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LEARNING DEVELOPMENT BASED ON LESSON STUDY FOR LEARNING COMMUNITY IN INCREASING MOTIVATION TO LEARN MATHEMATICS

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ABSTRACT

Low knowledge of mathematics can have an impact on the quality of education so that the importance of knowledge of mathematics is assessed and designed properly in learning both in terms of planning and preparation in teaching because learning that is planned beforehand will be more focused. Lesson study based learning for the learning community prioritizes several indicators including community learning, collaborative learning, caring community and jumping tasks which make children more willing to learn together and there is an attitude of tolerance among students. The research uses the mix method method with the development of thiagardjan through the 4D realm, namely define, design, develop and desseminate in experimental research using a nonequivalent control design with the results obtained from the pretest value to determine prior knowledge and posttest to determine knowledge after being given treatment and conducting interviews as research supporting analysis materials. The results showed that the development of the deviceLearning Development based on Lesson Study For Learning Community in increasing motivation to learn mathematics significant increase significant effect Based on the data correlation results (r) = 0.644 with the number of respondents 61 students. The correlation value (0.644) is in the interpretation value between 0.40 to 0.70, this shows that the relationship between students' learning motivation and learning tools using lesson study for learning community is moderate or quite strong.

Keywordss: Education, Lesson Study For Learning Community, Motivation

1. Introduction

The process of learning mathematics in schools has a very important role. By learning mathematics, students are expected to be able to improve their creative thinking skills, be consistent, independent and honest. Therefore, knowledge of mathematics must be mastered but in reality there are still many students who have difficulty in learning mathematics. Low knowledge of mathematics can have an impact on the quality of education (Sukarani et al., 2022)One of the efforts in increasing mathematical knowledge is the need for a good design of learning materials and designed by the teacher before the learning process takes place so that it can improve students' abilities(Sudiarta et al., 2013).

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*Lesson study*has developed in Japan since the early 1990s which comes from two words jugyo which means lesson or learning, and kenkyu which means study or research or assessment.According to(Hobri et al., 2018)Lesson study as a driving force for school reform that always prioritizes student learning, the nature of children's learning at school is not only getting knowledge from teachers, but also through interaction and learning together with friends.

*Lesson study*is one of the coaching efforts in improving the learning process carried out by a group of teachers collaboratively and continuously, in planning, implementing, observing, and reporting the results of reflection and evaluation of their learning activities.(Hobri et al., 2018). Learning community is one of the important aspects that must exist in every class, affective teachers will strive to form an effective learning community in their learning. The

learning community that exists in a class in a learning activity will greatly affect student involvement in the learning process, and ultimately the achievement of learning objectives.

Learning mathematics with lesson study for the learning community, students can find concepts in the number pattern material by solving given contextual problems and students can estimate the right solution steps. Students are also given the opportunity to discuss, ask questions, and have opinions in groups through group discussions so that students are also seen to be more active during the teaching and learning process.(Octriana et al., 2019).

The important thing that needs to be improved in learning is the learning system in which most schools implement a learning system that leads to teachers and this system makes students compete with each other among their friends, do not want to help each other for fear that their grades will lose to the students they help, this results in students whose abilities are less will be difficult to develop(Yanti et al., 2018). Therefore, we need to implement a new learning system, namely the lesson study system for the learning community, a learning system where students who understand better will help those who do not understand, so that it will foster an attitude of helping students, not just a competitive attitude to get the best grades. which can have a negative impact on students.

*Lesson study for learning community*focusing on the development of teaching and learning professions, this is expected to improve the competence of teachers, through lesson study is expected to improve the quality of learning both at the teacher level and student learning outcomes(N. Hasanah et al., 2021). Competent teachers are expected to improve the quality of learning so that learning targets are achieved. Lesson study for learning community activities include planning, implementing and reflecting every teacher actively involved in these activities.(Hasanah et al., 2022).

One form of lesson study is conventional and carried out in three stages, namely plan (plan), do (implement) and see (reflect) which is continuous or never ending (continuous improvement). Along with the times, lesson study has changed into collaborative-based lesson study and learning community, generally referred to as lesson study for learning community (LSLC). Things that need to be considered in the implementation of LSLC are how students and teachers learn from each other (collaborative learning), care for each other and no one is neglected (carring community).

