

Accompaniment of Contextual Learning Oriented Minimum Competency Assessment of Mathematics through Lesson Study

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DOI: <https://doi.org/10.18196/berdikari.v11i2.17692>

ABSTRACT

The Minimum Competency Assessment is one component of the national assessment as an assessment policy established by the Indonesian government in the independence of learning to assess the success of formal education in schools. SMP Muhammadiyah 8 Batu City has implemented learning innovations but needs improvement, especially in integrating student involvement in creative, critical, communicative, and collaborative thinking and referring to the Minimum Competency Assessment. This mentoring activity through Lesson Study aims to improve the quality of mathematics learning by using a contextual approach oriented towards Minimum Competency Assessment. This mentoring activity used workshop and simulation methods. All four mathematics teachers attended the workshop and simulation. The activity results showed that the Lesson Study team was able to produce contextual learning tools oriented towards Minimum Competency Assessment, which integrated student involvement in creative, critical, communicative, and collaborative thinking, which was realized in the form of Lesson Design. The model teachers and observers were enthusiastic and carried out contextual learning activities oriented towards Minimum Competency Assessment through Lesson Study well. Students gave positive responses and were very active during learning. Therefore, the contextual learning assistance activities oriented toward the Minimum Competency Assessment can be said to be effective. The learning tools that the teacher had prepared could be implemented in other classes with relatively similar student characteristics.

Keywords: Contextual Learning, Mathematics, Lesson Study, Accompaniment

INTRODUCTION

The junior high school of Muhammadiyah 8 Batu is a private school with a relatively large number of students. There will be 18 study groups in the 2021-2022 academic year. The eighteen study groups or classes are divided into six grade 7 groups, six grade 8 groups, and six grade 9 groups. The junior high school students of Muhammadiyah

8 Batu come from Batu and Malang Regency. The enactment of regulations limiting the distance between school and homes to enter school and accepting new students stipulated by the government has hardly reduced the interest and number of students in Batu City and Malang Regency to attend the junior high school of Muhammadiyah 8 Batu.

Minimum Competency Assessment (AKM) is a component of the national assessment as an assessment policy established by the Indonesian government in independent learning to assess the success of formal education in schools. AKM assesses the basic competencies students need to develop their abilities and play an active role in positive social activities (Tohir, 2019). AKM is used to measure students' cognitive abilities related to numeracy literacy. The junior high school of Muhammadiyah 8 Batu has implemented the Freedom to Learn curriculum. One math teacher has made several learning innovations, but it still needs to be improved, especially in integrating student involvement in creative, critical, communicative and collaborative thinking and referring to AKM. Active participation of students in learning mathematics still needs to be improved. Students in the learning process lack the ability to think creatively, critically, communicatively, and collaboratively through problem-solving. Contextual problem-solving is able to develop students' communication skills during learning (Indah Nartani et al., 2015).

The mathematics assessment process goes hand in hand with the chosen learning model. Learning models using contextual problems provide opportunities for students to think critically in solving problems and obtaining the essential concepts of the subject. The use of contextual problems can facilitate students' understanding of mathematics learning material (Lestari et al., 2021) and equip teachers to present contextual lessons (Williams, 2022). Contextual learning develops students' interest and achievement in mathematics (Velani & Retnawati, 2020). Contextual learning components in this mentoring activity include inquiry, questioning, learning community, modelling, reflection, and evaluation.

Therefore, based on the identification of these problems, it is still necessary to assist in implementing AKM-oriented contextual learning, which emphasizes the involvement of students in creative, critical, communicative and collaborative thinking through Lesson Study for Learning Community. Contextual learning facilitates students' development of the ability to understand mathematical concepts and communication (Lubis, 2020; Silaen et al., 2021). The assistance for Lesson Study for Learning Community

(LSLC) activities is the integration of innovative learning concepts in tertiary institutions with real activities in schools. Lecturers know the difficulties in learning at school and can provide alternative solutions while implementing them. Mathematics teachers can find out the difficulties students face in learning mathematics and alternative solutions through Lesson Study for Learning Community activities. Students have experience completing AKM mathematics through contextual learning. Using a good context selected through contextual learning is a good starting point for math activities in the classroom (Taher et al., 2019). Contextual learning can improve students' thinking ability at a higher level in mathematics (Hobri et al., 2018).

