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Three Unique Facts About Lesson Study-Based Micro Teaching in Mathematics Learning Media Courses

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Abstract
Mathematics Learning Media courses prepare students to design and use effective media. This research aims to describe unique facts that emerge during lesson study-based microteaching, which is carried out in the context of mathematics learning. This method involves three stages: Plan, Do, and See, which allows students to collaborate and get feedback. Even though micro-teaching is proven to contribute to student skills, observations show that there are challenges, such as low critical and creative thinking skills and errors in carrying out apperception. The research results show that ineffective apperception activities, a lack of creativity in designing media, and students' ability to analyze information critically during learning are obstacles to learning objectives. This research recommends the need for more intensive guidance from lecturers to improve the quality of learning in the future.

Keywords: Micro Teaching, Lesson Study, Mathematics Learning Media

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Introduction

Digital literacy is critical in learning in the modern era. There are several important things about digital literacy. The first is easy access to information. Digital literacy allows students to access various sources of information quickly and efficiently (Ervianti et al., 2023; Yuniawatika & Kurniawan, 2019). The second is that learning that integrates digital literacy can help students prepare themselves to face challenges in today's digital or online world of work (Soeprijanto et al., 2022). The third is that digital literacy allows students to collaborate and interact with classmates around the world, broadening perspectives and improving social skills (Bouaamri et al., 2024). One lesson that can train students' digital literacy is mathematics learning media courses (Purwanto et al., 2021).

The Mathematics Learning Media course prepares students to design and use effective media to achieve learning objectives (Muhaimin & Juandi, 2023). Students' media designs should be implemented in learning, not just made and then presented in class, so the media's usefulness needs to be clearly illustrated. Therefore, students must use the learning media that they have created in the form of actual real learning practices or micro-teaching.

Microteaching has been shown to contribute to student skills (Amran et al., 2023). However, various challenges were revealed that students faced in applying theory to teaching practice (Ebrahim et al., 2017; Muluk et al., 2020). This is because students design learning alone. Collaboration is needed in designing the learning to achieve learning objectives.

One method that is considered effective in achieving this goal is lesson study-based microteaching. The Lesson study has three stages: Plan, Do and See (Lestari et al., 2023). The Plan stage focuses on designing learning, the Do stage focuses on practicing or implementing learning designs in the classroom accompanied by observations from observers, and the See stage focuses on reflection (Aziz et al., 2024). Lesson and microteaching can be combined into a microteaching lesson study (MLS) and have proven effective in teacher training programs (Cerruto et al., 2023). This method allows students to hone their teaching skills

and provides an opportunity to collaborate and get constructive feedback from lecturers and classmates (Zhou & Xu, 2017).

In general, previous relevant research related to Lesson Studies has focused on the design of RPP and LKPD only. However, limited research also focuses on implementing Mathematics Learning Media designs in the classroom. With the existence of Lesson Study-Based Micro Teaching, it is hoped that students will prove that the media that has been designed can be useful in achieving learning objectives.

However, several unique facts were found based on observations made during lesson study-based micro-teaching. These unique facts are problems in the learning process. In this context, this study aims to describe unique facts that emerged during the implementation of lesson study-based micro-teaching in the Mathematics Learning Media course. Through these findings, valuable recommendations are expected to be produced in designing mathematics learning media and teaching practices using these media in the future.

Method

This study focuses on the Mathematics Learning Media course class. There are seven classes in the July-December 2024 semester divided into four lecturers. The four lecturers are members of the Lesson Study team. From the seven courses, 1 sample class was taken by purposive sampling as the class to be studied. The class was selected considering the suitability of the lecturer team's schedule with the sample class's lecture schedule. The sample class consists of 30 students divided into six teams. Each team is given a project to design RPP, LKPD, and conventional and IT Mathematics Learning Media.

