DEVELOPING THE MATHEMATICS STUDENT ACTIVITY SHEET (SAS) IN SUBJECT MATTER SCALE AND COMPARISON FOR STUDENTS OF SMP CLASS VII BASED ON CURRICULUM 2013

Edi Siswanto[a], Abdul Taram[b]
Program Studi Pendidikan Matematika Universitas Ahmad Dahlan
Jalan Ring Road Selatan, Tamanan, Banguntapan, Bantul Yogyakarta
[a]Mazedi1989@gmail.com , [b]taromahmad@yahoo.com

ABSTRACT

This research is motivated by the lack of Student Activity Sheet (SAS) mathematics are using the curriculum 2013, particular in SMP Muhammadiyah 6 and 9 Yogyakarta as the learning process in the classroom. The purpose of this research is to develop a SAS based on curriculum 2013, determine eligibility based one matter expert assessment and teacher assessment, as well as student's response to SAS. The study was conducted through the model of Research and Development (R &D). Steps that passed include two aspects, namely the development of the SAS and its feasibility. SAS development includes: (a) collecting information (b) the designing of SAS (c) Validating SAS to the expert review by the mathematics teacher of SMP Muhammadiyah 6 Yogyakarta and SMP Muhammadiyah 9 Yogyakarta (d) revising the product. The feasibility of SAS include (a) trial test (b) data analysis (c) the feasibility of SAS. the subject's research was students SMP class VII. The results of research and development has developed the Student Activity Sheet (SAS) on the scale and comparison in class VII SMP based on the curriculum 2013. The results of matter experts assessment and teacher assessment on the obtained an average score of 82.5 with very good category, so the SAS can be declared feasible. The student's response to the SAS is included in very good categories indicated by an average score of 85.3225. These results indicate that the Student Activity Sheet (SAS) in the scale and comparison in classVII of SMP based on the curriculum 2013 can be used in the learning process.

Keywords: Development, SAS mathematics 2013, good and decent used.

INTRODUCTION

Philosophical objectives of national education in broad outline, as an effort to form students who have the ability of technology and knowledge in religion. National education products are expected to be not only intelligent and clever but also berahlaq, moral, and character so that they are expected to be able to think critically in facing problems that often occur in daily life. To create a learning atmosphere so that students are active in the learning process there needs to be a plan that is used to support the learning process. The learning process takes place in many ways both intentional and unintentional. Learning takes place all the time to lead to a change in learners themselves. The change in question is a change in behavior in the form of new knowledge, understanding, skills, and habits in the learning individual. Learning here is defined as a process of permanent behavior change from not knowing to knowing, from not understanding to understanding, from less-skilled to skilled and beneficial to the learner.

Learning is a complex aspect of human activity. Simple learning can be interpreted as an ongoing interaction between development and life experiences. In a more complex meaning, learning is essentially the conscious effort of a teacher to learn his students (directing student interaction with other learning resources) in order to achieve the expected goals. In the world of mathematics learning teachers play an important role in utilizing learning resources in carrying out mathematics learning activities in the classroom. Teachers can use many learning resources so that they can use many ways in the learning process in class. Learning resources can be in the form of textbooks, modules, LAS, and so on. Learning resources can be used as a support for the learning process in class.

Learning resources that can be used by teachers in carrying out mathematics learning activities in classrooms include the Student Activity Sheet (LAS). In accordance with the 2013 LAS curriculum, it can be used to support the learning process in the classroom. LAS is a student guide used for

conducting investigations or problem-solving activities. LAS can be in the form of guidelines for development exercises or guidelines for the development of learning in the form of experimental or demonstration assistance. LAS contains a set of basic activities that must be carried out by students to maximize understanding in an effort to form basic abilities according to indicators of learning achievement that must be taken.

