

# Implementation Lesson Study Learning Community (LSLC) at Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Negeri Surabaya

Fida Rachmadiarti<sup>1</sup>, Ahmad Bashri<sup>2</sup>, Eva Kristinawati Putri<sup>2</sup>, Yuliani<sup>3</sup>, Tarzan Purnomo<sup>3</sup>

Department of Biology  
Surabaya State University  
Ketintang, Surabaya, Indonesia

**ABSTRACT:** The Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Negeri Surabaya has been implementing the Lesson Study in some subjects since the academic year 2009-now. Lesson study selected as one of the strategy of training for junior lecturers and lecturers of non-education. The objective of the study was to describe the result of the model implementation of lesson study, during the years 2014-2015 for the structure of plant and taxonomy of lower plant, and 2015-2016 for ecology. Data were collected through an observation in the plant structure and development class, the taxonomy of lower plant class, ecology class and student responses of these classes. Data were analyzed descriptively. Results showed that the development of the learning material was done by lecturers models together with a number of lecturers of biology that was solid to provide input for the realization of the good learning, learning activities in the lesson study were well done according to the observer, and the students responded positively to the learning process of lesson study learning community (LSLC). The best response was given to the effort aspect of lecturers to enable students that were increasing. Students were satisfied with the processes of the model regarding active participation.

**KEYWORDS:** lesson study, learning community, biology.

## 1. INTRODUCTION

Undang-Undang RI Nomor 14 Tahun 2005 about Teachers and Lecturers, said that teachers are professional educators with the primary task of educating, teaching, guiding, directing, train, assess, and evaluate students in early childhood education, formal education, primary education, and secondary education. Lecturers are professional educators and scientists with the main task of transforming, developing and disseminating science, technology, and the arts through education, research, and community service.

Referring to the task of lecturers in accordance with the law, biology as the part of the Faculty of Mathematics and Natural Sciences improve the quality of education constantly, particularly through lecturer's coaching. Lesson study is one of model that is used to train a lecturer as a means of enhancing the learning process. Lesson study is a professional development over a long period on teachers mutually collaborative through planning, research, and reviewing lesson plans as a way to determine on how students learn best. *Lesson study* is also a form of classroom inquiry in which several collaborative teachers in plan, teach, observe, revise and share the results of a single class lesson (Dudley, 2011).

Since 2009, Department of Biology has practiced on lesson study. Since 2013, it used as a means to provide a guidance on biology lecturers, whether they have educational or non educational. Lesson study is intended to the learning community among lecturers which can learn from each other and formed collaborations. According to Sato (2015) school classroom is not a place just to learn and grow for students/student, but also a place to learn and grow with each other for the teachers/professors as experts, as well as a place for parents and the local community. On the other hand, collaboration which is formed between lecturers is learn from each other through dialogues, interacts and inspires each other (Ueno, 2015).

The use of Lesson study, as a lecturer's coaching model to improve the quality of learning, begins with a coaching lecturer. In this process, lectures among the faculty observe each other, whether it is between junior-senior lecturer or from the other fields, education and non-education lecturer with reference to the principle of community learning and collaborative learning. Along with the increasing quality of lecturers, the expected quality of learning including the quality of students also increased. Accordingly, the purpose of this study was to describe the implementation of lesson study during the years 2014-2015 in the subject of plant structure and development and plant taxonomy, while the year 2015-2016 in the subject of ecology.

## 2. METHODOLOGY

This research was conducted to exploration of the academic year 2014-2015 and 2015-2016 in the Department of Biology, Faculty of Mathematics and Natural Sciences, UniversitasNegeri Surabaya. The subjects of this research were students of educational biology who programmed course onplant structure and development, plant taxonomy, and ecology, three lectures of the course as models and other lecturers as the observer. The research was conducted in the form of a series of activities on lesson study consisting of three phases namely planning (plan), implementation (do), and reflection (see).

### Plan

Plan is a phase is to design all of the learning process that can train students to actively participate along the learning activities. All of the identified problems and their solution along the discussion in this phase were compiled and packaged as a learning device, including: Class Implementation Plan (RPP), Student Activity Sheet (MFI), assessment instruments, and learning observation sheets.