METHODS

Four mathematics teachers attended this mentoring activity of AKM-oriented contextual learning through LS with workshop and simulation methods. The activity steps were carried out through a workshop on preparing mathematics learning designs by teachers in the form of AKM-oriented contextual teaching modules based on LS. In the process of preparing the teaching modules, the teachers received maximum assistance from the Community Service Implementation Team, with the mentoring schedule adjusted to the school's agenda. During the workshop for preparing teaching modules, implementing and reflecting on the success of the workshop, participants' abilities were evaluated using indicators at the Plan, Do, and See stage. Evaluation of program implementation and sustainability: at the end of the activity, an evaluation was carried out using the Focus Group Discussion (FGD) method. The FGD participants were all mathematics teachers guided by one moderator. The findings in the FGD implementation are used as sustainable best practices for the LS program.

Plan activities include the LS team collaborating on learning plans that include AKM learning tools and instruments. The team determines model teachers or lecturers, moderators, observers, note-takers and documentators who will practice learning. The team stabilizes the learning focus that has been mutually agreed upon. The team conducted discussions to obtain input from the AKM learning tools and instruments. The team revised the learning devices according to the suggestions and input from the discussion participants. The team prepares the facilities and infrastructure that will be used to implement learning (Do).

Do activities include Implementing learning according to the agreed learning scenario? Students strive to be able to learn in a reasonable and natural atmosphere. The

observer observes the steps of the learning process according to the scenario. The observer carefully observes and fills in the observation sheet of learning activities (students, educators, and their environment).

See activities include: The team reflects on the learning that has been carried out with discussion, starting with the model teacher conveying impressions and messages about the learning practices that have been carried out. Observer gives comments about good things during learning activities. Observer provides comments about things that are not good, along with evidence and steps for solutions. Activities continued in the next cycle based on the results of reflection.

RESULTS AND DISCUSSION

AKM-oriented contextual learning assistance through Lesson Study for Learning Community begins with coordination with all math teachers and school principals at the junior high school of Muhammadiyah 8 Batu to agree on an implementation time. In accompanying Plan 1 activities, the LS Team collaborated on learning plans that included learning tools, determining model teachers who practised learning, moderators, observers, note-takers and documentators. The model teacher defined in this Lesson Study activity is Ms. Laili Nur Hanifah, S.Pd., M.Pd. In addition, the Team deepened the mutually agreed learning material, namely Functions, with the learning objectives being: “Through AKM-oriented contextual learning activities, students are able to define functions, identify functions and not functions, and are able to solve problems in everyday life related to functions.

Next, assist the LS team in conducting discussions to obtain input from learning tools, then revise learning devices according to suggestions and input from discussion participants, and prepare facilities and infrastructure used in the implementation of learning (Do), which includes Student Worksheets (LKPD), markers, sticky notes, task boxes, and boards for pasting work that has been written on the sticky note.

The LS Team’s assistance in discussing Plan 1 activities looks like in Figure 1 below.



Figure 1. Accompaniment for Plan 1 Activities

The results of the discussions obtained in Plan 1 included that student activities in learning were carried out through simple activities, namely solving contextual problems related to the date, month and year of birth of each student by discussing in small groups (3 or 4 people). The problem is shown in Figure 2 below.

MASALAH 1.1



Setiap individu yang terlahir di dunia pasti memiliki tanggal, bulan dan tahun lahir masing-masing, dan hal tersebut pasti hanya terjadi satu kali dalam hidup kita.

Nah sekarang diskusikan dengan anggota kelompokmu mengenai nama siswa dan bulan lahirnya

Figure 2. Instructions for Student Activities in Plan 1

Accompaniment for Do 1 Activities

Accompaniment for LS activities in Do 1 focused on accompanying the implementation of learning according to the learning scenario in Plan 1 agreed upon by the LS team. In implementing this learning, two teachers observe the learning process steps according to the scenario with an emphasis on student activities (Figure 3).



Figure 3. Assistance in Do 1 Activities

Accompaniment in See 1 Activities

Accompaniment in the See 1 activity was carried out after Do 1, which the model teacher and all observers attended. The LS team reflected on the learning that had been carried out with discussions, starting with the model teacher conveying his impressions and messages about the practice of learning 1 that had been carried out. The model teacher said all the designs could be carried out well, but he was a little tense and worried there was not enough time. In general, the observer commented that during the learning activities, the students were active and communicated smoothly. The students were engaged in discussing the birth month of each group member. The observer also said that one student in group four was less active in problem-solving discussion activities. He only saw his group mates discussing it and, at one point, scratched his head. Students generally feel proud when they find solutions to problems and are happy while participating in learning. The LS team found good practices carried out by model teachers as best practices, in which the teacher presents mathematical concepts through simple context problems in everyday life that students often experience. Contextual problems that students often experience can improve students' critical and creative thinking (Arifin et al., 2020; Darhim et al., 2020; Mulyanto et al., 2018; Toheri et al., 2020). Based on the results of the assistance in See 1, this activity was continued in the second cycle of mentoring.