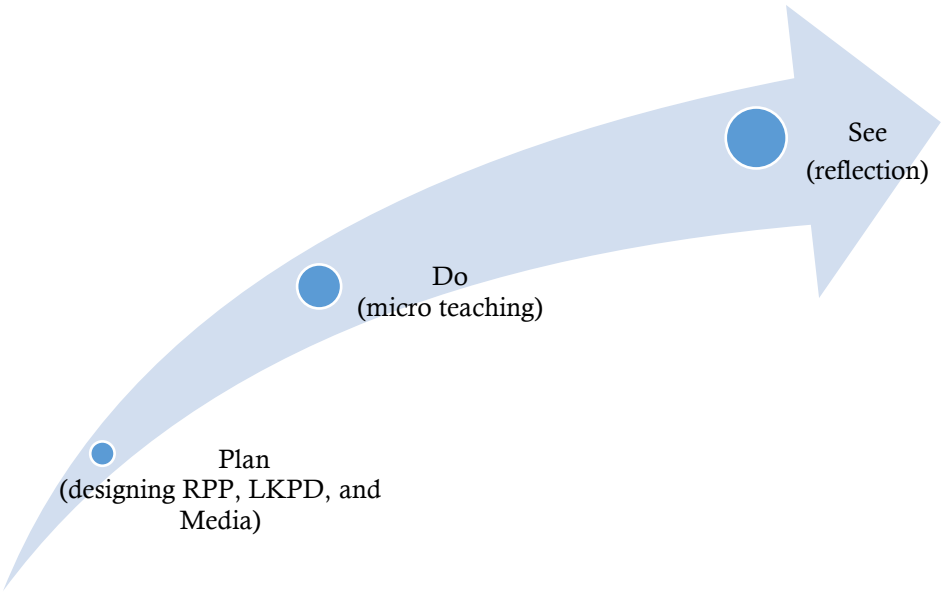

Figure 1. Lesson Study Based Micro Teaching Stages

Figure 1 shows the stages of Lesson Study-based microteaching. The Plan stage focuses on designing learning tools. At this stage, students and lecturers begin by analyzing the needs of learning media. This needs analysis is obtained by discussing and asking questions about students' experiences during elementary or middle school. The experience is what mathematics materials lack or are not understood by students; the solution is the availability of learning media to understand the material.

The Do stage focuses on the practice or implementation of learning designs in the classroom accompanied by observations from observers. At the Do stage, one student is selected from one of the groups that created the mathematics learning media project as a model teacher. The other students become model students. At this stage, the model teacher carries out all teaching activities as they should, starting with preliminary, core, and closing activities. The material chosen is the Pythagorean Theorem. The learning objective is for students to find or prove the Pythagorean Theorem through conventional and IT mathematics learning media. During the Do stage, the observer, in this case, is the team of lecturers teaching the Mathematics Learning Media course. The lecturer documents the positive and negative things done by the model student during microteaching. The See stage focuses on reflection.

At the See stage, reflection is carried out with the model teacher, model students, and observer lecturers regarding the positive and negative things the model students do during learning. This begins with the model teacher reflecting, evaluating, and analyzing what positive or negative things have happened during teaching,

then continues with responses from observers. These positive and negative things are focused on student activities. The data collection instrument for this study is a micro-teaching observation sheet. Data collection was carried out at the Do stage. The positive and negative things observed focus on student activities in the introduction, core, and closing activities. In addition, the critical and creative thinking skills of model students during learning are also observed.

Results and Discussion

Three unique facts were obtained during microteaching based on observations made during two lesson study cycles. The three facts are related to critical and creative thinking skills and mathematical problems in apperception. These three unique facts are included in the negative aspects of learning. These three facts are summarized from the reflection results at the See stage.

The first unique fact is related to apperception activities. Based on observations, there are two ways that model teachers do in apperception activities. The first way is to ask questions about the previous material and continue by informing the material to be studied. The second way is to give students mathematical problems at the beginning of learning. Students are asked questions about how to solve the problem, but the problem is not solved and is simply an example of a problem according to the material to be taught.