### Do

The implementation of lesson study begins with a briefing by amodeling lecturer to outlining the implementation of learning and all of the techniques/rules that were used by the observing lectures. The modeling lecturer implements the developed lesson plans while the observing lecturers observe the activity of student learning and learning activities. The observing lectures noted all the processes that occur during learning takes place.

### See

Reflection was conducted after learning practice. The modeling lecturer convey an impression for implementing the learning continued with faculty observer present the results of observations in the form of student activity in learning, the advantages and disadvantages of learning. In a reflection also discussed about the implementation of the action taken on issues arising from observations, and student responses.

Data wereconducted using observation and questionnaires. Data observation and questionnaires were analyzed descriptively.

## 3. RESULT AND DISCUSSION

### A. RESULT

#### 1. Plan

On this stage, the instructional designs were conducted by the modeling lecturer and professors teaching team of clumps of other subjects. The results of the course structure plant structure and development, plant taxonomy, and ecology. Results plan were summarized in Table 1.

Table 1. Result of Learning Design

Course	Matter	Model/met hod	Activity	Involved of lecturer	Suggestion
Plant structure and development	Anatomy of stem	Problem Based Learning	Presentation Discussion Observation	9 expert lecturers from: Ecology (1) Taxonomy (2) Structure of plant (2) Physiology (2) Genetic (1) Education (1)	<ul style="list-style-type: none"> <li>• Improve the correlation between competencies and learning outcomes</li> <li>• Complete evaluation test with their instrument</li> <li>• State clearly the syntax of Problem Based Learning in the core learning activities</li> </ul>
Plant Taxonomy	Algae	Cooperative learning Think Pair Share (TPS)	Presentation Discussion Observation	8 expert lecturers from: Ecology (2) Taxonomy (2) Microbiology (1) Structure and development (2) Physiology (1) 3 lecturer from another lecturer	<ul style="list-style-type: none"> <li>• The activities of student worksheet should be suitable with the learning outcomes</li> <li>• Learning activities should be suitable with the syntax of TPS</li> <li>• Learning method should avoid a talkative learning but used presentation</li> </ul>

					<ul style="list-style-type: none"> <li>• Observation sheet of affective need to be more operational</li> <li>• Change the verb in competencies: describes and communicating become understanding</li> <li>• The activity of presentation need to be added into the learning indicators which used the verb communicating</li> <li>• Observation sheet of student activity should be more operational, such as: honesty, conscientious and responsibility</li> <li>• The consistency of water sampling whether fishing ponds or stank</li> <li>• Need to decide the number of target species for each group</li> </ul>
Ecology	Ecosystem	Contextual learning	Presentation Discussion Observation	9 expert lecturers from: Ecology (3) Taxonomy (1) Microbiology (1) Structure and development (1) Physiology (2) Education (1)	<ul style="list-style-type: none"> <li>• The sentence of water quality testing number 1 in student worksheet is incorrect. Student have to compare the quality of water but they only have a sample of water</li> <li>• Revised for data table</li> <li>• Procedures should be converted into a command sentences</li> <li>• Analysis questions should be divided into two meeting</li> <li>• In step 5 can be divided into two meetings, at the first meeting, student doing lab activities and check the data, the second meeting, students presented the results of lab, and writing in the form of a report</li> </ul>

Based on Table 1 it is known that there are discussions and feedback that quite a lot both in terms of pedagogy and in terms of the material. The results of these discussions berujuan for learning which will be implemented the result will be better because of the implementation plan of the course was developed jointly involving various college teams. This is where the relationship can learning among faculty, Having regard to the various inputs during the

discussion in the plan, lecturer models make improvements in learning devices and instruments. This case has also been carried out at the university of Wisconsin-La crosse embarked on a proof of concept project to try out lesson study in their classes. They started with little formal knowledge of lesson study but agreed to follow the Japanese model. Each team developed learning goals, planned a research lesson to address the goals, taught, observed, analyzed, and refined the lesson.

## 2. Do-See

Phase of do begins with a briefing beforehand and continued implementation of learning in the classroom. when in class, model lecturer of implementing the learning and observer done observations of the students in learning activities. Result of do-see was summarized in Table 2.