Based on interviews with mathematics class VII teacher Ibu Wartinem Spd. On November 7, 2014, at 09:00 at the Muhammadiyah 6 Junior High School in Yogyakarta, information was obtained that the school does not yet have an VII grade junior high school mathematics LAS. For learning mathematics in class VII, the school uses the concept of mathematics reference book and its application in class VII. Learning in Yogyakarta Muhammadiyah 6 Middle School in class VII is still often centered on the teacher. The teacher conveys learning material using manuals and worksheets made by the teacher but students do not have worksheets individually or in groups so some students only take notes and listen. In this learning process, some students can be active but not all are active. So learning in the classroom does not work effectively. Therefore there is a need for LAS that can be used as a guide for students during learning, with the hope that learning in class can run well.

Based on the results of interviews with mathematics class VII teacher Ibu Siti Nurhanifa S.Pd on April 25, 2014, at 09:30 at the Muhammadiyah 9 Junior High School in Yogyakarta, information was obtained that the school did not yet have a VII grade mathematics LAS in junior high school. In the process of learning mathematics in class, the teacher uses the concept math reference book and its application for class VII. The learning that takes place the teacher explains and students pay attention and take notes, the teacher conveys the material in front of the class with difficulty but some students are active, that is the obstacle of the teacher in teaching students in class. So that learning in the classroom does not run effectively. Therefore there is a need for LAS that can be used as a guide for students during learning, with the hope that learning in class can run well. Because the teacher has not yet developed the 2013 mathematics LAS. So for learning in the classroom the mathematics teacher gives lessons to students using the reference books provided by the school. Mathematics learning in class VII has not been centered on students. With learning that has not been centered on students, students are not yet fully active, so mathematics learning in the classroom has not been effective. In order for learning to be effective students also need to open guidelines for learning such as LAS that can be used as a guide in the process of learning mathematics in class. The development of LAS can be used as an alternative for classroom learning. LAS 2013 emphasizes more on students to be active in-class learning.

From these problems, the researcher finally made a decision by making the title Development of Student Activity Sheet (LAS) mathematics on a scale and comparison material for seventh-grade junior high school students in accordance with the 2013 curriculum.

Based on the description above, the objectives to be achieved from this research are:

1. Develop LAS on scale and comparison material for VII grade students of SMP in accordance with the 2013 curriculum.
2. Knowing the eligibility of LAS on scale material and comparison in class VIII of SMP in accordance with the 2013 curriculum.

METHODS

Research methods

This research is a research and development study with a product in the form of a Mathematics Student Activity Sheet (LAS) on a scale and grade VII comparison material in SMP in accordance with the 2013 curriculum**.**

Development Procedure

In this research development, researchers will develop a product in the form of LAS. In this study using the following steps: potential and problems, collecting data, product design, product design validation, design revisions, product trials.

Try Research and Development Subjects

The subjects in this research and development consisted of material experts and students of Class VII A of Yogyakarta Muhammadiyah 6 and SMP Class Muhammadiyah 9 of Class VII A of Yogyakarta.

Data Collection Techniques and Instruments

This development research uses several data collection techniques, namely: interviews, documentation, and picket. The research and development data were obtained using the following data collection instruments: the material expert test instrument, and the test instrument for students.

The data obtained will be calculated the average score or empirical score with the formula:

$$M = \frac{\sum fx}{N}$$

Information :

M : Average score

$\sum fx$: Total score

N : Number of assessors

Furthermore, the data obtained from both material experts and students are converted into qualitative values based on ideal assessment criteria with the following conditions:

Table 2. Actual Score Scale Score 5

No	Sekor Range	Criteria
1	$\bar{x} > Mi + 1{,}8\ Sbi$	Very good
2	$Mi + 0{,}6\ Sbi < \bar{x} \leq Mi + 1{,}8\ Sbi$	Well
3	$Mi - 0{,}6\ Sbi < \bar{x} \leq Mi + 0{,}6\ Sbi$	Enough
4	$Mi - 1{,}8\ Sbi < \bar{x} \leq Mi - 0{,}6\ Sbi$	Less
5	$\bar{x} \leq Mi - 1{,}8\ Sbi$	Very less

RESULTS AND DISCUSSION

Test Data

Trial data in developing the Development of Student Activity Sheets (LAS) mathematics on scale material and class VII comparison of SMP in accordance with the 2013 curriculum.

