The Use Mathematics Learning Media With *Lesson Study* Setting

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Abstract: *This is a qualitative descriptive study by applying learning media with Lesson Study in the learning process. The learning process in this research included the implementation of learning, students activities and students responses. However, it did not exclude learning outcomes. The target product in this study were (1) Media/props used in learning; (2) learning tools that suit the media used; (3) The Lesson Study is expected to become input for schools as a reference for educators to be more innovative in the use of media that can be used by any educators both in Palopo and in other regions.*
Keywords: *Learning Media, Lesson Study, Learning Process*

I. Introduction

The development of science and technology forced education to adjust all the complex changes on human life. A nation with high quality human resources will create healthy and dynamic national stability as well as to develop and achieve prosperity. The most strategic means to achieve it is education as education is the process of improving the quality of human resources required in development.

In improving the quality of education, various efforts have been made by the competent authorities in the field of education. These efforts covers almost all educational components such as the improvement of the educational curriculum, improving the ability of teachers, provision of teaching and learning media, organizational management, and management education and other efforts related to quality improvement and quality of education.

Mathematics is part of national education system taught at all levels of school education. School math is a fundamental science required by learners to support their success in further education. Learning mathematics is aimed at establishing learners' reasoning ability reflected through critical thinking, logical, systematic and able to solve problems in mathematics and other areas of daily life. This gives the sense that in the teaching of mathematics, educators should be able to associate learning with situations in everyday life learners.

There has bee perception that math is a difficult subject, less fun and only some specific learners can master it. The perception becomes one factor in the low success in mathematics education. This is due to the abstractness of mathematics which is sometimes difficult to be understood by the learners. Not to mention the lack of variety of teaching strategies used by educators that students feel bored in learning. This makes most learners have difficulty in absorbing mathematical concepts taught in school, both for learners in primary schools and secondary level students. In consequence, it can not be denied that educators are obliged to change the paradigm that mathematics is a subject that is easy, fun, and fun to learn.

The problem of low absorption of learners in mathematics should be a serious concern, particularly for teachers of the subject. Educators should choose interesting technical presentation of and appropriate teaching strategies so that the material presented is easy to understand and not boring for the learners. One of the most important element to the success of the students is the availability of supporting meas or study aids in this case an adequate teaching aid, including information technology.

The use of media education in the implementation of the teaching of mathematics can improve motivation, attention and learning achievements of learners of the material being taught. This is in accordance with the view of Hamalik [1] that teaching media in teaching and learning process can arise new desire and interest, motivation and stimulation of learning activities, and even bring psychological influences on learners.

Therefore, the educators' efforts to manage and empower the various variables of learning and using a variety of media that can assist the effectiveness and efficiency in teaching and learning is an important part in the success of achieving the planned objectives if they are designed, organized, and used appropriately. In addition, instructional media used must be easy to understand and easy to used by learners. Media may not increase difficulty for learners in learning the subject.

Some examples of media that can be used to teach mathematics include props and computer which is currently developing rapidly. With the use of these media, educators are expected to create and bring learners towards fun, interesting and meaningful learning that the math concepts can be easily understood by learners, becomes long-term memory, and can be used in problem solving of everyday life problems.

Related to the problem elaborated, *Lesson Study* method or strategy can be used. *Lesson Study* emerged as one of the alternatives to overcome the problem of learning practices that have been seen as less effective. Generally, the learning practice in Palopo tends to be performed conventionally through oral communication techniques. Such conventional instructional practices more likely to emphasize on how educators teach *(teacher-centered)* than on how students learn *(student-centered),* and the overall results, as we predict, does not to contribute a lot to the improvement of the quality of teaching and students' learning outcomes.

Lesson Study is one of the development efforts to enhance the learning process carried out by a group of educators collaboratively and continuously in planning, implementing, observing and reporting learning outcomes. *Lesson Study* is not a short term project, instead, it is a relentless continuous activity and is an attempt to apply the principles of the *Total Quality Management* which is improving processes and student learning outcomes on an ongoing basis, based on the data. [2] Provided the formulation of *Lesson Study* as one of the coaching model for educator profession through assessments and ongoing collaborative learning based on the principles of collegiality and *mutual learning* to build a learning community. Therefore, *Lesson Study* is an activity that can encourage the formation of a community of learning *(learning society)* that consistently and systematically perform self-improvement, both at the individual and managerial levels.

II.   Research Methodology

1.   Types of research

This research is a qualitative descriptive study, which aims to describe the activity of students and teachers in mathematics as it is [3]. To support this research, the process of lesson study and the manufacture of media were carried out simultaneously. Based on consideration of efficiency, particularly in terms of the time available, in other words, during the process of implementation of lesson study has also been conducted to design or manufacture of the media that will be used in the learning process.