The stages in the implementation of the LSLC are as follows:(Herviani et al., 2018)including;

1. Stage plan (scheduling & planning); In this stage, the teacher who will carry out the lesson study arranges a meeting schedule. In the preparation of this teaching material, the teacher concerned must formulate learning problems that were found from the start, so that they can easily set goals and targets for achievement in the learning process.
2. Do stage (teaching & observing); after planning and materials When the model teacher is teaching, another team member (teacher observer) makes observations on the lesson, observations make important notes regarding the ongoing process, the results of observations will provide detailed notes and collect evidence without making judgments before carrying out discussions. Observers provide new perspectives and can gather evidence of students' thinking and understanding. Before carrying out the observations, the team determines what data will be collected and assigns each member to be an observer in the lesson.
3. See stage (reflecting); Discussion forums in lesson study require constructive input from all observer teachers. The opinions given must be intelligent, wise, able to model an analytical approach in the discussion, and delivered in a non-offensive manner so as not to discourage the model teacher.(Nuryami et al., 2022). This reflection should be carried out openly and thoroughly, covering all stages of the process so that the model lecturer has useful and comprehensive input, not piecemeal.

*Lesson study for learning community*focusing more on the student learning process does not directly lead to the results, even in it there are teachers who also learn and process so as to produce optimal learning so, it can be concluded that lesson study for learning community is a learning that prioritizes student activities how students collaborate(Hasanah et al., 2022)and communicate with peers so that it can make students more broad in receiving lessons and make students more focused in carrying out the teaching and learning process and the teachers in it also process and evaluate each learning event.

Characteristics of lesson study for learning community (LSLC), the main elements in LSLC learning include collaborative learning, learning community, caring community and jumping task. Collaborative learning here is a learning situation

where two or more people learn together. Collaborative learning is based on the fact that knowledge can be created in groups where members actively interact by sharing experiences and taking on asymmetric roles(Casillas et al., 2017).

Learning community pThis learning is intended to build communication between students, teachers and parents. The learning community is formed on two pillars, namely the values of the character of cooperation in togetherness and prosperity, and the values of caring and passionate about moving forward together(Herrera-Pavo, 2021). The teacher fully devotes attention to and monitors student activities and is responsive to students who are passive and appear to have problems in participating in learning in other words, the teacher must be sensitive to small details or signals from students who are easily overlooked, and pay attention to student communication both verbal and non-verbal.

*Carring community*is building a study group that cares about each other and is sensitive to the environment and Jumping Task is a task task with a level / level in the form of an application or more developed and not all students are required to be able to solve it.

The benefits of lesson study for the learning community(Hobri et al., 2018) as the practice of professional development of teachers, among others, as follows;

1. Increase teacher knowledge about teaching and learning materials
2. Increase teacher knowledge and teacher accuracy in observing student learning activities
3. Strengthening collegiality between teachers and observers other than teachers.
4. Strengthen the relationship between the implementation of daily learning with long-term learning goals
5. Increase teacher motivation to always develop
6. Improving the quality of learning including its components..

In this research, Development based on Lesson Study For Learning Community in increasing motivation to learn mathematics also has the aim of increasing student motivation because this motivation can affect children's learning patterns and the success of learning goals.Several factors affect the success of students in learning mathematics, including internal factors including initial ability, intelligence level, learning motivation, study habits, learning anxiety, learning motivation, and so on. While external factors include the family environment, school environment, community environment, socio-economic conditions, and so on(Sustainable, 2017).

Hamalik in(Learning & Students, nd)also suggests three functions of motivation, namely it can encourage behavior or an action, without motivation there will be no action such as learning, motivation functions as a driver and serves as a director, meaning directing actions towards achieving the desired goals.(Kurniawan et al., 2014).

2. Research Methods

The process of developing learning devices in this study refers to the 4-D model (four D Model). Development using the Thiagarajan model,(N. Hasanah et al., 2021)consists of 4 stages, namely the definition stage, the design stage, the development stage, and the dissemination stage. The learning tools developed include: lesson plans (RPP), student worksheets (LKS), and learning outcomes tests (THB).

This defining stage is the initial stage which contains analyzing activities, the purpose of the definition stage is to define and define needs. The definition stage consists of five main steps, namely front-end analysis, learner analysis, concept analysis, task analysis, and specification of instructional objectives.)(Nuryami et al., 2022).

The Design Phase consists of several stages, namely the preparation of tests where the researcher makes questions to be used in the research process, media selection, format selection after the media is known to use the media and the format then the initial design (initial design) is carried out.

The Development Phase (Develop) consists of a validator test that is carried out to an expert to assess the future of what we are developing in this research, the development of lesson study for Learning Community learning tools that prioritize the collaborative learning focus area. The dissemination stage, this stage is the stage of using the learning tools that have been developed(Murtikusuma et al., 2022).

