Lesson Study for Learning Community to Improve the Teaching Quality of Biology Teachers

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Abstract: The aims of this study is to increase the teaching quality of Biology Teacher through Lesson Study for Learning Community (LSLC). The research was conducted at SMA Negeri (State Senior High School) 16 Semarang, Central Java, Indonesia, of the second semester in academic year 2015/2016. The subjects were teachers of class XI.1 of SMA Negeri 16 Semarang. LSLC in this study involves some teachers such as Biology, Bahasa Indonesia, English, Sociology, and also prospective Biology students teachers. The instructional media is video to learn about exploration of mangrove ecosystems. This research method used classroom action research design with cycles and combined with LSLC. The results showed that quality of the teaching increase at the preliminary activities, core activities, application of learning strategies that educate, engage student in learning, as well as time management conducted by Biology Teacher. The conclusion is that Lesson Study for Learning Community can improve the teaching quality of Biology Teacher in SMA Negeri 16 Semarang.

Keywords: LSLC, Teaching Quality, Biology Teacher

1. INTRODUCTION

Learning process is the focus in education, with teachers as well as planners and implementers of the learning process. The influence of teachers on educational success is huge. Learning process is very influential in enhancing the analytical skills of learners, therefore, teachers are required to develop and improve the quality of learning. In addition, teachers have a strategic function in the development of education, particularly to educate graduates who are becoming professionals as mandated by Law No.14 of 2015 on Teachers and Lecturers. Moreover, in the era of globalization, teachers who have innovative thoughts and act effectively in improving the quality of the course and learners’ development is urgently needed. In performing their professionalism duties as educators, teachers earn the obligation to perform basic activities in accordance with Permendikbud no.22 of 2016 which is about the standard process of primary and secondary education in the implementation and control of the learning process. The goal of the mandate of Law and Permendikbud can be achieved when teachers can improve the professionalism. One of the efforts for the achievement can be done with the Lesson Study.

Professionalism of teachers should always be improved, because the increased professionalism of teachers will be followed by an increase in the effectiveness of teaching and learning. Indirectly the improvement in teachers’ professionalism will also have the impact on improving the quality of education in general. Lesson Study is a method, used by the Japanese educational system for over a century, of observing students’ learning. (Bogner, 2007).

SMA N 16 Semarang is one of the schools that have implemented Lesson Study. However, based on interviews with biology teachers of this school, there are still some shortcomings so that the implementation is not maximized. One class in this school, named XI.1 IPA needs to improve the quality of learning. This will need the cooperation among educators in improving the quality of learning. This activity can be packed into a study of sustainable and collaborative learning based on the principle of collegiality, known as Lesson Study.

The implementation of Lesson study is not exactly easy, especially in maintaining the intensity and frequency of the implementation. Therefore it is necessary for a renewal and reformation in the implementation of Lesson Study, and one of them is by the application of Lesson Study which is oriented on Learning Community (LSLC). Learning community can be interpreted as a learning community, where not only students who learn collaboratively, but also educators collaborate together to
improve the quality of learning, collegiality and professionalism. It is not only a collaboration of science teachers as well as across discipline, stakeholders, and parental and community participation (Sato, 2012). Based on the results of Short Term Training on Lesson Study Batch V organized by Ristekdikti and JICA (Japan International Cooperation Agency), followed by the author during one month in Japan in 2015, it is known that Lesson Study for Learning Community (LSLC) is the latest Lesson Study. Therefore, it is necessary to conduct a LSLC research in Indonesia to overcome the problems of learning which has not been maximized yet. With the community's learning, it is hoped that the lesson study activities is expected to run continuously and strengthen the cooperation and collegiality among teachers and other academic circles in an effort to improve the quality of teaching and learning achievements of learners in secondary education environment indirectly.

The teachers’ success in developing teaching skill mostly depends on the involvement and active participation of students supported by instructional media. The teachers’ efforts to improve students’ learning should make the learning activities more fun and interesting with the help of media and learning resources accordingly. The best learning resources to learn the material on ecosystem is the ecosystems in the surrounding area. So far in the process of ecosystem learning students of SMAN 16 Semarang has never been taken to mangrove exploration. Although the mangrove areas is on the reachable location from the school, but if it is carried out during the hours of learning in school then the time is not sufficient. So there needs to be an appropriate medium for learning material by using video of mangrove ecosystem exploration.

Based on the above background, the purpose of this research is to improve the quality of teaching through video exploration by a Biology teacher through Lesson Study for Learning Community.

2. RESEARCH METHOD

The research was conducted in SMAN 16 Semarang. The research was conducted in the second semester of the academic year 2015/2016. The research sample was class XI.1 Science of SMA N 16 consisting 33 students. This study is a mixed method design-a combination of Action Research Classroom and Lesson Study activities for Learning Community (LSLC).

