Performance assessment in algebra learning process

Ida Lestariani, Imam Sujadi and Ikrar Pramudya
Universitas Sebelas Maret, Jl. Ir. Sutami 36A, Surakarta, Indonesia

E-mail: idha.laney@gmail.com

Abstract. The purpose of research to describe the implementation of performance assessment on algebra learning process. The subject in this research is math educator of SMAN 1 Ngawi class X. This research includes descriptive qualitative research type. Techniques of data collecting are done by observation method, interview, and documentation. Data analysis technique is done by data reduction, data presentation, and conclusion. The results showed any indication that the steps taken by the educator in applying the performance assessment are 1) preparing individual worksheets and group worksheets, 2) preparing rubric assessments for independent worksheets and groups and 3) making performance assessments rubric to learners' performance results with individual or groups task.

1. Introduction
Assessment is the process of gathering information and processing to measure the achievement of learning outcomes of learners. Assessment is an important part of education [1]. For educators, gather information about learners' learning and information about the learning process. For learners, the assessment is the process of their information about learning progress. Assessment has become an important key to improving the quality of education [2]. The quality of education can be achieved by improving the quality of the learning system and assessment [3].

Assessment by educators is an assessment done by educators/teachers of a subject that aims to measure learners' understanding. Assessment can be done by educators by making assessment instruments including test format and assessment. Permendikbud No 23 Tahun 2016 has set provisions made by educators in assessing the learning outcomes of learners. Provision of educators in conducting an assessment of learners about the knowledge and skills aspects of and the usefulness of the assessment, assessment mechanism, assessment procedures, and assessment instruments undertaken [4].

Assessment in the Curriculum 2013 requires educators to conduct authentic assessments that include an assessment of attitudes, knowledge, and skills [4]. In mathematics subjects, the authentic assessment used is the assessment of knowledge and skills [5]. Assessment as a form of implementation of KD 3 and KD 4 in the curriculum. In this study focused on performance assessment. Performance assessment is one of the techniques in performing the skill assessment contained in authentic assessment [6].

Performance assessment is an assessment that requires students to perform performance, not answering or selecting answers from a range of possible answers [7]. Performance assessment refers to mathematical tasks and situations that enable learners to demonstrate their understanding and thinking.
to apply their knowledge and skills in a variety of contexts [8]. Performance assessment is also a procedure for the use of tasks aimed at knowing how well students have learned [9]. Assessment by educators in accordance with the assessment standards set by the government. This is contained in the 2013 curriculum assessment standard. The skills aspect assessment procedure is carried out through the steps of a) assessment planning; b) develop assessment instruments; c) carry out the assessment; d) utilize the assessment results, and e) reporting the results of the assessment of numbers with a scale of 0-100 and description [4].

Performance assessment that refers to mathematical tasks is given by educators in the form of problem-solving questions. The problem-solving stage created by educator refers to the solving stage by Polya. The problem-solving stages by Polya consist of 4 stages: (1) understanding the problem, (2) planning the problem solving, (3) solving the problem according to the second step plan, and (4) re-checking the result [10].

The purpose of this study is to describe the implementation of performance assessment at the problem-solving stages according to Polya in the mathematics learning process. Performance assessment is one of the authentic assessments that not only to measure what the learners know but to emphasize what the learners do [6]. While in school, educators rarely make an assessment with non-tests [4]. In relation to the valuation function that is very important for educators and learners, it has become the educator's skill to be able to do a good assessment according to the standards of assessment that exist in the Curriculum 2013.

2. Method
Data obtained by observation, interview, and documentation. Researchers make observations on the mathematics learning process in class X, XI, and XII with different educators. Based on the observations obtained subjects who often perform performance assessment of educator class X. So selected class X teachers as research subjects. Researchers make observations on the implementation of assessments made by the educators. With the help of observation guidelines, researchers recorded information needed to support research data. Information obtained by researchers in the form of research implementation process on the mathematics learning process. Based on the observation, the subjects were interviewed for performance assessment conducted at the time of learning. The researcher asked the educator about the assessment process done as a form of validation of observational data obtained by the researcher. From the results of the interview, then performed the method of documentation of performance assessment results conducted on student learning outcomes and instruments made by educators in assessing the performance of learners. This documentation is an assessment instrument that has been created by educators. Then the data analysis technique is done by data reduction, data presentation and conclusion [11].

3. Results and discussion
During the learning process, digital cameras are used to record all the learning activities in the classroom. Learning activities undertaken by educators in the classroom is from the beginning of giving materials to obtain material conclusions and assessment of learners learning outcomes. The stage observed by researchers in the learning process is an observation at the stage of implementation of the assessment. Overall research results, assessment stages conducted by educators are 1) plan assessment; 2) develop assessment instruments; 3) carry out the assessment; 4) reported scoring results in the form of numbers with a scale of 0-100 [4].

