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Plan – Do – See: Lesson Study-Based Differentiated Learning in Middle Schools

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Abstract

The Covid-19 pandemic hit almost all parts of the world, including Indonesia. It has been almost two years since the pandemic hit, impacting various sectors, including education. During the pandemic, learning was carried out online and felt less effective. Various government efforts have been made for faster recovery, especially in education. One of the government's efforts is through the KDS program (Lecturer-Teacher Partnership in Schools) through Lesson Study activities. This study aims to see the implementation of a Lesson Study carried out together with junior high school teachers in partner schools. Through KDS (Lecturer-Teacher Partnership in School) activities by implementing Lesson study, compiling and implementing differentiated learning. The research method used is the descriptive qualitative method. The subjects of this research were students of SMP. Lesson Study stages, namely planning (Plan), implementation (Do), and reflection (See), which are carried out with lecturers as facilitators and teachers in partner schools as model teachers and observers, have been carried out correctly by Lesson Study guidelines and the learning objectives can be achieved planned. The results of research conducted through Lesson Study conducted with teachers in schools by implementing differentiated learning of student learning outcomes are mostly complete.

Keywords: Lesson Study; Post Covid; Differentiated Learning.

Introduction

The Covid-19 pandemic has significantly impacted various sectors (Farhin et al., 2023; Humaidi et al., 2022; N. D. Safitri, 2023). The impact on the education sector results in the learning process taking place online. Ready or not ready for online learning by utilising technology? Online learning has several negative impacts, including the absence of direct interaction and communication (Bird et al., 2022; Defina & Rizkillah, 2021; Lestari et al. et al., 2021; Owusu_Fordjour et al., 2020). This causes students to be unfamiliar with direct collaboration and communication activities. Students' study habits during a pandemic differ from in-person learning activities (Beveridge et al., 2021; Weber, 2021; Yim & Gomez, 2021). When learning activities are carried out offline, there needs to be habituation and adaptation again.

Learning activities are essentially structured activities and interactions where there is involvement between learning subjects, namely students, instructors, namely lecturers, learning tools (Bergsten & Frejd, 2019; MM Effendi et al., 2022; Rizki et al., 2022), and the surrounding environment (as learning resources) as an effort to achieve learning goals. After the pandemic, learning activities were carried out offline, so the adaptation was needed not only by students but also by teachers (Aristovnik et al., 2020; Dutta & Smita, 2020; Kaninjing et al., 2021; Lestari et al. et al., 2021). For the learning objectives to be achieved, it is necessary to choose good strategies, methods, models, media and learning resources. In addition, student activity can also be used as a benchmark in learning activities (Hasanah et al., 2022; ND Safitri et al., 2023). Learning is a process or practice activity (Astuti et al., 2023; Setiawan & Waluyo, 2023). Student experience in learning can be built through active interaction activities with fellow students (Farida et al., 2023; E. Safitri et al., 2023), teachers, teaching materials and the surrounding environment. Students do not immediately own knowledge, skills, and attitudes in learning, but students need to manage them initiatively (W. P. Lestari et al., 2023; Mustakim et al., 2023; Pratama et al., 2023). The teacher acts as a facilitator; it can also be a source of learning, but students must be able to maximise the facilities provided and manage and understand various information based on their abilities.

To understand and manage various information, each student has different abilities, so it is necessary to facilitate student learning activities in the form of differentiated learning activities (Choirudin et al., 2021; Triono et al., 2023; Wijaya & Darmayanti, 2023). Differentiated learning is an effort to meet and adapt to the learning needs of different students in class (Kamal, 2021; Septa et al., 2022; Suwartiningsih, 2021). Differentiated learning does not mean that the teacher has to meet the needs of each student (Arif et al., 2022; Sah et al., 2022; Sari et al., 2023). However, the teacher uses various learning approaches so that they are suitable or close to the learning styles possessed by students.

