

Implementation of 21st Century Learning Through Lesson Study

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Abstract: The 21st century curriculum must be designed according to 21st century education standards issued by the BSNP in 2010 based on the 21st Century Skills Partnership (P21) (2008) framework, further detailing a number of 21st century learning frameworks (P21) summarized in specific skills, content of knowledge, expertise and literacy aimed at supporting the achievement of 21st century skills for students. In the framework of P21, several competencies must be possessed: (1) Critical thinking and problem solving skills; (2) Communication and collaboration skills; (3) Creativity and innovation skills; (4) Information and communication technology literacy; (5) contextual learning skills; and (6) Information and media literacy skills. It is a challenge for instructors to realize the skills available in 21st Century learning, therefore in this study the aim is to find out the role of lesson study in realizing 21st Century learning. The research method used is the qualitative method of sampling purposive sampling in the Materials Science class FKIP UNS Building in 2019. The results obtained through the learning approach with lesson study can realize 2nd century learning skills.

Keywords: *lesson study, 21st Century learning, learning community*

Introduction

The 21st century is known as the era of knowledge, which means that in this era alternative alternatives to meet the needs of life in various contexts will be based more on knowledge. Efforts to meet these needs include knowledge-based education, knowledge-based economic development, knowledge-based community development and empowerment, and industrial development also based on knowledge (Mukhadis, 2013).

Sajidan & Afandi (2017: 12) argue that the 21st century is seen as a century where information is widely spread and technology develops and the birth of millennial generation, it's no wonder that experts categorize this century as a century of knowledge. They also mentioned that the disclosure of information and the rapid flow of globalization marked an era in which science was connected and synergized rapidly and led to a process of transformation that was so large from an agrarian society to an industrial society and then towards a society of broad knowledge and a modern economy.

The 21st century that has the characteristics of an era of knowledgeable society requires competent graduates in the era of openness as it is today. Therefore, true education must be in line with existing demands. Thus, revamping the education system in accordance with the demands of this century becomes a very crucial thing to do. The curriculum, for example, must be designed in accordance with 21st century education standards, in accordance with the BSNP education formulation framework (2010) which is actually based on the P21 framework issued by the Partnership of 21st Century Skills (Afandi & Sajidan, 2017).

According to the Partnership of 21st Century Skills cited by Afandi & Sajidan (2017) thinking competencies as the main framework of 21st century education are 4Cs (creativity and innovation, critical thinking and problem solving, communication and collaboration) and ITCs (information, media and technology skills).

To realize 21st century learning, Szpytma (2019) states that the school's physical environment is an important factor that must be well designed so that it can play an important role in the 21st century teaching and learning process. To realize this, MoPLE21 is used as an interdisciplinary tool by educational theorists and professionals for design, assessment, and use in everyday learning environments.

Sahin, M. C. (2009) mentions that to achieve the goals of the 21st Century, Learning Skills require new approaches and new methods. In this case the principles of postmodern learning design seem to meet the needs of the 21st century.

Qian, M., & Clark, K. R. (2016) argued that in facilitating the development of 21st century student skills might be effectively carried out through a game-based learning approach.

Amornkitpinyo, T., & Wannapiroon, P. (2015) states that the acceptance of technological processes through learning innovations in the 21st century there are four components of perceived benefits, namely perceived ease of use, attitudes and behavioral intentions to use models, actual use, acceptance of online learning, and student satisfaction.

The 21st Century skills instrument of Malaysia (M-21CSI) consists of five different elements namely: Digital Age Literacy, Inventive Thinking, Effective Communication, High Productivity, and Spiritual Value. It is a useful instrument for evaluating Malaysian students' mastery of 21st century skills (Osman, K., Soh, T. M. T., & Arsad, N. M., 2010)

Sutrisno (2015) said that internationally education in the 21st century demands a number of characters that need to be possessed both as teachers and as students. Citing the opinion of Andrew Churches in Sutrisno (2015) mentions a number of characters that must be possessed by teachers, including being a visionary, brave to take risks, and of course also as a creator, communicator and collaborator. So teachers and students must have creative, communicative and collaborative characters.

Based on the demands of the 21st century, it is necessary to apply learning methods that require teachers and students to collaborate to create active, communicative, and creative learning. Learning also needs to be planned well so that the teaching and learning process becomes more effective and there needs to be an evaluation of learning that has been done so that the next learning process can be identified deficiencies that need to be corrected and strengths that need to be improved. It is also inseparable from the teacher who needs to know the character of each student. The character of students can be known through evaluations conducted by teachers. So that teachers can treat students according to the character they have in the learning process. One learning model that is considered suitable is the Lesson Study learning model.

Supriatna (2014), defines Lesson Study as a learning study or study lesson. Activities undertaken in Lesson Study are reviewing all aspects of learning in the hope that we can learn students optimally, in this case can also be interpreted as learning from learning. There are three stages that must be done, namely plan, do, and see in the form of ongoing activities.