The results of field observations indicate that, in the planning and development stage of the educator's assessment instrument, the stages of assessment are commonly undertaken by the educator such as determining the objectives of the study, preparing the grid, making questions/problems that will be used for performance assessment and rubric assessment. However, there are several stages of performance appraisal in accordance with Permen-dikbud No 23 Tahun 2016 on assessment standards that are not fully implemented by educators.
There are several stages of performance assessment that are not applied by educators. Based on interview results, the review stage is not always done by educators because the problem used for performance assessment has been used before. Time not included on the assignment/question sheet as it was submitted at the time of the award. Educators do not also write down the steps that need to be done to show the performance because, in accordance with the task given, learners are considered capable of performing stages of learners of the problems done.

The individual task and problem-solving stage using Polya’s stage made by educator [10]. The educators are given the individual task in the mathematics learning process to know the performance of the individual learners. Educators also create descriptive scoring rubric problem-solving according to Polya's steps to support a learners’ performance assessment.

The educator made the tabulation of performance assessment scores. Based on the learning outcomes of learners who have scored a scale of 1-4 then educators enter the value of learners on the value sheet-like. The score is the total score of the 1-4 range that has been summed. The final grade obtained by learners is obtained from the provisions made by the educator.

In addition to self-directed tasks, educators create group assignments for performance appraisals. Educators create questions for group task, scoring rubric, and rubric assessments. The group tasks created by educators aim to gain an assessment of the learner's activities that occurred during the discussion [13]. Assessment is done on learner’s performance, behavior or interaction [12]. The group tasks are created to test learners making answers or outcomes that show their knowledge and expertise [13].

During group discussions, educators doing observation activities learners in group work. Educators conduct an assessment of the performance of learners with group assessment rubric through the behavior of the song during a discussion. Assessment of the performance of the process of applying the learner's knowledge in completing the task. Educators assess the performance of learners ranging from how to discuss, exchange opinions with the group to get the results of the discussion. To help educators perform group performance assessment, educators make the assessment rubric.

After the learner has finished working on the group task within the time period determined by the educator then collects the worksheet’s learners. Next, the educator asks to present the results of his discussion [13]. When learners present the learning outcomes, the educator provides an assessment of the learner's performance with the help of a performance assessment rubric [14, 15]. When other groups respond, educators observe and then assess the learners. This makes it easier for educators to know the ability of learners in performing group tasks. Educators also perform performance assessments to each individual. This is done educators so that learners can show the performance and understanding of the discussion.

4. Conclusion
The results of the research indicate that the steps taken by the educator in applying the performance assessment are preparing individual worksheets and group worksheets, rubric assessments for independent worksheets and groups, and making performance assessments rubric to learners' performance results with individual or groups task. In the implementation of performance assessment on the learning process, educators ask learners to present the results of the discussion to the front of the class. Educators assess the ability of learners to express ideas in solving problems using the rubric that has been prepared.

References
[1] Dimas A, Cari, Suparmi dan Handhika, J 2016 Pengaruh bentuk penilaian tp kemampuan siswa untuk menjawab permasalahan dengan benar Jurnal Int Ilmu Pengetahuan dan Ilmu Pengetahuan 1 40
[2] Hariadi 2017 Instrument Development of Authentic Assessment for Manipulative Fundamental Motor Skill at Elementary School Conf Seies: Material Science and Engineering 180
[3] Mardapi, D 2012 Pengukuran, Penilaian dan Evaluasi Pendidikan (Yogyakarta: Nuha Litera)
[4] Peraturan Menteri Pendidikan dan Kebudayaan No 23 2016 Tentang Standar Penilaian Indonesia
[5] Septiani A dan Rustaman 2017 Implementation of Performance Assessment in STEM (Science, Technology, Engineering, Mathematics) Education to Detect Science Process Skill Conf Series Journal of Physics 812

[6] Alimudin 2014 Penilaian dalam Kurikulum 2013 Proc Seminar Nasional 01 23

[7] Asmawi Z 2005 Tes dan Asesment di SD (Jakarta: Universitas Terbuka)

[8] Marzono, R J D Pickering and McTinghe J 1993 Assessment Student Outcomes Performance Assessment Using the Dimensions of Learning Model (Alexandria: ASCD Publication)

[9] Enger and Yanger 2001 Assessing Student Understanding in Science (California: Corwin Press, Inc)

[10] In’am A 2014 The Implementation of the Polya Method in Solving Euclidean Geometry Problems Int Education Studies 7 149

[11] Salmayzury, Ruslan dan Pristialayuo 2015 Evaluasi Program Pembelajaran Matematika di SMA Negeri Watansoppeng Jurnal Penelitian dan Evaluasi Pendidikan 1 1

[12] Direktorat Tenaga Kependidikan Depdiknas 2004 Standar Kompetensi Guru (Jakarta: Depdiknas)

[13] Sa’dijah 2009 Asesmen Kinerja dalam Pembelajaran Matematika Jurnal Pendidikan Inovatif 2 92

[14] Putra H D, Herman T and Sumarmo U 2017 Development of student worksheets to improve the ability of mathematical problem posing International Journal on Emerging Mathematics Education 1 1

[15] Tanujaya B, Prahmana R C I and Mumu J 2017 Mathematics instruction, problems, challenges, and opportunities: A case study in Manokwari regency, Indonesia World Transactions on Engineering and Technology Education 15 287