2.   Population and Research Sample

The population in this study were all primary schools located in the territory of Wara Sub-District. Sampling was carried out by *purposive sampling* technique*;* with the selected schools were SD Negeri 6 Bogar and SD Negeri 23 Batara.

3.   Research Procedure

The procedure of the study followed the flow map. Itserves to illustrate the stages of the learning media implementation in lesson study conducted during the research process. The description of the ongoing flow map is as follow

Figure 2. Flow Map of questionnaire Application
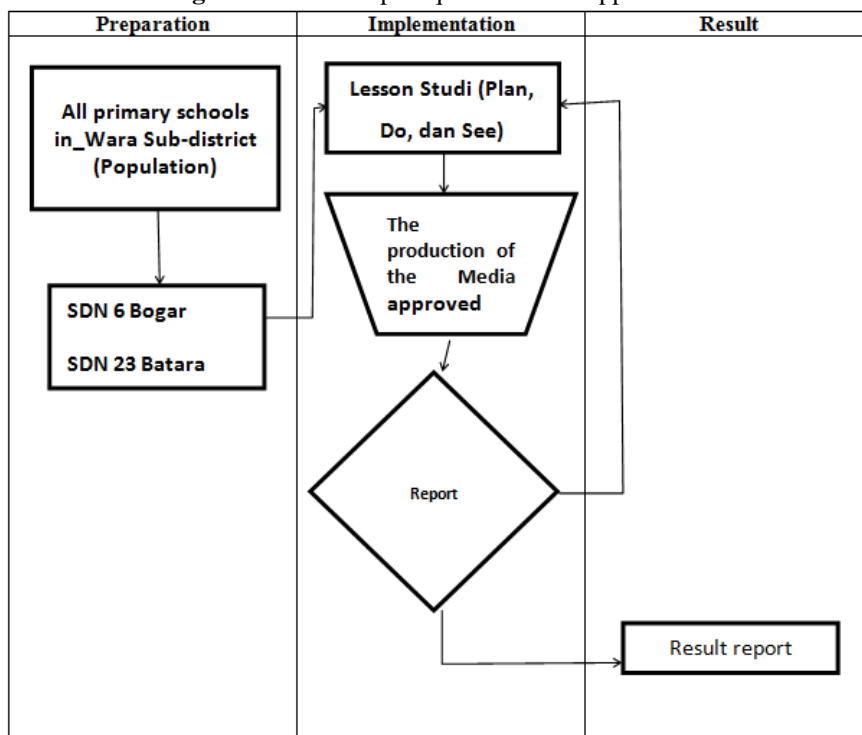
4. Data Collection Technique

Data collection in this study was conducted through video recording on each cycle and direct observation by researchers by video recording the activities in the *open class* based on the observation of the researcher's observervation. The validation techniques used was the the extension of observations in each cycle. The steps of data collection and validation are as follow:

a. Retrieving data via videotape when learning takes place *(open class).*
b. Performing transcription the data of the first to the the fourth cycles were and categorized based on the component set.
c. Performing reduction, abstraction, transformation, and categorizing the data of the first to the fourth cycle.
d. Comparing data of each cycle. All the consistent data related to the research objectives were used to perform data analysis.

5. Data analysis technique

In qualitative research, data analysis was conducted from the collection to the conclusion. Activities in qualitative data analysis were performed interactively and continuously until complete, indicated by the saturated data. The steps of data analysis were as follows:

a. Examining the data have been obtained from the video recordings of the *open class.*
b. Data reduction is an activity which refers to the process of selecting, focusing, abstracting, and transforming raw data. Data reduction in this study was performed by creating a summary comprising: core, process, and statements in accordance with the purpose of the research. Data validation technique used in this study was an extension of the observation, as explained in the third part of the steps of data collection and validation.
c. Data presentation that includes data classification and identification, i.e writing the organized and categorized data collection from which conclusion is drawn. In this study, the video recording data from each subject were reduced and categorized based on the components in every aspect observed. Therefore, information obtained can be easily concluded.

Data presentation and data interpretation, i.e the valid data as described in the fourth step of data collection and validation were presented and interpreted to obtain conclusions based on the research objective.

III. Results

The result of the study with SDN 6 Bogar and SDN 23 Batara as a sample were as follows:

1. Results for SDN 6 Bogar

1.1. Implementation of the first cycle

The first cycle began with the application of Collaborative Learning using group methods to make effective use of instructional media. Implementation of the learning aims to improve discipline and teamwork. In Do activities, the implementation of learning was very good at the beginning, yet as we enter the core of the activities, the model teacher could not manage the students in their respective groups that learning became inconducive. During the learning, the media use was still low (not in accordance with the plan). Due to the ineffectiveness of the media usage, the teacher took over the class that cooperative learning did not go well, so did the media becomeas a tool to help students learning.