Differentiated learning in class can be done through particular. There are three differentiation learning strategies: content, process, and product (Herwina, 2021; Kamal, 2021). Content differentiation is what we teach students. Process differentiation is how we convey it to students, and product differentiation is what tasks or final results we ask of students. In addition to these three strategies, several things are needed and can support them, including the environment, teacher and student readiness, and shared commitment. To realise differentiated learning activities (Fauza et al., 2022; Sekaryanti et al., 2022) through the KDS program (Lecturer Partnership with teachers at school) through *Lesson Study activities*, jointly and collaboratively arrange differentiated learning activities.

Lesson Study activities are activities carried out jointly with colleagues with the same goal, namely to design learning so that students gain a good understanding of the learning process and build new knowledge and knowledge together through exchanging opinions and information (Ningrum et al., 2020; Suwartono et al., 2022; Tanujaya & Mumu, 2020). *Lesson Study* has three stages, namely planning (*plan*), implementation (*do*), and reflection (*see*). All stages of *Lesson Study* are carried out together, where success and failure are a shared responsibility, not the responsibility of the model teacher, whose role is to present the plans made.

One form of collaborative activities with teachers to improve the quality of learning is through *Lesson* Study. Through *Lesson* Study, school learning can increase (Juano & Ntelok, 2019; Kongthip et al., 2012; Tanujaya & Mumu, 2020). After the pandemic, the government is trying to speed up recovery, including education. Through KDS activities with *Lesson Study,* it is expected to be able to contribute and have a positive impact. Previous research has not explicitly examined differentiation learning. The research aimed to determine the implementation of *Lesson Study* to design differentiated learning in junior high schools.

Research Methode

The research method used in this research is descriptive qualitative research. The model teachers in the open class are the Mathematics, Science, and PAI teachers at SMP Yadika Bangil, who take turns acting as model teachers. This activity has 5 (five) teachers and 1 (one) lecturer. *Open classes* will be held at Yadika Bangil Middle School from September to November 2022.

The stages of the research that will be carried out are by the flow or stages of the *Lesson Study* (Sukmawati et al., 2021), which is to start planning (*Plan*) (Izzah & Qohar, 2020; Sah et al., 2023; Sugianto et al., 2017; Sumarni et al., 2021). At the planning or *plan stage*, lesson plans, media, LKPD and student evaluation are prepared. After preparing the plan, *an open class* (*do*) activity was carried out by one of the teachers acting as a model teacher. When the model teacher conducts an *open class, other* teachers observe student learning activities. Then, *a reflex* (see) is carried out based on the results of observations when *the open class is implemented*. Data analysis is done through data reduction, presentation and conclusion (Abdussamad, 2021).

Results and Discussion

Lesson Study activities are carried out through three stages, namely planning (*plan*), implementation (*do*), and reflection (*see*). All stages in *lesson study* cannot be carried out independently but must be carried out in collaboration with colleagues. Before starting the activity, a mutual agreement was made that when conducting an open class, the success and failure or discrepancy between plan and implementation is a shared responsibility, not the responsibility and burden of the model teacher. In addition, it was also agreed that when carrying out observation activities, the focus of attention was on students, not model teachers, so the reflections carried out did not corner the model teacher but looked at student activities.

Plan, *do*, *see* activities are carried out for each subject. At the planning stage (*Plan*): Develop an innovative learning design with a group of teachers through differentiated learning. At the implementation/open class stage (*Do*): Open class and observe learning. All partner teachers participate and are willing to become model teachers who conduct open classes. Reflection stage (*See*): Reflecting on evidence of student learning findings and their relation to learning objectives and suggestions for improvement, namely redesign: using suggestions and improving learning as material for preparing for further learning.

The first cycle was carried out in the science class, which later *opened the class* in the 7th grade girls. Class 7 girls totalled 20 students, and the material studied was the Form of Substance. The learning that will be carried out is designed with differentiation learning. The learning objectives stated that students can explain the differences in the states of particles in solids, liquids and gases. Only some students understand the first learning objectives in experimental and discussion activities. In achieving these learning objectives, students who study in groups carry outpouring and placing various objects and their forms in different containers. Students observe what objects change and do not change according to the container or place.