1. Analysis

   Analysis conducted by researchers to provide an overview of the media to be developed. Based on the data analysis technique used, the data obtained from the assessment of material experts and mathematics teachers in grade VII and students are processed, the results are as follows:

   a. Material analysis

      The selection of material to be developed in the LAS is carried out by consulting with mathematics teachers in grade VII of Muhammadiyah 6 Yogyakarta and Muhammadiyah 9 Yogyakarta. The material chosen is a scale and comparison because this material is still difficult for students to understand. The LAS was developed in the hope of helping students understand the material.

   b. Curriculum analysis

      Curriculum analysis is done by conducting a literature study that includes analysis of the subject matter, competency standards, core competencies, and indicators that must be achieved by students in learning.

2. Design

   The design/design stage consists of 3 steps: compiling the LAS design, and the LAS assessment sheet.

3. Development

This Development Phase includes:

a. Reference collection
b. LAS Making
c. Validation and valuation
d. Limited trial
e. Implementation

Applying math LAS by testing LAS in schools to determine the use of LAS if used in learning, and large class trials are the final trials in this development process. The trial is conducted by giving a product that has been accompanied by a questionnaire to students who have been selected according to specified criteria. The questionnaire used has the function to obtain data in the form of student assessments about the quality of the developed LAS.

Data analysis

The data obtained are divided into three parts of the assessment which are the results of the assessment of the experts, the students' responses and the overall assessment combined. The results of the LAS assessment from various aspects will be explained as follows:

a. Assessment Questionnaire Analysis

The assessment of media and mathematics LAS material on the scale and comparison of grade VII SMP in accordance with the 2013 curriculum was carried out by material experts namely Dra. Sumargiyani, M.Pd is a UAD mathematics education lecturer, and a grade VII mathematics teacher, namely Wartinem, S.Pd. is a teacher of grade VII mathematics teacher at Muhammadiyah 6 Yogyakarta Middle School, and Siti Nurhalifa, S.Pd is a teacher of grade VII mathematics teacher at Muhammadiyah 9 Yogyakarta Middle School.

Table 2. Table Data Scoring Validation Assessments Lecturer Expert material and Teacher

No	Evaluator	Value
1	Dra. Sumargiyani, M.Pd	83
2	Siti nurhalifa, S.Pd	86
3	Wartinem, S.Pd	84
Amount		253
Average		84,33333
The quantitative data criteria (positive statements) are very good		

b. Analysis of Student Response Questionnaire

Questionnaire responses of students to LAS mathematics on scale material and comparisons for VII grade junior high school students in accordance with the 2013 curriculum are known based on the results of trials conducted at SMP Muhammadiyah 6 and 9 Yogyakarta at the time of the trial.

Table 3. Student Assessor Score Data Table

No	Evaluator	Value
1	SMP Muhammadiyah 6 Yogyakarta	86,2
2	SMP Muhammadiyah 9 Yogyakarta	84,445
Amount		170,445
Average		85,3225
The quantitative data criteria (positive statements) are very good		

c. Combined Analysis of Assessment Questionnaire and Student Response Questionnaire

After the results of the assessment in terms of media and material as well as the students 'responses are known, then the results of the assessment in terms of media and material as well as the students' responses are combined to find out the feasibility of the LAS mathematics on the scale material and comparison of class VII SMP in accordance with the 2013 curriculum that has been produced.