On See stage, we the researchers team, model teacher and and the observers thought about anything to be revised for the following meeting. The observation indicated the following things:

1. The group setting was not well organized.
2. The use of learning media was not optimum
3. Cooperative learning did not go according to the syntax.
4. Time management of the model teacher was not well spent. As a result, all the activities planned in the stage plan could not be implemented.

Based on the discussion results of lesson study team, it is necessary to reform and make a more mature learning plan for the second cycle to make better lesson study and able to achieve the goals that have been set.

1.2. Implementation of the second cycle

The implementation of the second cycle was more focused on the syntax of cooperative learning model, the steps in the use of media, the group setting, timeliness of targeted activities completion in each phase. Cycle II was conducted in one face to face meetings and carried out by model teacher to teach and to be a facilitator during the learning process. In the second cycle the application of the learning was carried out by modifying the group formed at the beginning of the implementation of learning in order to be effective. In addition, in the second cycle also used worksheet containing steps to be performed by the students in the processing the learning media.

the observer reported that the study was carried out well with some points to be added. The first point is the need of media to help students to be more innovative and find their own ideas in processing the media

without any complete instructions. The second point is that the model teacher must also be better in controlling the class conditions that students actively express their thoughts on the outcome of their discussions. The constraints that have overshadowed every learning is time management.

1.3. Implementation of the third cycle

Activities of Cycle III were focused on the final delivering of this subjects and a manifestation of the achievement of competencies expected to be fulfilled by the students, i.e the students were able to use the medium of learning, the teacher model was able interpret ideas in the learning process, as well as the ability of teachers to make learning media.

In this cycle the researcher team tried to elevate the level of the learning desired by the model teacher which is including the type of cooperative model. The implementation of grouping during the class was modified by the formation of experts team consist of students from the original group. The media used were varied to support the implementation of learnin that every expert team used different media and to be informed to the home team to construct the students' ideas in the use of instructional media. The group modification was carried out that each student has a full understanding of the material and the use of media suitable for the material.

In the implementation, the teacher was required to be more active (in the planning) in giving guidance. Each student was highly enthusiastic on this activity, yet it gave a burden for the teacher as the teachers had to master each media displayed and able to take decisions on any conditions in the classroom.

2. Results for SDN 23 Batara
2.1. Implementation of the first cycle

Cooperative Learning Think-Pair Share (TPS) was applied in the first cycle by dividing the students into groups of two students. Then model teacher provided *scaffolding* that the students were able to understand the material provided. On the use of the media, at the beginning of the meeting the students were given full guidance through the Student Worksheet (LKS) in which each step in the use of media was made detail to ease the students in understanding the material.

In implementation step, the teacher carried out the class as planned in the planning stage. Many students had difficulty in understanding the material, the teacher had to walk around to provide guidance *(scaffolding)* to each group of the students. This made the teacher not optimal in giving guidance.

From the results of the first cycle, the researcher team, model teacher and observes decided to keep using this model, how to apply or make effective use of the media with model Think-Pair Share (TPS) cooperative learning model.

2.2. Implementation of the second cycle

In cycle II, the whole team of lesson study focused on the use of media by using Think-Pair Share (TPS) cooperative learning model, to make it more efficient, we agreed on the provision of material focusing on two sub materials beforehand, this made the implementation will not burden the model teacher in teaching coupled with the use of simpler media. Arsyad (2002) argued that generally, media is a tool of learning process, everything that can be used to stimulate thoughts, feelings, concerns and abilities or skills of learners so as to encourage the process of learning. Based on the concept of lesson study, the team further simplify the media use for the learning process can run properly. At Plan stage, the lesson study team performed simple simulation that later became a model guide for teachers in the implementation process.

In the learning implementation, the model teacher and students activity showed a significant increase from the previous stage. This is characterized by students' activeness in delivering feedback and responds to any questions. In fact there was a surprising finding where one of the students provided a separate idea that stimulated other students to think creatively in solving the problems presented. Even use of media that once become obstacles has became an effective tool for students.

However, there were still some problems arose both from the students, the teacher or the tools used (learning media). These constraints came from the students being busy with their own group and did not care or provided assistance to groups that experienced problems. Therefore, the lesson study team planned an approach or method for the next cycle.

2.3. Implementation of the third cycle

At this stage, the team thought of how to make the students more concerned with other groups. The team agreed to use peer tutoring method to make the students more concerned and could assist teachers in providing an understanding models for other students. By continuing to use the same model, we can see the details of advantages and disadvantages of the model. By adding sub material and the use of more complex media, the results of the learning process indicated that the difficulties of providing an understanding for other

students (the process of transferring knowledge) plus media use to be mastered by the student could be handled with peer tutoring. Students' ability to transfer knowledge was still low and the students even do things beyond what have been planned without proper guidance.

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