In this activity, what students did in almost all groups was mixing various objects, especially objects that were liquid and had a soft texture, in one container. This shows the student's lack of understanding in following the instructions in the LKPD and the model teacher's explanation. The second activity to achieve the first learning objective is observing the syringe where the needle has been taken. Only the syringe and piston are left. This experimental activity was to observe the compressibility properties of three forms of objects, and students succeeded in drawing the correct conclusions. All groups correctly answered the compressibility property of the three different states of matter. Solids, sequentially liquids and gases possess the greatest compressibility.

The second learning objective is to describe diffusion events in liquids and gases in everyday life. For the second learning objective, students were given an explanation in advance about the definition of diffusion, then sprayed perfume over the room, after which students were asked to observe how the smell of perfume could reach the students' noses. The second learning objective has been achieved, as evidenced by students explaining how their noses can smell students' perfume at a certain distance from where they spray perfume. The third learning objective is to describe the particles of each state of matter: solid, liquid, and gas. Students are still confused about how to describe the third particle of the shape object's shape model. The teacher re-explains, starting from the beginning, the properties of solids seen from changes in shape based on the container, compressibility, and diffusion properties. However, students still do not understand. Only two children could understand how to describe the shape of the third particle of matter.

After reflecting and making conclusions, the model teacher provides material reinforcement for the properties of solids, liquids, and gases, gives examples of objects, and asks students to imagine each example of the objects mentioned. Finally, students can understand the shape of the third particle of matter. Then, students can independently describe the shapes of solid, liquid, and gas particles. With *Lesson study*, we learn about student activities during learning: students who learn and have learning difficulties. Observers from teacher friends help model teachers find students with learning difficulties. Cooperative learning makes it easier for students to understand and find meaningful learning in the material properties of solids, liquids, and gases.

The second cycle was carried out for mathematics subjects. Stages of planning (*plan*) Partner teachers and lecturers discuss to determine teaching materials and learning strategies appropriate to the first plan. Differentiated cooperative learning is the best choice considering the need for students to learn to work together and the presentation of different learning needs among students. In the second plan, the model teacher presented the design of the Mathematics learning device (RPP) according to the first plan. Partner lecturers and teachers provide input for improvement so the lesson plans presented become joint works of partner teachers and lecturers to be presented to students. The learning media used are laptops, LCDs, *PowerPoint Slide Shows*, books/reference materials, Student Worksheets (LKPD), whiteboards, and markers.

The learning model used is problem-based learning and discovery learning with a scientific approach. At the beginning of the learning activity, students are divided into groups with diverse abilities in the hope that there will be collaboration between members. Starting from the prepared LKPD, students collaborate to complete it. By collaborating, students observe, ask, try and process data. LKPD is to guide students to find conclusions according to learning objectives. Submission of apperception at the beginning, the formation of groups, and the distribution of worksheets affect the classroom management model during learning. As a facilitator, the teacher guides each group to ensure a learning process and mutual collaboration between group members. Henceforth, in the presentation session of group discussion results, the teacher manages the class by acting as a moderator during the presentation, up to the reinforcement of the material.

Furthermore, the teacher conducts *an open class* (*do*) beginning with opening learning activities with greetings and prayers led by students to train students' leadership and religious spirit and remind them of the previous material that has been studied, namely exponential numbers, then relating it to the topic to be studied, namely finding the definition of exponential numbers. Displays daily facts in dividing single-celled animals and the volume of a cube-shaped aquarium and its relationship to the learning objectives to be achieved. In this session, the students' enthusiasm began to learn more about the material related to the facts presented.

