assessment.

For this reason, multiple choice questions need to be considered. Like a test in the form of a description, this test has advantages and disadvantages. The advantage is that it can cover more material. Although, multiple choice questions do not reflect the authentic mathematical context of assessment, multiple choice questions can be developed provided that these items can reveal an understanding of the mathematical ideas needed and integrate more than one concept. Questions like these need to be designed that only take about 2 or 3 minutes to solve.

Most of the lecturers give a quiz at the end of each lecture unit. Their reason is that quizzes motivate students to be involved in every lesson in class and help students monitor their learning progress. Students get an overview of the types of questions that will be encountered on the midterm and final semester exams.

Several test items constructed by several lecturers asked students to solve certain problems that referred to the use of a method. For the purpose of understanding and skillfully using the method, it is very good. But for the purpose of increasing and developing student mastery of the concept is not quite right. Problems like this will shackle student creativity in developing the understanding they already have.

Most of the test items emphasize low-level thinking with easy answers. This question can be answered in two or three steps. Items like this provide opportunities for students to succeed and demonstrate the knowledge they have. Even if later on to do more complex tasks they have to try harder. Short-answered questions have the potential to make it easy to decide on unfinished learning objectives, so that appropriate remediation can be determined.

For some purposes, low level questions are important and needed. After that, students are expected to be able to connect ideas and expand their thinking. For that the role of items with high level questions is required. High-level questions require students to do intellectual processing. In a low-level test, students who have the potential for high-order thinking skills do not have the opportunity to show their abilities, and even that potential does not develop. For example, by asking students to correct a set of answers in the form of descriptions. Answers to questions are provided. The answer contains common misunderstandings or correct but incomplete answers or illogical inferences. In a test in the form of a description like this high reasoning will develop well.

There was very little use of questions in a realistic context. Whereas the basis of authentic assessment is evaluating the ability of students to apply what has been learned in mathematics to the real world context. Authentic assessment mathematics tests focus on analytical skills and the ability to integrate what is learned along with creativity and skills. The results of the group project's collaborative efforts were also assessed. It is not only learning the calculation process that is important to know, but also how to take the finished product and apply it to other situations.

Then, the use of technology such as calculators and computers in mathematics learning assessment should be a necessity. Computers have changed not only in terms of what mathematics is required, but also in how mathematics is done.

It must be realized that in the world of mathematics education, the presence of computers and calculators, presents a new challenge to how mathematics is done.

Test items in the form of open answers are hardly found in mathematics courses. Even though with an open assignment like this, students will explain or prove the answer. Lecturers will know their thinking or reasoning process. Student explanations or proof of their work will include descriptions, mathematical statements, drawing diagrams, graphs and even some other form of mathematical communication presented on paper.

During this study, the use of portfolios was not found. Even though in this form of assessment, the works in each lecture are collected by students. These works can describe the growth and achievement of students during one semester. These works can be in the form of written papers (papers) that are produced (designs and revisions), works that are entered in journals, assignments to solve questions / problems that are produced, quiz results and others.

Analysis of the compiled test items shows that the nature of the subject matter, beliefs and knowledge about the assessment and the time it takes to construct and check the results of the assessment greatly affect the lecturers in conducting the assessment. This is as stated by Ericson et al (in Davis, 2013: 43) that the practice of assessment is highly dependent on the values, assumptions and educational philosophy of the teacher.

CONCLUSIONS AND SUGGESTIONS

Decisions regarding the practice of assessment are highly dependent on the values, assumptions and educational philosophy held by the lecturer. The lecturers carry out the assessment practice together in various ways according to their perspective on teaching and learning. If lecturers want to change the assessment practice they think of and combine several forms of assessment as suggested in the current learning assessment, it is difficult to do it without being supported by other factors involved such as students and decision makers.

Based on the findings in this study, the suggestions in this study:

A change in the assessment paradigm needs to be done. Assessment of student achievement needs to change because they are required to have new abilities and knowledge adapted to the global economic era of the 21st century. In this era, students not only need a basic understanding, but also need to think critically, analyze and make decisions. Helping students develop these skills will make a difference and will represent a new approach to assessment.

REFERENCES

1. Airisian, Peter, W. (1994). *Classroom Assessment*. Reston, Va: Mc Graw Hill, Inc.
2. Billstein, Rick. (1998). *Januari Assessment: The STEM Model*. *Mathematics Teaching in The Middle Scholl*, 4(4):282-296.
3. Davis, Barbara Gross. (2013). *Tools for Teaching: Teknik Mempersiapkan dan Melaksanakan Perkuliahan yang Efektif*. Jakarta: PT RajaGrafindo Persada.
4. Heddens, James W & Speer, William R. (1992). *Today's Mathematics: Activities and Instructional Ideas*. New Jersey: Prentice Hall.
5. Jarolimek, John & Foster R, Clifford D. (1993). *Teaching & Learning the Elementary School*. New York: Macmillan Publishing Company.
6. Kauchak, Donald P & Eggen Paul D. (1993). *Learning and Teaching: Research-Based Methods*. Boston: Allyn and Bacon.

7. Linn, Robert L & Gronlund, Norman E. (1995). *Measurement and Assessment in Teaching*. New Jersey: Prentice- Hall, Inc.
8. NCTM, (1995). *Assessment standard For School Mathematics*. Virginia: The NCTM.
9. Ormrod, Jeanne Ellis. (1995). *Educational Psychology: Principles and Aplications*, New Jersey: Prentice Hall.
10. Owens, Douglas T. (1993). *Research Ideas For the Classroom High School Mathematics*.
11. New York: NCTM Macmillan Paublishing Company.
12. Popham, W. James. (1995). *Classroom Assessment: What Teachers Need To Know*, Massuchusett: Allyn & Bacon.
13. Senk, Sharon L, Backmann, C.E & Thompson. (1997).. *Assessment and Grading in High School Mathematics Classroom*. *Journal for Research in Mathematics Education*, 28 (2) : 187- 215.
14. Suherman, Tatang. Tersedia pada http://file.upi.edu/Direktori/FPMIPA/JUR._PEND._MATEMATIKA/196210111991011
15. -TATANG HERMAN/Artikel/Artikel6.pdf Wagiran. (2011). *Classroom Assessment: Bagian*
16. *Integral Proses Pembelajaran Dalam Upaya Menyiapkan Sumberdaya Manusia Secara Holistik*. Tersedia dalam jurnal *Invote*, Vol VII, No 2 Agustus tahun 2011. ISSN 1411-
17. 5514 hlm. 199-217
18. Webb, Norman, L. (1992). *Assessment Of Students' Knowledge Of Mathematics: Step Toward A Theory*. Madison: University of Wisconsin.