Lewis (2006) states that Lesson study is a form of learning development from Japan centered on collaborative study, which has spread rapidly in the United States since 1999. Lesson study will increase the capacity to learn innovations that arise in learning. This innovation is expected to increase the capacity to learn more and more across cultural boundaries.

Elliott, J. (2012) Study lessons when delivered through explicit learning theory, will provide a strong basis for learning with practitioner-based development.

Whereas according to Tijmen (2019) states that adaptive teaching in research and practice will become increasingly important if increasingly complex using effective professional

development approaches, for example in promoting adaptive teaching practices can use Lesson Study.

Based on the explanation above, this study aims to determine the role of lesson study in realizing 21st century learning skills.

Method

The method used is qualitative with a descriptive approach. The subject of this research are students in the Building Engineering Education study program in the Building Materials Science course. The sampling method is purposive sampling.

Data collection methods in this research were observation, interview, documentation and questionnaire. Observations, interviews and documentation aim to determine the course of the learning process by using lesson study. While the questionnaire is used to determine the percentage of 21st century skills possessed by students. The questions given in the questionnaire were 40 questions.

The observation and interview guidelines refer to the procedure of implementing lesson study which consists of plan, do, and see stages with instruments such as table 1 as follows.

Table 1. Observation And Interview Instruments

No	Activities	Criteria
1.	Plan	<ul style="list-style-type: none"> • Discussion in the learning community • Lesson Design • Results of discussions in the learning community
2.	Do	<ul style="list-style-type: none"> • Action model teacher in class (whether according to lesson design or not).Peran serta observer • Observer observations
3.	See	<ul style="list-style-type: none"> • Model teacher experience during the implementation session • Observation report from observer • The suitability of learning outcomes based on lesson design

The questionnaire used in this study used a Likert scale with a total of 40 items. The questionnaire grid can be seen in table 2 as follows.

Table 2. Questionnaire Instrument

Aspect	Indicator
Creativity and Innovation (A)	Think creatively
	Work creatively with others
	Implement innovation
Critical Thinking and Problem Solving (B)	Effective reasoning
	Using systems thinking
	Make judgments and decisions
	Solve the problem

Aspect	Indicator
Communication and Collaboration (C)	Communicate clearly
	Collaborate with others
Information, Media and Technology Skills (D)	Access and evaluate information
	Use and organize information
	Analyze and produce media
	Apply technology effectively

Data analysis uses interactive analysis techniques. Activities in interactive analysis techniques include data reduction, data presentation, and drawing conclusions are cyclical and interactive processes. The link between data analysis and data collection according to Miles and Huberman can be seen in Figure 1 as follows.

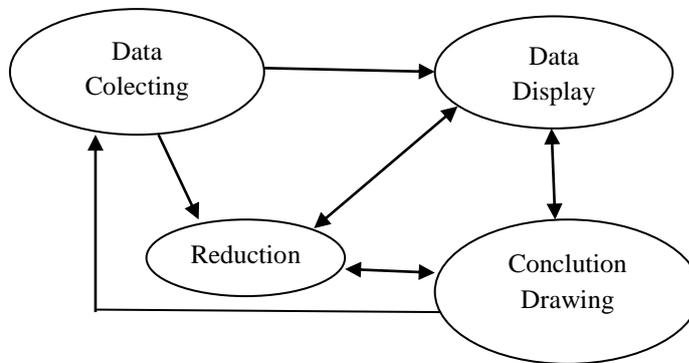


Figure 1. Interactive analysis cycle (Miles and Huberman)

Results and Discussion

The study was conducted during three lessons using a series of lesson study activities. The lesson study activities consist of plan, do, and see stages with the following observations:

Plan

Learning planning is carried out by involving all members of the learning community consisting of observers and model lecturers. This plan discusses what material will be delivered in accordance with the curriculum used and what methods will be used. Learning consists of opening the lecturer will open learning then direct students to learning through e-learning at spada.uns.ac.id which will be used as a lecturer media in virtual classrooms. In this e-learning will contain learning materials provided by model lecturers to students. At the core of the learning lecturer will deliver the core material and will be given questions to be done in a group discussion. Then at the end of the lesson it is planned that each group will present the results of the discussion in front of the class.

In this planning process the observers provide input and suggestions so that learning objectives can be achieved according to the Semester Learning Plan (RPS) used in the study program. It also discussed the assessment that will be given by the model lecturer for each assignment given to students. The assessment discussed includes activeness (psychomotor), attitude (affective) and the value obtained from the assignment (cognitive) for each student.

Do

The do phase is carried out in class with the model lecturer applying the learning plan that has been discussed with the previous learning community at the plan stage. In the do stage the lecturer conveys the material and sequence of learning in accordance with what was planned. The model lecturer occasionally asked questions in front of the class. Then the model lecturer encourages students to be active in answering the questions given so as to create collaborative learning between students and lecturers. Meanwhile the observer has the duty to record the events that occur in this process, especially the student learning activities. Observer records findings that are considered important in the learning process. This observer's notes will be used as discussion material in the reflection stage.