Both ways of doing apperception are undoubtedly wrong. This is because the two methods follow the same principles of apperception. Apperception is an activity that motivates and arouses students' interest and attention at the beginning of learning (Musthofa & Sujadi, 2020). If the first method is used, students will not be interested in learning. This is because the approach is limited to linking the material from the previous meeting and the material to be studied. Questions do not direct students to think but only to recall the title of the material studied previously. To attract students' attention and interest at the beginning of learning, teachers can provide a mathematical problem in real life. It is explained that providing problems in real life can arouse students' interest (Asmira et al., 2021; Owora & Chika, 2019).

The second mistake is that the problems given need to be solved or solutions are sought as if they were only examples of material and relevant problems. If the problem is brought to the core activity and a solution is sought, it will undoubtedly be more enjoyable for students. In fact, in observations made by the team of lecturers, the problems used by the model teacher in the apperception activity differ from those in the core activity. In general, students need clarification on this. If this continues, of course, the purpose of the apperception will never be achieved. Students will ignore everything the teacher says in the apperception activity because the problems seem to be just for story material that does not require thinking about finding solutions to problems. Indeed, apperception activities have received less attention from teachers because it is challenging to apply them in practice (Putri, 2020). There are many difficulties teachers face, one of which is the need for teacher mastery of apperception, and many teachers still assume that apperception does not affect the learning process. Apperception plays an important role in learning activities. The first minutes of the lesson are critical in determining the smoothness of the upcoming lesson, and apperception activities can be carried out in the first minute.

The second unique fact is that students' creative thinking skills in designing mathematics learning media still need to improve. Creative thinking skills show how someone can modify something existing to have a different value or create something entirely new (Meiarti et al., 2020; Sitorus et al., 2019). Many students tend to imitate media that has been developed. Even though a needs analysis was carried out at the Do stage regarding the media to be designed, it has been concluded that several new needs differentiate media design from existing media. However, the designs are only like those many others have made. So creativity is not visible. Today's Quality education requires developing students' critical and creative thinking skills (Astuti et al., 2019). This ability is also highly prioritized in the context of mathematics learning (Ida et al., 2021). The third unique fact is that the critical thinking skills of model students still need to improve. Critical thinking skills are seen if students can use their logical thinking to analyze the truth of the information received (Jablonka, 2020; Syafril et al., 2020). When the model teacher explained that the material needed to be corrected or better structured in its delivery, all the model students asked questions. The error occurred when the model teacher showed a mathematical problem that students had to observe. The problem is related to the Pythagorean Theorem in real life. The problem is that two friends live in a housing complex, yes.

Three things are recommended from the results of this research and can be applied in everyday educational practice. First, quality problems in apperception make students interested and focused on starting learning (Musthofa & Sujadi, 2020; Wisniewski et al., 2022). Second, the analysis of the needs and novelty of learning media projects designed by students must be considered by educators (Akin et al., 2023). Do not let the media created just copy media that other people have created without any novelty value that is adapted

to the needs of the times. Third, trigger questions need to be increased in learning activities. Quality questions to students have proven to be effective in training students' thinking (Chin & Osborne, 2008). Educators should pay attention to these three things for quality learning.

Conclusion

This study reveals that implementing Lesson Study-based Micro Teaching in the Mathematics Learning Media course faces several challenges, especially developing students' critical and creative thinking skills. Low creativity in designing media, problems presenting apperception questions, and students' lack of courage to ask questions indicate the need for more intensive guidance from lecturers. This study can provide insight into the development of more effective learning methods in the future and encourage students to be more active in the learning process.

Based on the conclusions of this research, it is recommended that future educational practices pay attention to mathematical problems that stimulate students' critical and creative thinking. Problems don't just involve asking questions; they must make students actively think. The problems in question can be non-routine problems, higher-order thinking skills (HOTS), or literacy.

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