To measure students' motivation using a questionnaire that was tested for the validity of the questionnaire, reabThe validity of the questionnaire after the questionnaire was valid and reliable was then used to measure students' motivation, how much influence the learning tools that had been developed and designed as

attractive as possible could increase students' learning motivation.
Can measure the level of significant influence using a simple correlation test(Puspitasari et al., 2019).

3. Results and Discussion

In this study, which was conducted for the first timenamely the development of learning tools from lesson plans, worksheets and learning outcomes tests accompanied by games to make students interesting. After validating the validator, the next step is to test the readability of the device and start doing research.

As for the results of the study obtained inData and Analysis of Practicality Data on Learning Devices used to see the practicality of learning devices were carried out by observing teacher activities which were carried out in 5 meetings when the model teacher carried out learning in class. The scores of observations were then recapitulated and analyzed.

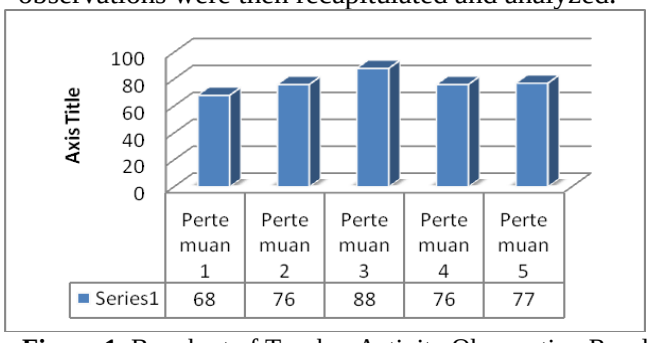

Figure 1. Bar chart of Teacher Activity Observation Result Recapitulation

Based on the results of the recapitulation in Figure 4.8, the average overall score of teacher activity observations is 3.36 and the overall average percentage of teacher activity observations is 84%. Practitioners provide suggestions that do not change the overall learning device. Based on the practicality criteria, the learning tools meet the practical criteria.

Furthermore, data analysis on the effectiveness of learning devices can be seen from the results of observing student activities during lessons, the results of student response questionnaires to the applied learning, and students' completeness as seen from the results of the mathematical reasoning ability test. The following will describe the analysis of the effectiveness of learning tools.

a) Analysis of Student Activity Observations

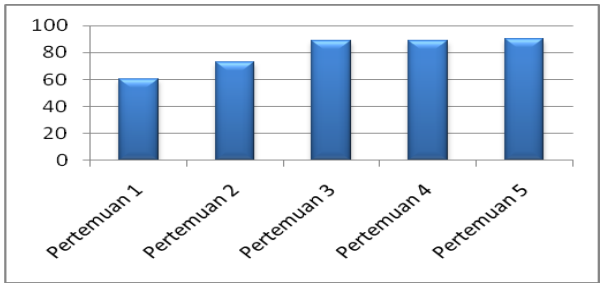

Figure 2. Results of Observation of Student Activities

Based on the results of the analysis in Figure 4.9, it can be seen that the activity of students during the learning process at meeting 1 is still not good, meeting 2 has increased because they are used to group learning, namely the category is quite good and for meeting 5 it is in the good category.

b) Data Analysis of Student Learning Completeness

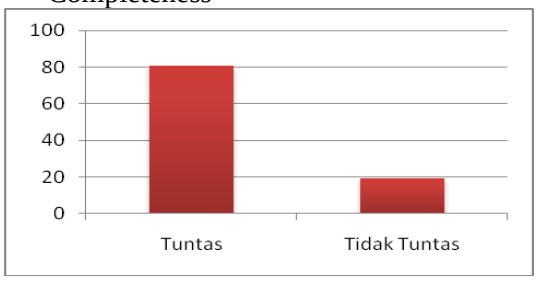

Figure 3. THB Results of Trial Class Students

Based on the picture above, as many as 86% of students were declared complete in learning mathematics using tools that have been developed so that the test class on the completeness score has been fulfilled properly.