This research was conducted in two cycles of Action Research. Each cycle consisted of four steps (Kemmis and Mc Taggart, 1988), namely (a) planning, an activity to formulate the problem, define goals and methods of research, as well as an action plan, (b) action, which is performed as a planning exercise, (c) observations, carried out systematically to observe the results or impact of the action on the learning process, and (d) the reflection that is reviewing and considering the outcome or impact of the action taken. Those action research activities then were combined with components of lesson study (plan, do and see). The stage plan was integrated into the planning activities of Action Research Classroom, do was mixed in action and observation activities, and see in the reflection stage. All these activities were done collaboratively with the involvement of observer in various fields as a learning community. Media used in this study was the video of mangrove exploration and the learning model used was Discovery Learning. The instrument used in this study was the teacher competence observation sheets and documentation. The indicator of the success of this study was if there was an increase in learning achievement of very good category.

3. FINDING AND DISCUSSION

The fourth stage in this Action Research combined with the stage of LSLC thus forming one complete cycle. This research was conducted in two cycles, while the activities in each cycle were described as follows:

a. First cycle
The first cycle of classroom action research activities was done on material analysis of learning strategies implemented for three meetings. At each meeting, LSLC activities (plan, do, see) were applied on a
regular basis until the end of the cycle, so that within one cycle of action research, there were three times of LSLC activities. Elaboration of the stages of research in the first cycle was described as follows.

1) Planning Actions
Activities in this preparatory stage are to prepare everything related to the research. Action planning is done collaboratively in groups integrated in the activities plan of lesson study. In the plan activity the teaching team and the researchers discussed the form of biology teaching and learning implementation plan (lesson plan) using instructional mangrove video, then grouping students in which each group has a heterogeneous academic ability, learning strategies, and evaluation.

2) Implementation of the action
The implementation phase of the actions was carried out in accordance with a program that had been developed in the lesson plan. Teachers deliver material of the ecosystem components and the relationship of biotic and abiotic components through mangrove exploration video and ask the students to observe. Students discuss in small groups and noted the result of their discussion using Student Discussion Sheet. The teacher became a facilitator in the implementation of the classical discussion to communicate the results of group discussions.

3) Observation
Observations were made during the implementation of the learning process. It was done by recording of all of the activities conducted by observers from various disciplines namely biology teacher, Indonesian teacher, English teacher, and the Sociology teacher as a learning community. The instruments used were sheets of observation and documentation.

The results of the observations showed that the implementation of learning by biology teachers in the first cycle is as follows.

Tabel 1. Learning Implementation of the First Learning Cycle

<table>
<thead>
<tr>
<th>No</th>
<th>Aspect</th>
<th>Value</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Implementation of preliminary activities (apersepsi and motivation)</td>
<td>75</td>
<td>Good</td>
</tr>
<tr>
<td>2</td>
<td>Describing competence and action plans</td>
<td>70</td>
<td>Enough</td>
</tr>
<tr>
<td>3</td>
<td>Mastery of the subject matter</td>
<td>80</td>
<td>Good</td>
</tr>
<tr>
<td>4</td>
<td>The application of educative learning strategies</td>
<td>74</td>
<td>Good</td>
</tr>
<tr>
<td>5</td>
<td>The application of scientific approach</td>
<td>80</td>
<td>Good</td>
</tr>
<tr>
<td>6</td>
<td>Use of learning resources/media in learning</td>
<td>78</td>
<td>Good</td>
</tr>
<tr>
<td>7</td>
<td>Involving learners in learning</td>
<td>80</td>
<td>Good</td>
</tr>
<tr>
<td>8</td>
<td>Implementation closing activities</td>
<td>77</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>614</td>
<td>Good</td>
</tr>
</tbody>
</table>

4) Reflection
The results of the implementation of the first action showed that the learning process reflected together in order to obtain information about the advantages and disadvantages in the first cycle. All of the learning problems were recorded during the observation and documentation. This record is used to find a solution through discussions. The results of the first cycle reflection were related to the implementation of preliminary activities, and time management. Since the discussions lasted long enough and the seating arrangement so that female students so tend to discuss with female students, as well as in boys. Additionally students’ presentations are ineffective and the video media has no voice narration. The results for further reflection is used as a guideline and other considerations in Planning Implementation Cycle II.
b. Second cycle

In the second cycle, the result of the reflection at the first cycle stages was included in second cycle of planning stage. The findings obtained in the first cycle were then discussed and corrective measures were sought so that the actions in the second cycle will be more effective. The material for the second cycle was the application of learning strategies. The stages in the second cycle are as follows.

1) Planning actions

Activities undertaken in the preparatory stage is to prepare the seating chart with intersecting positions between male and female, students’ presentation strategies that make more optimal learning time management, and in its evaluation, jumping tasks were also planned to develop students’ higher order thinking skills. Besides the video was improved by adding voice narration and written captions to clarify information in the video.

2) Implementation of the action

The implementation phase of the actions was carried out in accordance with the lesson plan that had been developed. The teachers deliver material about imbalance in relationships between components due to natural and man-made nature. Discussions with LDS students ended with a parallel presentation and continued to the classical questioning. In this case, the learning process implemented the scientific approach, in which the teacher acts as a transmitter of information, facilitators and tutors. Atmosphere of learning was fun and made the students engaged in learning and enjoying the lessons. At the end of learning, students were given the jumping task in the form of questions of higher critical thinking.