See

In the see stage, the model lecturer reveals learning experiences using lesson study from the beginning of learning to the end. Then reveal things that are considered lacking in learning to be responded to by the learning community. The response from the learning community is expected to improve the quality of further learning. Meanwhile, the observer also expressed his opinion alternately about the course of learning and expressed his findings while observing. Furthermore, things that are considered lacking in learning are used as discussion material and a solution is sought so that further learning can proceed better.

Learning with lesson study that divides students into several groups can encourage students to display collaboration and communication skills in their respective groups, according to one of the 21st century skills, collaborative and communication. In addition to being shown in groups, this skill is also demonstrated when students present the results of group discussions in front of the class and then are responded to by students from other groups. This is also supported by the statement of the model lecturer in the interview stating that this skill is demonstrated by students through group discussions that look very active, and have a high enthusiasm for learning. Meanwhile, from the questionnaire given to students, the percentage of communication and collaboration skills was 81.54%.

Meanwhile, lecturers also strive for students to display critical thinking skills and problem solving. This is shown through the students being given assignments in the form of problems that must be done in groups. By way of giving opinions and discussing each other in groups of students can display critical thinking and problem solving skills. In the interview, the model lecturer stated that this skill was demonstrated when students were given assignments to start observing, then discuss with group members and conclude the results of the discussion, so students were able to think critically and solve the problems given. From the questionnaire filled out by students, the percentage of critical thinking and problem solving skills was 82.46%.

21st Century skills of creativity and innovation can be seen through students who are encouraged to provide creative answers in answering questions given by model lecturers. In addition, answers from students are also required to be related to contemporary innovations in related subjects. The model lecturer also mentioned in the interview that this skill can be seen from the work done by students, for example in making articles and papers, the result is that students are quite creative and innovative in keeping with the times. From the questionnaire filled out by students, the percentage of creativity and innovation skills was 80.92%.

Furthermore, learning with blended learning that is learning through face-to-face and virtual classes can also show that 21st century information, media and technology skills have been applied in this learning. Model lecturers provide material in the form of e-books that can be

accessed by students. Through this it is hoped that students can utilize it as learning material. In addition to the e-book, the model lecturer also provides links that can link to sites related to the material being studied. In the interview conducted, the model lecturer also mentioned that e-learning that was used maximally as a medium of learning by students could be said to have information, media and technology skills. The model lecturer also added that students are already very skilled at using media, especially in the field of IT operations (information and technology). From the questionnaire filled out by students showing the results of the percentage of information, media and technology skills by 80, 62%.

The results of the percentage of questionnaires that have been filled can be seen in Figure 2 as follows:

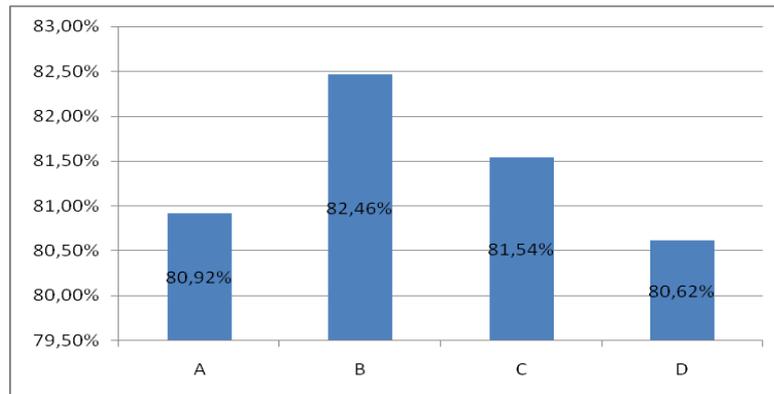


Figure 2. Percentage of 21st century skills

(A) Creativity and Innovation; (B) Critical Thinking and Problem Solving; (C) Communication and Collaboration; (D) Information, Media and Technology Skills

Conclusion

Lesson study is one approach to learning that can be combined with a variety of learning models, one of them with blended learning and group learning so that teachers can bring up various kinds of 21st century skills to students. Lesson study also allows for continuous learning improvement because in a series of lesson study activities all learning activities are designed, implemented and evaluated so that in their activities we obtain solutions and input from members of the learning community for better learning. Learning is not designed by itself but by a learning community consisting of model lecturers and observers so that the quality of learning is indirectly guaranteed. Through lesson study activities learning can be documented in written form as well as videos and photos, starting from planning to evaluation. From the discussion that has been described, it can be concluded that through lesson study can bring up 21st century skills such as Creativity and Innovation, Critical Thinking and Problem Solving, Communication and Collaboration Information, and Media and Technology Skills.

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