



Good Practices in Education Across Disciplines and Grade-Levels

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Editor

Dr. Sukatman, M.Pd.

Dr. Budi Setyono, M.A.



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TECHNIQUE OF DESIGNING AUTHENTIC ASSESSMENT IN MATHEMATICS LEARNING

Abi Suwito
Nurcholif Diah Sri Lestari
FKIP Universitas Jember

Abstract: Learning implementation will be not release from students assessment activity. Authentic Assessment is done in order to measure the students ability in mastering the knowledge through creativity to solve many issues related to students real life. However, most of teachers still have not mastered on Authentic Assessment. This article talking some of teacher focused in Authentic Assessment designing.

Keywords: Mathematics Learning, Authentic Assessment

ABSTRACT

Curriculum 2013 is one of government real ways in order to repair educational quality in Indonesia. The development of Curriculum 2013 based on assessment competence aspects, all of the graduated are expected to be able to balancing and balancing their soft skill and hard skill included aspects of affective, psychomotor and cognitive competence. Related to the strengthening Curriculum 2013 assessment, assessment conducted more emphasis on the student performance, not only tests but also portfolio assessment or environmental support.

Assessment Authentic is activity process conducted by the teacher to assess students ability along the learning process. At beginning, Assessment Authentic is developed because of the discrepancy between the current assessments conducted. Assessment used is focused on the cognitive aspects and skill dominant in an assessment. It is better if assessment conducted more emphasis on balancing of cognitive, psychomotor and affective by the complementary portfolio assessment and test. Hence, Authentic Assessment has relevance to the scientific approach in learning appropriate to the needs of Curriculum 2013.

Actually, Authentic Assessment is not a novelty in the curriculum of Indonesia. "Permendiknas No. 20 tahun 2007" Authentic Assessment has been as educational assessment standard. However, in real fact (school) many teachers are not using yet Authentic Assessment as a standard assessment. This is presumably because teachers do not have the ability to use Authentic Assessment in any learning process. Muchtar (2010) said that the implementation of authentic assessment at school needed a

professional teacher who mastered the method of assessment, realize the importance of authentic assessment and have commitment to advance the education.

DISCUSSION

Authentic Assessment

Authentic Assessment is a significantly meaningful measurement over student learning outcomes for affective, psychomotor and cognitive domains (Kemdikbud, 2013). In line with this, Johnson (2002) said that Authentic Assessment provide greater opportunities for students to demonstrate what they have learned and what has been mastered during the learning process. Based on some definition above it can be concluded that the Authentic Assessment is a measurement to shows the abilities, knowledge and skills of students in solving real life problems.

In order to teachers can compose Authentic Assessment, and then the characteristics of Authentic Assessment needs to be recognized properly. Moon (2005) shows that the characteristics of Authentic Assessment are: 1) the assessment focused on the important material, and great ideas contained on it. 2) The assessment is done in depth. 3) The assessment is easy to be applied in learning. 4) The assessment is priority to quality of products or performance. 5) Assessment done can develop teacher knowledge. 6) The assessment provides opportunities for students to show their knowledge through many ways.

The steps of designing Authentic Assessment

Elliot (1993) the following will be presented regarding the factors to be considered in designing the assessment a) content or materials, b) length of activity required when doing assessment, c) Types of activities required to complete the assessment, d) The number of items in the assessment instrument, e) scoring rubric.

Furthermore, the steps that need to be done in designing Authentic Assessment are:

1. Analysis of learning materials that will be assessed
Before designing an assessment, teachers need to analyze whether the mathematical concepts that will be assessed, what capabilities need to be owned by the students at that time. For example, the ability to make a variety of mathematical representations, the ability to draw and make decisions, the ability to make mathematical connections, etc.
2. Determine the activity of learning.
The activity that will be designed in learning affected what kind of assessment form will be used. Therefore, teachers need to determine the

learning activities before designing an assessment. In this case, the design of Authentic Learning is more suitable with authentic assessment that will be designed.

3. Designing kinds and types of assessment

There are some questions that may be used as a reference in designing the type and the type of assessment that is: a) how teachers assess student knowledge during learning?. b) Whether the assessment will be done individually, in groups or in the classical?, c) how students can communicate or describe what they have learned during the learning? d) Whether the type of assessment that have been chosen is actually be able to measure the mathematical skills of students.

4. Compose an assessment tool and its rubric

Several types of Authentic Assessment tool that teacher used to assess their students are : a) Project, b) Portfolios, c) Journal, d) Problems of Open-Middle, e) Open-ended Questions, f) checklist, g) Guidelines for scoring.