After conducting *the open class*, reflection was then carried out. Based on the observer's observations, several facts were found that several group members could not work together with group members—waiting for the results of his friend's work. It was also found that several group members who did not follow the steps for working on the LKPD for a week found themselves confused and completed the LKPD and practice questions. Students feel impatient and immediately work on practice questions and eventually encounter difficulties. So, the role of the teacher becomes essential to be a good facilitator. In addition, it was also found that some students did not pay attention to their friends during the presentation. So, it is essential to pay attention to the layout of the LCD or the display media for the results of group discussions so that all students can pay attention. No less important is the teacher's instructions as a moderator to condition students to pay attention to their friends during presentations. So some of the suggestions given are names of students who need special attention, which needs to be applied to a different learning model (differentiation) to achieve learning mastery—also technical matters such as the location of learning media, table setting and others.

The next cycle is on Arabic language subjects. At the planning stage (*Plan*), discussion activities are carried out with partner teachers and lecturers to determine the best learning strategy that might be implemented, starting with the presentation of Arabic teaching tools so that some constructive input is obtained which was not previously thought of by the model teacher to add treasures and learning strategies by made some changes or modifications, such as in LKPD, where at first individuals were made into groups considering that Arabic lessons were limited to 1 lesson hour (40 minutes).

In implementing *open classes* (*do*), learning Arabic can be carried out according to a predetermined schedule. There is a minor obstacle in that some students have not changed their uniforms after the sports subject, given the limited time, students are allowed to take part in lessons wearing sports costumes. In the division of groups, some groups are less balanced, especially in numbers, although it does not significantly affect group work results. The number of group members is considered too large, so some students are passive because they cannot access the media provided because of the limited number. In the joint reflection activity between model teachers, observers and partner lecturers, many necessary inputs could be used to improve learning Arabic in the future.

In collaboration with colleagues through *lesson study,* there is interaction and communication, so there is input, suggestions, and improvements from differentiated learning plans (Sekaryanti et al., 2023; Sugianto, Cholily, et al., 2022). Differentiated learning is made in terms of content differentiation in the form of audio, video and practical presentation of material—process differentiation is students' freedom to complete the tasks given and the products produced. Not only do they plan together, but when other lecturers observe how students learn, this can help the model teacher to know in detail about students who are learning and who have not studied. Observations when *open classes* are focused on students so that model teachers do not feel judged because the implementation of learning in class is the shared responsibility of all teachers who make joint plans (Khoiriyah et al., 2022; Sugianto, Darmayanti et al., 2022; Vidyastuti et al., 2022). Based on the results of the observer's observations, most of the students were excited to take part in the learning being carried out. This shows that *lesson study* can improve the quality of learning (Juano & Ntelok, 2019; Kongthip et al., 2012; Tanujaya & Mumu, 2020).

Based on the results of the evaluation and reflection carried out at the end of the lesson, data was obtained from the evaluation that 85% of students had completed and the learning objectives had been achieved. This shows that differentiated learning has a positive impact, but compiling and implementing differentiated learning is not easy and instantaneous. It requires a mature process and thought, so one of the solutions offered is through LSLC (lesson *study for learning community*). It can be done jointly and collaboratively to plan learning.

Conclusion

Collaborative activities carried out by lecturers and teachers are packaged as *lesson study* (LS) activities. The stages carried out include planning activities (*plan*), carrying out open class/ *do* (*class*) and observation and reflection (*see*). *Lesson study (LS)* activities have a positive impact on learning. Through *lesson study (LS)* activities, teachers can improve competence, incredibly professional and pedagogical competencies, which are very important in improving the quality of education in schools. Lecturer and teacher collaboration will be able to develop more meaningful learning in improving Higher Order Thinking Skills (HOTS) and students' 4Cs skills. Through *lesson study,* teachers and lecturers collaborate in planning, implementing and reflecting on learning activities with differentiation. In general, students

become more enthusiastic, and the results of the evaluation of learning that is carried out can be achieved. The research being conducted is still limited to junior high school students in one of the private schools, for further research can be carried out at the high school or tertiary level and can develop LS (lesson study*)* to become LSLC (*lesson study for learning community*).

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