3) Observation

Observations on the second cycle were carried out also by observers from various fields of science as a community. In addition to recording the implementation of learning, observers also wrote the positives and negatives of the learning process that they observed on a sticky note paper of different color. The results of each observer remarks were documented as supporting material on reflection based on AR and LSLC. Based on the results of the observations, it showed that the enforceability of learning by biology teachers in the second cycle is as follows.

<table>
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<th>No</th>
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<tbody>
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<td>1</td>
<td>Implementation of preliminary activities (apersepsi and motivation)</td>
<td>80</td>
<td>Good</td>
</tr>
<tr>
<td>2</td>
<td>Describing competence and action plans</td>
<td>88</td>
<td>Very good</td>
</tr>
<tr>
<td>3</td>
<td>Mastery of the subject matter</td>
<td>90</td>
<td>Very good</td>
</tr>
<tr>
<td>4</td>
<td>The application of educative learning strategies</td>
<td>80</td>
<td>Good</td>
</tr>
<tr>
<td>5</td>
<td>The application of scientific approach</td>
<td>85</td>
<td>Good</td>
</tr>
<tr>
<td>6</td>
<td>The use of learning resources/media in learning</td>
<td>82</td>
<td>Very good</td>
</tr>
<tr>
<td>7</td>
<td>Involving learners in learning</td>
<td>85</td>
<td>Very good</td>
</tr>
<tr>
<td>8</td>
<td>Implementation closing activities</td>
<td>80</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>670</td>
<td>Very good</td>
</tr>
</tbody>
</table>

4) Reflection

The observation on the implementation of second action to the learning process and the student learning outcomes were reflected together in order to obtain information about the advantages and disadvantages in the second cycle. Learning activities by using video mangrove exploration gave teachers the opportunity to apply a contextual learning so it is more easily understood by students. The concept is supported by the results of research conducted by Taufik et al. (2014) which states that the development
of integrated science teaching media characterized by caring the environment on the theme of conservation with the media improve learning outcomes. Learning was carried out with the design of the U-shaped seating area as well as the position of men and women intersect group discussion makes the discussion became more run collaboratively. Teachers in implementing the scientific approach have become a transmitter of information, the facilitator, as well as excellent mentors when students learned in small-group discussions and mutual listening classical discussion. Based on the observations it can be seen that the indicator of the success of this research was achieved very good category and there was an increase from the first cycle to the second cycle as much as 10.89%. This represents an increase teaching quality.

Collaborative learning that develop collaboration skills among students provide significant contribution to help students who have difficulty in understanding the concepts of learning and solving problems of jumping task and finding a solution that balances the relationship between the components due to natural and man-made factors.

The success of Lesson Study is the achievement of a collaborative process of the Learning Community that has a common interest to learn from each other in improving the quality of learning. This is in line with Lee (2008) that stated the benefits of lesson study one of which is to develop the professionalism, the implementation process of lesson study integrates a number of strategies professional development, including in the form of the pedagogical ability, collaborations, peers observation, group conferences, self-reflection as well as a heightened awareness on the needs and difficulties faced by students. Educators need to think carefully about the object of learning, critical components, questions, activities and approaches that can be used. Educators will also get reciprocal of how teaching has been done and the new ideas of activities see or observe learning activities carried out by colleagues / study lesson team.

Sato (2012) stated that Lesson Study can realize the right of children's learning guarantee the development of teachers as educational experts, build a trust of many parents in the area, so there are no teachers, students, and parents who oppose the vision of a learning community. Learning community appears based on the vision and mission emphasis on ensuring the rights of each child's learning without exception and improves the quality of teaching as well as the achievement of simultaneous between quality and equity in learning. These activities can be pursued through the implementation of three systems of activities, including collaborative learning is in the classroom, the formation of a professional learning community, and collegiality in the teachers' rooms, as well as parents' participation and the community. The third system is a system of activities that concretely realize the vision and mission of education to become the important tools to build learning communities (Sato, 2012)

In the system of these activities, both in the introduction of collaborative learning students in the classroom and the formation of learning communities of teachers (collegiality) in lesson study, students and teachers pursue learning of high quality, and the system this activity is a means to be able to understand the philosophy of the public, democracy and superiority.

Lesson Study oriented in Learning Community or commonly abbreviated to LSLC give teachers the opportunity to revisit the reactions taken reflexively as skill when they saw student learning or confusion among students in learning. LSLC simply not focused on how to teach the teachers, but also pay attention to the students how they learn in class and what the rationale in a real situation is, and discuss how teachers can help students so that student learning was more qualified (Sato, 2012). LSLC has two characteristics; the first is that this event is an opportunity for teachers to obtain knowledge about the subject matter. Thus it can be recommended to all teachers can open a class (do open class) at least once per year. The second is that the event is an LS cross subjects or fields of study, therefore it needs some discrepancy with the LS-based subjects such as during this time, so it will expand the horizons of teachers in teaching and improving the quality of teaching.
4. CONCLUSION

Based on the findings, it can be concluded that Lesson Study through Learning Community in learning Biology with video media of mangroves exploration can improve the quality of learning in SMA N 16 Semarang.

5. REFERENCES