Table 4.Combined Scoring Data Table

No.	Evaluator	Average
1.	Questionnaire Assessment Expert material and teachers	84,333333
2.	Student Response Questionnaire	85,3225
Total		169,65583
The quantitative data criteria (positive statements) are very good		

Product Revision

The LAS mathematics on the scale and comparison material of VII grade of SMP in accordance with the 2013 curriculum in mathematics learning which has been assessed by material experts and mathematics teachers of VII grade SMP is then revised according to the input of improvements that have been given.

CONCLUSION

Based on the results of the study it can be concluded that using LAS mathematics on scale and comparison material can be used in mathematics learning especially in students of SMP Muhammadiyah 6 Yogyakarta and class VII SMP Muhammadiyah 9 Yogyakarta in the subject of scale and comparison. This is evident from:

1. Based on the results of the validation of the material expert lecturer and the teacher obtained an average score of 84.333333. Based on the average score it can be seen that the LAS mathematics on scale material and class VII comparison of SMP in accordance with the 2013 curriculum developed according to expert lecturers and teachers achieved very good criteria.
2. Based on the results of the questionnaire responses of students of SMP Muhammadiyah 6 Yogyakarta obtained an average score of 86.2. Based on the average score it can be seen that the LAS mathematics on scale material and class VII comparison of SMP in accordance with the 2013 curriculum developed according to students of Muhammadiyah 6 Yogyakarta Middle School achieved very good criteria.
3. Based on the results of the questionnaire responses of students of Yogyakarta Muhammadiyah 9 Middle School an average score of 84.445 was obtained. Based on the average score it can be seen that the mathematics LAS on scale material and class VII comparison of SMP in accordance with the 2013 curriculum developed according to students of SMP Muhammadiyah 9 Yogyakarta reached very good criteria.
4. Based on the results of the combined questionnaire responses of students between SMP Muhammadiyah 6 Yogyakarta and SMP Muhammadiyah 9 students an average score of 85.3225 was obtained. Based on the average score it can be seen that the LAS mathematics on the scale and comparison material developed according to students of Muhammadiyah 6 and 9 Yogyakarta Middle Schools achieved very good criteria.
5. Based on the average results of the assessment calculations by material experts and student responses with an average of 169,65583. Based on the average score, it can be seen that the LAS mathematics on the scale material and the comparison of VII grade of SMP in accordance with the

2013 curriculum developed according to the material experts and student responses reached good criteria and is suitable for use in the learning process

REFERENCES

Imas. Kurniasih dan Berlin Sani. 2014. *Implementasi Kurikulum 2013 (Konsep Dan Penerapannya*) Surabanya: Kata Pena.

Majid. A. 2006. *Perencanaan Pembelajaran (Mengembangkan Standar Kompetensi Guru). Bandung: Remaja Rosdakarya.*

M. Ismail.2013. *Pengembangan Lembar kegiatan siswa Matematika pada materi persamaan linear dua variable untuk siswa Smp/MTs kelas VIII berbasis penemuan terbimbing*. Yogyakarta: UAD.

Mulich. M. 2007. *KTSP Pembelajaran Berbasis Kompetensi Dan Kontekstual*. Jakarta: Bumi Aksara.

Riyanto. Y. 2009. *Pradikma Baru Pembelajaran.* Jakarta: Kencana.

Suherman, Erman. 2003. *Strategi Pembelajaran Matematika Kotemporer*. Bandung: UPI.

Sugiyono. 2009. *Metode Penelitian Pendidikan (Pendekatan Kuantitatif, Kualitatif, dan R&D)*. Bandung : Alfabeta.

Sukarjo. 2006. *Kumpulan Materi Evaluasi Pembelajaran.*Yogyakarta: Universitas Negeri Yogyakarta (UNY).

Tim Redaksi Pustaka Yustisia. 2013. *Perundangan Tentang Kurikulum Sistem Pendidikan Nasional 2013*. Yogyakarta: PY.

Yoyok.R. 2014. *Pengembangan LAS matematika SMP kelas VII pada materi bangun ruang berdasarkan penemuan terbimbing*. Yogyakarta: UAD.