

Implementation of Training on the Preparation of High Order Thinking Skills (HOTS)-Based Assessment Instruments for Junior High School Teachers

Saudah

Mathematics Education Department, University of Muhammadiyah Purwokerto, Central Java, Indonesia

*Correspondence: saudah.ump@gmail.com

Abstract

The purpose of this science and technology application activity is to provide training in the preparation of assessment instruments based on *High Order Thinking Skills* (HOTS). The subjects in this service were the teachers of Muhammadiyah Ajibarang Junior High School. The location of the implementation is at Muhammadiyah Ajibarang Junior High School. The implementation of activities is carried out through the presentation of HOTS materials, providing knowledge about various assessment instruments in learning, and how to prepare HOTS-based assessment tools. The output of this service activity is that teachers can understand HOTS material, teachers can understand various assessments in learning, and teachers can develop HOTS-based assessment instruments. The result of this IBM activity is that teachers can understand the meaning of *high order thinking skills* (HOTS) theory and can prepare HOTS-based assessment instruments at least at the C4 level.

Keywords: *Cabri 3D*; Dimension 3; Troubleshooting.

This is an open access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



1. INTRODUCTION

Facing the 21st century, there are many developments in the economic, technology, communication and information, education and also developments in other sectors. One of the areas that needs to be considered is the field of education, because education is the initial process of forming a person's personality so that it is able to bring about a change. The point of 21st century learning that is a challenge today is in terms of character quality, competence and basic literacy (Awaliyah, 2017). Meanwhile, according to (Apandi, 2018) the 21st century learning process will provide several skills, namely communicative, collaborative, critical thinking and problem solving as well as creative and innovative thinking, these skills will be a provision in producing a generation of nations that are able to compete globally and regionally. The success of the 21st century depends on an individual in developing skills and

being able to master the forces and uncertainties that will occur, all depending on the human being himself (Helmawati, 2019).

Mathematics as an educational vehicle plays an important role in education. Learning mathematics is one of the means of scientific and logical thinking and has an important role in efforts to improve the quality of human resources. Given the importance of mathematics as a basic science, mathematics learning at various levels of education needs serious attention. In learning activities at school, students are the center of the learning process. This is in accordance with the objectives of curriculum 13 or what is often called K13.

The 2013 curriculum is a curriculum that states that the assessment of learning outcomes uses authentic assessments because in its assessment it is able to provide ability information for students as well as being holistic and valid (Permendikbud, 2016). With the establishment of the education system in the Law, all matters related to education, for example: curriculum, learning, and assessment are arranged in accordance with the educational functions listed in the Law. A good teaching system certainly produces good learning quality, then the quality of learning will affect the results of student assessments. Therefore, there will be an improvement in the quality of learning, it must pay attention to these two systems (Taroreh, 2012).

According to Juliantine, assessment is an integrated part of a learning process. Assessment is a set of systems that relate to the goals that will be achieved by educators. In Permendiknas No. 16 of 2007, it has been stated that assessment is one of the elements of learning that must be mastered by educators and students. Educators who are able to carry out assessments well mean that educators are able to determine the achievement of learning outcomes and evaluate students. It will be conveyed more deeply by the Minister of National Education that the assessment of learning outcomes that must be carried out if it is associated with the competence of students must meet 3 aspects, namely: cognitive, affective, and psychomotor (Juliantine, 2013).

The curriculum leads to the development of 21st century skills and higher-level thinking skills or HOTS. Students' high-level thinking skills can be formed by developing questions based on higher order thinking skills (HOTS). High-level thinking skills can be developed if students are able to work on HOTS-based questions. Thinking ability can be known through assessment during the learning process. According to Arifin (2016), assessment is a process that is carried out in a structured manner that includes the collection, analysis, and interpretation of data that aims to find out the learning objectives that have been achieved by students. Assessments in the 2013 revised 2017 curriculum include attitudes, knowledge, and skills. Assessment is important to be carried out in the learning process because the results of the assessment can increase the motivation of students to excel. Learning assessment activities at school can be carried out through activities, namely daily exams, mid-semester exams, and final semester exams. The development of this assessment instrument is expected to assist teachers in preparing HOTS-based assessment instruments based on the demands of the curriculum that has been implemented, namely the revised 2013 curriculum. Based on the description above, the researcher wants to share knowledge and experience regarding the preparation of HOTS-based assessment instruments for teachers in

the form of training. With the hope, it can be implemented by teachers in learning activities with the aim of improving the quality of teaching and learning.