c) Student Response Questionnaire Results

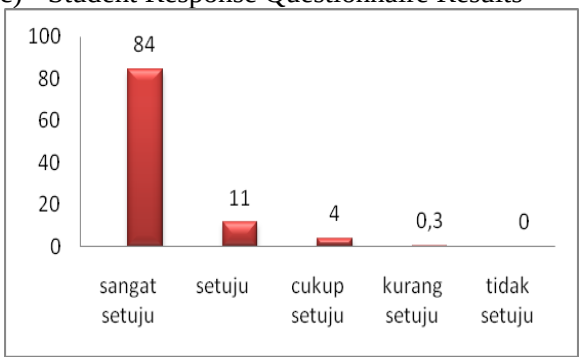

Figure 4. Bar Diagram of Student Response Questionnaire Data Recap

The student response questionnaire sheet was filled out by 36 students. Based on the results of the responses that have been presented in the diagram above, the learning tools are considered effective, because students who give positive responses≥ 80%ie achieve and how much there is a very good category. So it can be concluded that in general students gave a positive

response and the learning tools developed were declared effective84%

In learninglearning development based on lesson study for learning community in increasing motivation to learn mathematics there is also a jumping task indicator*Jumping task*is the provision of questions/tasks that challenge or are above the level of curriculum demands and are applicable or applied questions that challenge students to be critical, creative and think at high levels (Nur Hasanah et al., 2022)

In this study, the jumping task was made with open-ended questions so that students could think logically. Through the jumping task, students were able to think independently and grow with others. Through a creative learning process, they would develop more effective thinking, which could attract students to think more. more creative in solving a problem. Through jumping tasks, students are able to think independently and grow with others, through a creative learning process that will foster more effective thinking that can attract students to think more creatively in solving a problem. In addition to this, there is also a puzzle that can foster students' enthusiasm for learning

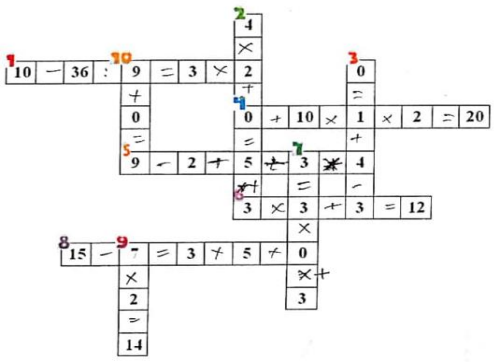

Figure 5. Game and Jumping Task

Instructions for use

1. This game is divided into two:
   a. The first game is a math game with the aim of increasing students' motivation in learning mathematics.
   b. The second game is a math problem with the aim of measuring student learning success in class based on the material being discussed.
2. The first game is a crossword puzzle with several squares containing numbers and the empty boxes must be filled with operations plus (+), minus (-), times (×), or divide (:) and equals (=), so that it can be a true statement according to mathematical rules.
3. After being able to correctly answer the first game, students can continue to complete the second game, based on the number on the crossword that students are able to answer.
4. If the student succeeds in answering the question in the second game, the student is declared successful in answering the question on that number and gets a score.

It can be seen that the children's motivation in working on the questions is very enthusiastic, especially the fighting system that occurs for the puzzle game. From the results of children from the questionnaireStudent responses to measure student learning motivation are significant or there is a relationship between student learning motivation and student test scores.

Table 1. Reliability Test Results

Cronbach's Alpha	N of Items
,800	27

Bebased on the table the value of the Cronbach alpha coefficient above is 0.800 A variable can be said to be reliable if it has a Cronbach's Alpha coefficient greater than or equal to 0.60 but if the Alpha value is < 60%, this indicates that there are several respondents who answered inconsistently. then it can be concluded that 0.800 > 0.60 reliable data.

Table 2. Simple Correlation Results

Correlations			
		Motivation to learn	Learning outcomes
Motivation to learn	Pearson Correlation	1	,644**
	Sig. (2-tailed)		0
	N	61	61
Learning outcomes	Pearson Correlation	,644**	1
	Sig. (2-tailed)	0	
	N	61	61
**. Correlation is significant at the 0.01 level (2-tailed).			

Based on the data in table 4.7 above, it is known that the correlation (r) = 0.644 with the number of respondents being 61 students. The correlation value (0.644) is in the interpretation value between 0.40 to 0.70, this shows that the relationship between students' learning motivation and learning tools using lesson study for learning community is moderate or quite strong. The correlation value means that there is a moderate or strong relationship between student

learning motivation and student learning scores obtained after trialling lesson study based learning tools for the learning community.

4. Conclusions

Teachers as the foremost element in learning must pay attention to what strategies must be done so that students are able to learn well in mathematics subjects. By providing good learning and in accordance with the wishes of students, it can generate students' learning motivation which ultimately affects their learning outcomes. Based on the data in table 4.7 above, it is known that the correlation (r) = 0.644 with the number of respondents being 61 students. The correlation value (0.644) is in the interpretation value between 0.40 to 0.70, this shows that the relationship between student learning motivation and learning tools using lesson study for learning communities is moderate or quite strong.

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