Accompaniment for Plan 2 Activities

In accompanying Plan 2 activities, the LS Team collaborated on learning plans that included learning tools, determining model teachers who practised learning, moderators, observers, note takers and documentation. The model teacher determined in this

Lesson Study activity is the same as in Plan 1: Ms. Laili Nur Hanifah, S.Pd., M.Pd. In addition, the Team stabilized the learning focus mutually agreed upon, namely the continuation of Functions. The learning objectives are: “Through AKM-oriented contextual learning activities, students are able to identify functions and not functions and solve problems in everyday life related to functions.”

Next, assist the LS team in conducting discussions to obtain input from learning tools, then revise learning devices according to suggestions and input from discussion participants, as well as preparing facilities and infrastructure used in the implementation of learning (Do), which includes Student Worksheets (LKS), Markers, sticky notes, task box, and board to attach the work that has been written in the sticky note.

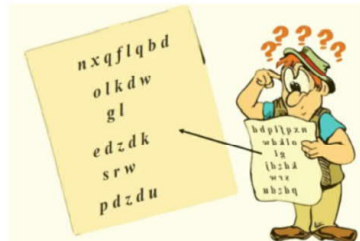
The following is the documentation when accompanying the LS Team in discussing Plan 2 activities.



Figure 4. Accompaniment for Plan 2 Activities

The results of the discussions obtained in Plan 2, among others, were that student learning activities were carried out to solve the “Use of Passwords/Messages” problem by discussing in small groups of three or four people. The following is a simple problem regarding passwords that are given to students.

Bisakah kalian memahami pesan berikut:



Tanpa mengetahui kode sandinya, pesan diatas tentu tidak bisa dimengerti, lain halnya jika kita punya kode pesan berikut.

Perhatikan aturan sandi di bawah ini.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
q	w	e	r	t	y	u	i	o	p	a	s	d	f	g	h	j	k	l	z	x	c	v	b	n	m

Tuliskan arti pesan sandi berikut.

- gkqfuzxqax qrqsqi uxkxax atzoaq ro kxdqi*
- uxkxax qrqsqi gkqfuzxqax ro ltagsqi*

To solve this problem, students in each group are given Plano paper to write down their work.

Accompaniment for Do 2 Activities

Accompaniment for LS activities in Do 2, namely accompanying the implementation of learning according to the learning scenario in Plan 2 agreed upon by the LS team. In implementing this learning, the teacher acts as an observer, consisting of two teachers observing the learning process according to the scenario, emphasising student activities. The following is the accompanying document for Do 2 activities.



Figure 5. Accompaniment for Do 2 activities

At the end of the Do 2 activity, students in each group presented their work in front of the class, while the other groups provided clarifications and questions. Next, after the group representatives finished the presentation, the teacher and reinforced the con-

cept of function and non-function based on the problem-solving results. Discussions in the redesigned lessons contributed to developing the interrelated dimensions of conceptual understanding and literacy mathematics (Jazuli et al., 2017; Wardono et al., 2020; Yuberti et al., 2019).

At the end of the lesson, the model teacher conducts a learning reflection, in which each student writes the results of a reflection on the understanding of the material studied on the provided sticky notes and then attaches them to the board provided. The following shows the activities of students pasting the results of reflections.

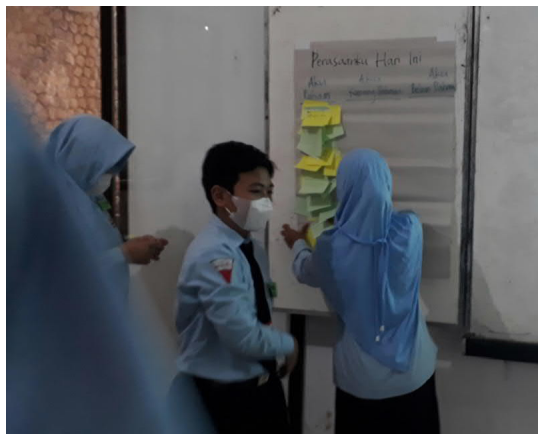


Figure 6. Students attach the results of their reflections

The results of the students' reflections written on the sticky note show that 100% understand the function material that has been learned, as shown in Figure 5.8 as follows.