Development of Assessment Plan

Before a teacher begins the learning in the classroom, of course, they need lesson plan, which is often called RPP (lesson plan). The lesson plan can give you instructions about the activities that will be conducted in learning. Therefore, teachers also need an assessment plan. Development of an assessment plan is useful to reflect the expectations and performance of students in learning. Besides, avoid teachers from wasting time to assess for unnecessary things.

Compton, dkk (1999) show several things contained in the assessment plan are: a) learning objectives, b) Mathematics Content (Big ideas or list of topics), c) the important mathematical assessment (such as, problem solving, group work, oral and written communication, reasoning, implementation), d) list of the assessment tools used, e) plans for scoring or feedback.

Here is an example of the assessment plan developed by a teacher at the senior high school.

Mathematics Assessment Plans –Senior High School X-grades

The types of the following assessment will be used to gather facts about how well you can understand and use the mathematics that have been studied this semester.

Test and quiz

Objectives: to evaluate students ability to work individually in a state of overseen

PROOF

- Knowledge, and ability to apply, great ideas
- ✓ Quiz-comprehension delivered with rapid implementation from skill or technique
- ✓ test-comprehension delivered with the selection, implementation, and justification from problem-solving strategies

Frequency

- Quiz- once at every two meetings
- Test – conducted when every chapter is completed; collection of problem

Evaluation

- Quiz-points for each correct answer
- Test- analytical scoring for each problem

Collection of group Problems

Objective

- To evaluate ability of working collaboratively

Proof

- Problem solving strategy - communication skills - listening skills
- Making final result (conclusion) by assembling the different ideas of several people

Frequency

- At least once a week

Evaluation

- Checklist teacher observation -4 scales-point
- Checklist self-assessment - 4 scales-point

The assessment plans above does not contain all the assessment activities and it is still general (no learning objectives). However, at least it has been able to describe how the assessment process will be conducted by the teacher.

Criteria of learning activity using Authentic Assessment

Assessment techniques used to measure the learning process is certainly related to the learning activities that are designed by teachers. Therefore, Authentic Assessment requires Authentic Learning as learning design. Lombardi (2007) said that Authentic Learning usually focused on real world, complex problems and solutions, using role-playing exercises, problem based learning, case studies, and participation in group practices significantly.

Furthermore, several basic things of the underlying the Authentic Learning design proposed by Lombardi (2007) are:

1. Relevant to the real world: the activities in Authentic Learning ask students to work with abstract concepts, facts and formulas in the reality of their social life.
2. Learning begins by defining a problem (ill-defined problem): The challenges cannot be solved easily by the application of an existing algorithm, but Authentic Learning relatively defined and open to multi interpretations, requiring students to identify tasks for themselves and subtasks required to complete the main task.
3. Sustainable Investigation: Problems can not be solved in a matter of minutes or even hours. Instead, Authentic Learning consists of complex tasks to be investigated by students during sustained period of time, requiring a significant investment of time and intellectual learning resources.
4. Some sources and perspectives: Learners are not given a list of learning resources directly. Authentic Learning provides opportunities for students to examine the task from a variety of theoretical and practical perspectives, using a variety of learning resources, and requires students to distinguish information that is relevant to the irrelevant.
5. Collaboration: Success is not achieved by individual students. Authentic Learning makes well integrated collaboration between tasks, both in learning and in the real world.
6. Reflection (metacognition): Authentic Learning enables students to make choices and reflect on their learning, both individually and as a team or group.
7. Interdisciplinary perspective (cross-disciplinary): In Authentic Learning, Relevance is not limited to a particular domain or subject matter. Instead,

Authentic Learning encourages students to adopt various roles and think outside the specific discipline.

8. Integrated Assessment: Assessment formed is not only test, in the Authentic Learning assessments that used more emphasis on balancing cognitive, psychomotor and affective aspects by the portfolio assessment and complementary test.
9. Product polishing learning: Authentic Learning not only aims to prepare students to be able to graduate well, but to create meaningfulness product of learning itself.
10. Various interpretations and results: Authentic Learning prioritizes problem representation that is open-ended.

CLOSING

Based on the descriptions above, there are some factors needed to consider by teacher to designing Authentic Assessment. Given these factors, it does not mean a teacher will encounter many obstacles in designing Authentic Assessment. This requires ability of qualified teachers about analyzing mathematics materials, determine the activity of learning and making decisions about what will be the assessment tools are used in learning. Obviously, these abilities are not obtained instantaneously. There needs to be a willingness and awareness to learn designing Authentic Assessment. The obstacles that may be encountered either while designing or when conducting the assessment can be discussed by collaborate with the other teachers to improve the quality of learning Authentic Assessment.

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