Table 2. Result of Do-See

Course	observation	Problem	Solution	Lesson learn
Plant structure and development	<ul style="list-style-type: none"> <li>students following study with enthusiasm because observation of plant structure and development based on the problems of each group,</li> <li>student difficulties in making incision skills because specimen size of plant is too big. Phase see, activity was attended by lecture model and four observer. Observer gives feedback learning implementation based on fact. In general, the lesson is very interesting and appropriate planning of SAP</li> <li>active student since learning starts, but there are students who hasn't to learn maximum</li> </ul>	<ul style="list-style-type: none"> <li>lecturer hasn't to lead sampling techniques representation of parts tissue in incision anatomy.</li> <li>because limited microscope only one each group</li> </ul>	<ul style="list-style-type: none"> <li>lecturer need to lead sampling techniques representation of parts tissue in incision anatomy.</li> <li>one microscope for two people so that more optimal for learning</li> </ul>	<ul style="list-style-type: none"> <li>contextual problem based learning model prepared by the students in groups and conducted inquiry can be applied to the course structure and development of the plant.</li> </ul>
Plant Taxonomy	<ul style="list-style-type: none"> <li>Students active to learn</li> <li>There are group still confused recognize Diatomae.</li> </ul>	<ul style="list-style-type: none"> <li>Students difficult to recognize Diatomae</li> <li>Students dont bring identification key</li> </ul>	<ul style="list-style-type: none"> <li>Lecturer or assistant lecturer need to intensively monitor the students (Because after another group presentations, this group just know that it actually has found diatomae)</li> </ul>	<ul style="list-style-type: none"> <li>How to lecturer model for even distribution unique activeness so all students can ask the question, which is punctuated by jokes that removes fear and awkwardness of students so that they</li> </ul>

	<ul style="list-style-type: none"> <li>• using TPS is still not particularly successful for pairing phase</li> <li>• when observing, there are group still doing student activity sheet (MFI)</li> <li>• there are group haven't had skills to use microscope</li> <li>• Pair groups was observed who can't follow the course of learning. This is shown by their unfinished work but had moved on the next student activity sheet (MFI)</li> <li>• The media for learning source too transparant so difficult to find Diatomae</li> </ul>	<ul style="list-style-type: none"> <li>• Students don't understand the function of pairing</li> <li>• Students don't manage time</li> <li>• Microscope error and students did not report</li> <li>• Students confused with the task at student activity sheet (MFI)</li> <li>• Prepare using learning media</li> </ul>	<ul style="list-style-type: none"> <li>• Pairing activity must written in student activity sheet (MFI) so function interaction between students was created</li> <li>• Lecture and assistant lecture monitoring condition of microscope</li> <li>• Assistant lecture need to monitor each group evenly not only on certain groups</li> <li>• Lecture preparing culture of Diatomae</li> </ul>	<ul style="list-style-type: none"> <li>• become brave to ask</li> <li>• Keep synergistic coordination between lecture, assistant lecture, and laboratory</li> </ul>
Ecology	<ul style="list-style-type: none"> <li>• most students active learning, students enjoy learning outside the classroom and learn the material regarding to context</li> <li>• There are passive student</li> <li>• Two groups still busy with their work when another group presentations</li> </ul>	<ul style="list-style-type: none"> <li>• Passive student is a student silent in class</li> <li>• Time allocation hasn't been deliver to students</li> </ul>	<ul style="list-style-type: none"> <li>• gives task to pay attention in presentation, member of groups must invite student to active in discussion</li> <li>• lecture need to deliver time allocation to students</li> </ul>	<ul style="list-style-type: none"> <li>• contextual learning for students when it can identify water quality bozem Unesa</li> <li>• seat position facing each other in the group benefit occurrence interaction</li> </ul>

Results do-see in the implementation of lesson study of the course structure and plant development, plant taxonomy and ecology showed that have been formed not only on the learning community of lecturer in a team or another team, but also between students within or between groups. According to Government Regulation No. 19 of 2005 on National Education Standards, Chapter IV, Article 19, paragraph 1 states that the process of learning in the educational unit organized in an interactive, inspiring, fun, challenging, motivating students to actively participate and provide enough space for innovation, creativity, and independence according talents , interests, and physical and psychological development of students.

Results do-see also known weaknesses of students, such as in the observation by microscope of learning plant taxonomy learning and immediately found a solution. According to Lewis (2006) The subject matter is important. Lesson study focuses on the material or materials that are considered important lesson and a weakness point in students' learning and are very difficult to study by student.