2. METHOD

The activities are carried out in the form of training, in this case the preparation of HOTS-based assessment instruments. The target audience for this training is the teachers of Muhammadiyah Ajibarang Junior High School. The number of teachers who will be trained in this activity is 25 people. The consideration of choosing teachers at the location is because the school has not been able to provide such training facilities to teachers. This activity was carried out by presentation and discussion methods. The activity is designed interactively through training for teachers and then continued with simulation along with assistance by the implementation team. The instruments used in this training activity are activity observation sheets and questionnaires on the implementation of activities.

3. RESULTS AND DISCUSSION

The realization of problem solving is by conducting participatory cooperation between the implementer and the principal of Muhammadiyah Ajibarang Junior High School. The Head of the Implementation Team invited the class teacher and prepared a training link (online). Meanwhile, the service implementer is in charge of providing training materials and certificates. Based on the results of the questionnaire on the implementation of training activities, 75% of all participants have competence in compiling HOTS-based assessment instruments. This data shows that instrument preparation training is an innovative action in accommodating mathematics teachers in improving students' higher level thinking skills (HOTS). Assessment instruments that integrate HOTS thinking can improve mathematical ability. In line with the research of Anisah and Lastuti (2018), it is explained that mathematical solving skills can be developed through assessments based on *high order thinking skills* (HOTS). The implementation of this activity discussed the preparation of assessment instruments based on *High Order Thinking Skills* (HOTS) for teachers of Muhammadiyah Ajibarang Junior High School. After the training activities were completed, the results proved that the level of satisfaction of participants/teachers was in the satisfied category. Thus, this training can be said to be successful and able to attract teachers' interest in following and compiling HOTS-based assessment instruments and can be applied in the teaching and learning process in the classroom. In line with the research of Taroreh et al. (2012) who explained that instruments that integrate HOTS capabilities can improve teachers' abilities and competency development related to learning activities.

4. CONCLUSION

Based on the results of observations on the implementation, it can be concluded that through the service to the teachers of the Muhammadiyah Ajibarang Junior High School class, the results were obtained that (1) the teacher's interest in the training increased, (2) the teacher's understanding of HOTS increased, (3) the teacher's ability to compile HOTS instruments was skilled. It is still necessary to conduct further studies in the field to find out the actual feedback that occurs, both the difficulties and the advantages. For the next activity, it is recommended that this activity be continued until the teacher can implement the instrument in learning and in the future groups can be created according to the field of study to be more focused.

Acknowledgments

The researcher expressed his gratitude to the University of Muhammadiyah Purwokerto.

REFERENCES

- Anisah, A., & Lastuti, S. (2018). Development of HOTS-based teaching materials to improve students' mathematical problem-solving skills. *Kreano, Journal of Creative-Innovative Mathematics*, 9(2), 191-197.
- Apandi, I. (2018). Realizing 21st Century Learning and HOTS through Strengthening Teacher Process Skills in PBM. *Retrieved November 14, 2018*.
- Arifin, Z. (2016). *Learning Evaluation*. Bandung: PT Remaja Rosdakarya.
- Awaliyah, S. (2017). Preparation of HOTS Questions for PPKN and Social Studies Teachers in Junior High School. *Journal of Social Praxis and Dedication*, 1(1), 46–53.
- Helmawati. (2019). *HOTS-Based Learning and Assessment*. Bandung: Remaja Rosdakarya.
- Juliantine, T. (2013). Assessment in physical education. *Journal of the University of Education Indonesia*. <http://jurnal.upi.ac.id/assessment-physical-education/download>.
- Regulation of the Minister of Education and Culture of the Republic of Indonesia No. 23 of 2016 concerning Education Assessment Standards
- Taroreh B.S, Sugiharto & Soekardi. 2012. Model Performance Assessment of Learning Outcomes of Volleyball in Elementary School. *Journal of Physical Education and Sports*, 1(2) 123-130.