



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

**Andika Setyo Budi Lestari ^{1*} ✉, Anton Wahyono ², Purwanto ³, Khoirul
Anas ⁴, Yessi Nurmalasari ⁵, Rachma Bibi ⁶, Mohamad Yunus ⁷**

PGRI Wiranegara University, Pasuruan, Indonesia ^{1*}

Yadika Bangil Middle School, Indonesia ^{2,3,4,5,6}

MA Ma'arif Bangil, Indonesia ⁷

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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 and has had an impact on 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 *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 descriptive qualitative method. The subjects of this research were students of SMP. *Lesson Study* stages, namely planning (*Plan*), implementation (*Do*), reflection (*See*) which are carried out with lecturers as facilitators and teachers in partner schools as model teachers and observers have been carried out properly in accordance with *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 that hit has had a huge impact on various sectors. The impact on the education sector results in the learning process taking place online. Ready or not ready for online learning by utilizing technology. Online learning has several negative impacts, including the absence of direct interaction and communication (Bird et al., 2022; Defina & Rizkillah, 2021; Lestari, Nusantara, Susiswo, et al., 2021; Owusu_Fordjour et al., 2020). This causes students to be unfamiliar with direct collaboration and communication activities. Apart from that, students' study habits during a pandemic are different from their study habits during 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 adaptation was needed not only by students but also by teachers (Aristovnik et al., 2020; Dutta & Smita, 2020; Kaninjing et al., 2021; Lestari, Nusantara, Chandra, et al., 2021). In order 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. Student experience in learning can be built through active interaction activities with fellow students, teachers, teaching materials and the surrounding environment. Knowledge, skills, and attitudes in learning are not immediately owned by students directly, but students need to manage them initiatively. The teacher acts as a facilitator, it can also be a source of learning, but students must be able to make maximum use of 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 that in student learning activities it is necessary to be facilitated in the form of differentiated learning activities. 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, but 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 special. There are three differentiation learning strategies, namely content differentiation, process differentiation, and product differentiation (Herwina, 2021; Kamal, 2021). Content differentiation is what we teach students, process differentiation is how we convey it to students, while product differentiation is what tasks or final results we ask of students. In addition to these three strategies, there are several things that are also needed and can support, including the environment, teacher and student readiness, and shared commitment. To realize 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 one of the 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, 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 that have been made.

One form of collaborative activities with teachers to improve the quality of learning is through *Lesson Study*. Through *Lesson Study* learning in schools can increase (Juano & Ntelok, 2019; Kongthip et al., 2012; Tanujaya & Mumu, 2020).

After the pandemic, the government is trying to speed up recovery, one of which is in terms of education. Through KDS activities with *Lesson Study* it is expected to be able to contribute and have a positive impact. Previous research has not specifically examined differentiation learning. The purpose of the research conducted was to find out the implementation of *Lesson Study* to design differentiated learning in junior high schools.

Research Method

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. There are 5 (five) teachers and 1 (one) lecturer in this activity. *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 in accordance with the flow or stages of *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*, the preparation of lesson plans, media, LKPD and student evaluation is carried out. 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 *open class* other teachers observe student learning activities. Then a *reflexee (see)* is carried out based on the results of observations when *the open class is implemented*. The process of data analysis is done through data reduction, presentation and drawing conclusions (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 (*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 students, not model teachers, so that 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*): Developing an innovative learning design with a group of teachers in the form of 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, as well as suggestions for learning improvement, namely redesign: using suggestions and making improvements to 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 totaled 20 students and the material being

studied was the Form of Substance. The learning that will be carried out is designed with differentiation learning. In the learning objectives it is stated that students can explain the differences in the states of particles in solids, liquids and gases. In learning activities that use experimental and discussion methods, only some students understand the first learning objectives because in achieving these learning objectives, students who study in groups carry out activities of pouring and placing various kinds of objects and their various forms in different containers. and 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 students' 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. The greatest compressibility is possessed by solids, sequentially liquids and gases.

For the second learning objective, namely 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 being able to explain how the smell of perfume can be smelled by the noses of students who are 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 of the object. The model teacher re-explains starting from the beginning about the properties of solids seen from changes in shape based on the container, compressibility, and diffusion properties. But 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 together, the model teacher provides material reinforcement for the properties of solids, liquids, and gases and gives examples of objects and asks students to imagine in 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 come to know student activities during learning. Students who really learn and students who have learning difficulties. Observers who come from teacher friends really help model teachers find students who have 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 that are 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 that the lesson plans presented become joint works of partner teachers and lecturers to be presented to students. The learning media used are laptops, LCDs, *Power Point Slide Shows*, books/reference materials, Student Worksheets (LKPD) as well as 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 go through the process of observing, asking, trying and processing data. LKPD is to guide students to find conclusions according to learning objectives. Submission of apperception at the beginning and the formation of groups and distribution of worksheets affect the classroom management model during learning. The teacher as a facilitator goes around to each group to ensure that there is 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. Reminding 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 the form of the process of 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 enthusiasm of the students began to find out 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 there were several group members who 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 important 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 important 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 that some of the suggestions given are some names of students who need it special attention, which for these students needs to be applied to a different learning model (differentiation) in order 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 so as 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 the implementation of *open class (do)* learning Arabic can be carried out according to a predetermined schedule. There is a small 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 there are groups that are less balanced, especially in terms of numbers, although it does not significantly affect the results of group work. The number of group members is considered too large so that there are some students who 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 important inputs were found that could be used as a source of improvement in learning Arabic in the future or in the future.

In collaboration with colleagues through *lesson study* there is interaction and communication, so that there is input and suggestions as well as 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 in the form of 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 really learning and who haven't really studied. Observations when *open classes* are focused on students, so that model teachers don't feel judged, because actually 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 when the evaluation was carried out at the end of the lesson that 85% of students had completed and the learning objectives had been achieved. This shows that differentiated learning has a positive impact, but to compile and implement differentiated learning is not easy and instantaneous, it requires a mature process and thought so that one of the solutions offered is through LSLC (*lesson study for learning community*). can be done jointly and collaboratively to plan learning.

Conclusion

Collaborative activities carried out by lecturers and teachers are packaged in the form of *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 will be able to improve competence, especially 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 it 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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