The focus of the most important of implementation three courses that have occurred refer to the observations, the learning and development done by the students, that is, whether the students showed interest and motivation to learn, how students work in small groups, how the students do chores from the teacher, as well as other matters relating to the activity, participation, and the condition of each student in the learning process. Thus, the focus is no longer only focused on how teachers teach but also how students learn (Lewis, 2006).

**Tabel 3.** Student Response of learning Process

No	Question	Response
1	Are the learning process attractive? Why?	Activity with powerpoint so that interesting]
		Students can collaborate, discuss, and exchange ideas in doing practicum
		This learning exercise courage, critical thinking, and collaboration
		Learning through practicum making easier to understand the material
		Knowing the water quality in bozemUnesa
		Learning process skills are included in the practicum activities
		Field observations directly
		Observing a drop of water in which there are living organisms: diatomae
		Observing anatomy of stem
2	Knowledge / skills do you get from this study?	Skill to take the water sample, skill to take water sample with light bottle winkler and dark bottle winkler
		Knowing how to test the water quality values DO and CO <sub>2</sub>
		Structured knowledge and process skills
		Care in environmental
		Using a microscope to observe diatomae
		Using a microscope to observe stem
3	What should be improved in learning today?	Coordination between lecture, assistant lecture and students to prevent misunderstandings the info obtained
		Learning media that in use should be added images to make more interesting
		When doing practicum, lecture and assistant lecture should be wearing coat lab
		Giving instructions clearly and correctly
		There are briefing before modelling
		Before doing practicum must understand correctly the working procedures as well as completing a practicum on time
		Tools and materials are prepared well and at the first check
4	What should not be done on learning today?	Kidding when doing practicum
		Talk alone with a friend whe doing practicum
		Giving the wrong label in solution
		Practicum is not according to procedure

In the reflection process also examined the response of students after implementing learning. Students were delighted to learn because there are activities that can build concept through activities and their thinking skills. There was also a social interaction among students, which can cooperate, discuss and exchange ideas in doing lab activities (Table 3). According to Chassels (2009), this is prove that lesson study as part of education program to actively participate into 21<sup>st</sup> century. In addition, Hiebert, Morris, Berk& Jansen (2007) support this study that At the three courses of learning can be an example for teacher candidate-students to see several lecturers observe their class

come from other subject lecturers. It shows how important introducing and developing lesson study as one strategy to complete teacher candidate to join into the professionalism.

#### **4. CONCLUSION**

1. Plan activities produced learning materials were developed by the model lecturer with their team teaching and another lecture in the learning community
2. Students actively learn and perform activities through practical activities to build the concepts, skills and attitudes performance in learning community. In addition, problems that occur in the classroom can immediately be solved through discussion between model lecturer and another lecturer.
3. Student response to learning apply lesson study received a positive response from students

#### **REFERENCES**

- [1] Chassel, C. (2009) Collaborative, Reflective, and Iterative Japanese Lesson Study in an Initial Teacher Education Program: Benefits and Challenges. *Canadian Journal of Education*, 4:734-763. Canadian Society for the Study of Education.
- [2] Dudley, P. (2011). Lesson Study. [www.lessonstudy.uk](http://www.lessonstudy.uk)
- [3] Hiebert, J., Morris, A. K., Berk, D., & Jansen, A. (2007). Preparing teachers to learn from teaching. *Journal of Teacher Education*, 58(1), 47-61. Retrieved December 02, 2009, from <http://www.udel.edu/education/mathed/downloads/Hiebert2007.pdf>
- [4] Lewis, C., Perry, R., & Murata, A. (2006). How should research contribute to instructional improvement? The case of lesson study. *Educational Researcher*, 35(3), 3-14. Retrieved December 03, 2009, from [http://www.aera.net/uploadedFiles/Publications/Journals/Educational\\_Researcher/3503/3592-01\\_Lewis.pdf](http://www.aera.net/uploadedFiles/Publications/Journals/Educational_Researcher/3503/3592-01_Lewis.pdf)
- [5] Putri, E.K. (2015). Report of Lesson Study at Plant Taxonomy. Surabaya: Biology Departemen, The Surabaya State University.
- [6] Rachmadiarti, F. Fitrihidajati, H., Winarsih, Purnomo, T., Kuncoro, S. (2015). Report of Lesson Study at Ecology Subject. Surabaya: Biology Departemen, The Surabaya State University.