

Learning Design Assistance Based on Hots Numeracy Literacy for Junior High School Teachers in Medan City

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Abstract. Strengthening literacy, numeracy and character skills is an important effort to improve the quality of human resources in the Digital Age and the Era of Disruption. As a teacher or education personnel, developing students' activeness so that they can apply numeracy skills well is a big responsibility. The numeracy skills in question are number concepts and arithmetic operation skills used for daily life skills. This service activity aims to provide numeracy literacy-based learning process assistance to junior high school teachers in Medan City to improve the ability of teachers to create Numeracy Literacy HOTS questions. This activity is carried out in several stages, namely the team preparation stage, school observation, making modules/materials to be delivered to mentoring activities. In delivering the material, the community service team used various methods, questions and answers, discussions, lectures and assignments. All of these methods are used as needed. The result of the activity is that teachers can develop HOTS-based questions in groups according to their respective subjects. The group was chosen in order to provide a positive stimulus to teachers who do not know and understand the preparation of HOTS-based questions on Numeracy Literacy to be encouraged to be able to compile independently and apply in preparing evaluation questions to students.

Keywords: teacher mentoring, HOTS questions, numeracy literacy.

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1. Introduction

Numeracy literacy is the skill to use various numbers (numerals) and symbols related to basic mathematics, whose purpose is to solve practical problems in various contextual problems (Gal & Tout, 2014; Han et al., 2017; Machaba, F., & Du Plooy, 2019). Numeracy literacy is very important to study and learn, especially to solve problems in everyday life (Dyah Worowirastru Ekowati et al., 2021; Mimeau et al., 2016). Education in elementary schools is no exception. Early learners must be taught about numeracy literacy because in various aspects of life, this skill is needed both at home, work and society (Eitel, 2016; Masjaya & Wardono, 2018).

When shopping or thinking about a vacation plan, planning a business or building a house cannot be separated from numeracy literacy. Even in community life, where people usually think about how hygiene and health need to be maintained, it certainly cannot be separated from the need for numeracy literacy information. Numeracy literacy in its development is an important part to pay attention to, because with numeracy literacy individuals will be able to prepare themselves in facing and living what will happen in the future (Fathani, 2016; Mahdiansyah & Rahmawati, 2014).

The focus in numeracy literacy is that students are able to formulate, apply and interpret into various

contexts that include mathematical reasoning and use concepts, procedures, facts in mathematics and tools to describe, explain, and predict phenomena in everyday life. Numeracy literacy is very important because with numeracy literacy one can understand the role or usefulness of mathematics in their daily lives (Maghfiroh et al., 2021; Pangesti, 2018).

One of the facts that occurs is the failure in the implementation of mathematics learning. Students have not understood the concepts that exist in learning mathematics (Yayuk et al., 2020). This error if left unchecked will have fatal consequences that can affect the next level of education. Basic understanding errors from an early age can be carried over to higher levels of education. This happens because mathematics is learning material that is interrelated with one another (Fong Peng, 2015; Novitasari, 2016). The emphasis of mathematics learning is now not only emphasized on theory but more than that, how students are faced with solving problems in everyday life.

Mathematical solutions related to everyday life are called numeracy literacy (Forgasz, 2019; Pangesti, 2018). Based on observations and interviews with teachers in junior high schools in Medan City, teachers have generally implemented junior high school learning using the 2013 curriculum. However, the learning has not fully touched on the essence of numeracy literacy which is now a concern of the government and is an important component in the assessment of the AKM.

Teachers only teach ordinary math concepts in the classroom. This fact sometimes makes student mastery in the learning process not effective and efficient. Moreover, now the government is also rolling out an independent curriculum. Teachers are still weak in mastering numeracy literacy materials and understanding the independent curriculum. The lack of training also makes teachers there less updated on new learning materials.

Seeing the essence of numeracy literacy that has been described above, then as an educator or teacher needs to make efforts in improving the quality of learning. This effort can be done with various innovations such as training for teachers, especially in learning numeracy literacy. A good teacher is an effective teacher (Perso, 2016). Effective teachers can be defined as teachers who help students acquire knowledge and facilities with numbers, number relationships and number operations based on an integrated network of understanding, techniques, strategies and application skills. Learning how to apply this knowledge and facility with numbers, number relationships and number operations in a variety of contexts. Highly effective teachers are key to learning and success (As'ari et al., 2019; Cahyati et al., 2018; Huang, 2020; Liu et al., 2020). Sustainable school improvement and student success also depend on the quality of classroom teaching. This effort not only provides a form of numeracy literacy training but how learning can also be integrated.