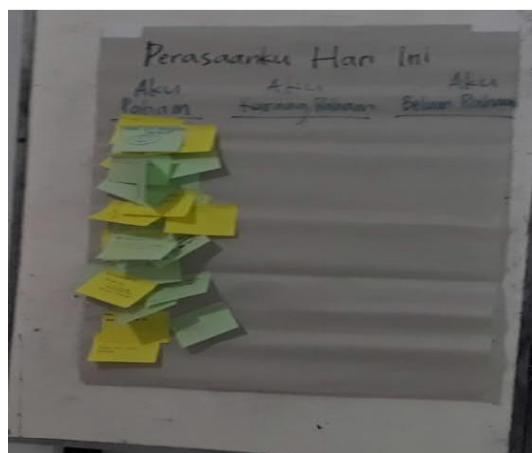


Figure 7. Results of reflection on learning

Accompaniment in See 2 Activities

Accompaniment in See 2 activities was carried out after Do 2, which was attended by the model teacher and all observers. The LS team reflected on the learning carried out in Do 2 with discussions, starting with the model teacher conveying impressions and messages about the learning practices 2 that had been carried out. The model teacher said that all the designs could be implemented properly without any problems, and students, in general, participated in the activities according to the response planned in Plan 2. In general, the observer commented that during the learning activities, the 2 students were very active and seemed happy during follow-up learning. In general, students can solve problems regarding passwords, although there is still one group that is incorrect. Observer also said that students who found, in general, they felt proud and happy. The LS team found good practices carried out by model teachers as best practices, in which the teacher presented mathematical concepts through problems in the context of everyday life experienced by students. A snapshot of See 2 mentoring activities looks like in Figure 8 below.



Figure 8. Assistance See 2

This dedication shows that the mentoring activities have resulted in a Plan design, which includes innovative learning tools, model teachers who practice learning, moderators, observers, note-takers and documentators. The design of the learning plan that has been prepared complies with the principles of AKM-oriented contextual learning. In this design, students are initially given simple problems and then discuss them in small groups. Solving simple contextual problems and group discussion activities are

the two main principles in contextual learning, which are realized in the learning steps. Contextual problems in everyday life often experienced by children in contextual learning can develop an understanding of mathematical concepts (Jazuli et al., 2017; Lubis, 2020; Sumirattana et al., 2017).

The model teacher has carried out the design or learning design well, without any problems, and students, in general, have participated in activities according to the response planned in the plan or design. In problem-solving discussion activities, students are able to demonstrate good collaboration skills, convey their thoughts to group mates, listen, and pay attention to the thoughts conveyed by friends in the group. Students generally get contextual problems, although there is still one group that is incorrect. These findings support the results of research which state that the implementation of learning that begins with contextual problems is able to develop students' critical thinking (Lestari et al., 2021) and learning mathematics to be effective (Irawan Saragih & Surya, 2017; Rahmayanti et al., 2020).

Generally, it was found that during the learning activities, students were very active and happy to participate. Students who find solutions to problems feel proud and happy. There is a high relationship between math problem-solving activities and self-confidence, and students give positive opinions on learning that start with contextual problems (Alfin et al., 2019).

CONCLUSION

This mentoring activity found that mathematics teachers were able to develop innovative teaching modules that were able to facilitate students' creative thinking. The learning design designed in the AKM mathematics-oriented contextual learning assistance through Lesson Study for Learning Community, carried out by placing simple problems in students' daily lives to be solved collaboratively in small groups, can provide a pleasant learning situation for students. Students make a mathematical model of this simple problem following the activity steps arranged in the activity sheet (LKPD). Students who can find solutions to problems feel happy, proud, and confident. AKM math-oriented contextual learning assistance through Lesson Study for Learning Community can be continued or expanded at the school level, along with other math material topics. The learning design results obtained in Plan activities can be followed up for implementing learning in other classes with the same student characteristics.

ACKNOWLEDGEMENT

The author expresses his deepest gratitude to the Chancellor and Dean of FKIP, University of Muhammadiyah Malang, who have provided funds for the implementation of this community service activity.

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