2. Method

Based on community service carried out in Medan City with the title "Learning Design Assistance Based on Numeracy Literacy Hots for Junior High School Teachers in Medan City" this activity was carried out to all junior high school teachers with the activity center at Thomas Alva Edison Private School located at Jl. Denai No.131, Tegal Sari Mandala II, Kec. Medan Denai, Medan City, North Sumatra. The number of participants recruited to participate in this activity was 30 people. Methodology or often referred to as a sequence or series of activities as a whole from the research process carried out. Based on the sequence of planning community service activities that will be carried out in community service activities (Murdjito, 2012).

Activities are carried out using several stages, namely the preparation stage, implementation stage, reflection stage.

The first stage of community service activities carried out is preparation which begins with compiling a community service team, then observing school readiness in participating in numeracy literacy activities, recording participants who match the criteria that can be used as participants in community service activities. After obtaining the participants of the planned activities and in accordance with the expected criteria, after the initial data is obtained, permission is made to the school related to the teacher of each school given permission to take part in the learning process program in numeracy literacy practice and character in junior high school teachers in the school.

The next stage is to prepare a module or collection of materials that will be delivered in community service activities, adequate rooms, activity schedules. After all the preparation processes are complete, the next stage is implementation.

The methods applied in the implementation of activities are lectures and questions and answers. The lecture method was chosen to provide an explanation of the material about the preparation of HOTS-based evaluation questions. Questions and answers were asked to get a deep picture of the acceptance of the material by the participants. The service activities were carried out in the hall of Thomas Alva Edison Private School Medan Denai. . The stages of the overall activity implementation can be detailed in the table as follows.

Table 1. Stages of Activity Implementation.

Stages	Activity	Implementation
1	Bloom's Taxonomy in Learning and Evaluation	Lecture and question and answer
2	Operative Verbs	Lecture and question and answer
3	Grids Preparation	Lecture and practice
4	Operative Verbs	Lecture and practice

In this mentoring activity, in delivering the material, the community service team used various methods, questions and answers, discussions, lectures and assignments. All of these methods are used according to needs, for example lectures when the community service team provides the information needed and reinforces each material conveyed by the teachers when they appear in delivering teaching materials by applying literacy, numeracy and character.

Questions and answers during the teacher participant session who participated in this activity asked, added, responded to the material presented by the participants who came forward. And so do the other methods used as needed.



Fig. 1. Participants enthusiastically respond to the presentation of the material

After the core activities are completed, of course, there is a follow-up that must be carried out from the results of these activities, in this case the community service team carries out consultation or guidance activities for participants who want to conduct discussions to explore the application of literacy, numeracy and character in each learning material presented as well as what media and methods are suitable for use when delivering the material in front of the class. After the guidance activities are completed, an evaluation is carried out to find out during the mentoring activities of the community service team. Participants progressed to what extent in the application of independent learning, as well as making a written report for the results of the service that had been carried out.

3. Results and Discussion

The service activity was held on Wednesday, July 12, 2023 at the Thomas Alva Edison Private School hall. The participants who attended amounted to 20 teachers from various subjects taught. The service activity starts at 08.00-14.00 WIB. The focus of the activity is the process of training and making questions based on HOTS Literacy Numeracy with a direct training model. Data were collected by observation and

giving practice tests to make Numeracy Literacy HOTS-based questions based on subjects by forming groups. The data were analyzed with descriptive qualitative based on the assessment guidelines for Numeracy Literacy HOTS-based questions.

The service activity is in the form of training by presenting Bloom's taxonomy material in learning and evaluation, operational verbs, preparation of grids, practice and presentation of HOTS-based questions. After the material is presented, the next session is discussion and question and answer before practicing making Numeracy Literacy HOTS-based questions.



Fig. 2. Participants composing questions in groups.

The Q&A took place in 2 sessions with theoretical and practical questions. Theoretical questions included the correlation between Bloom's Taxonomy and evaluation in the independent learning curriculum. Practical questions included the application of operational verbs in cognitive level 1 (Lower Order Thinking Skills/LOTS), cognitive level 2 (Middle Order Thinking Skills/MOTS), and cognitive level 3 (Higher Order Thinking Skills/HOTS).

4. Conclusion

Based on this explanation, it can be concluded that the learning design assistance activity for HOTS Literacy Numeracy for junior high school teachers in Medan Denai District which was held on July 12, 2023 at the Thomas Alva Edison Private School hall was very useful. When the independent learning curriculum is implemented, schools must be prepared with all the consequences,

one of which is implementing schools must be able to carry out evaluations independently.

This means that it is necessary to increase knowledge of compiling HOTS-based Numeracy Literacy questions for student evaluation activities. Participants participated in the training activities with enthusiasm even though there were still some obstacles experienced by the participants. Developing questions based on Numeracy Literacy HOTS learning design requires continuous practice and consistency. The results of the service have shown that the participants can follow the training well from start to finish. In addition, the collaboration of the participants in groups in developing questions is a positive stimulus among subject teachers.

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