Quality improvement of guiding online-first field practice training through use of reflective essay and lesson study

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Abstract. The purpose of this study is to describe the improvement of activities during the first field practice training conducted by online class through the use of Reflective Essay and Lesson Study. This action research is conducted on July 20–30, 2020, in the odd semester 2020/2021. The research subjects consisted of 6 biology students who perform peer-teaching practice. Students divided into two groups- each served as a lesson study team. Each student could practice teaching his friends twice through online teaching in the lesson study platform. Every day they write a reflective essay. The results showed that the use of Reflective Essay and Lesson Study could help the students improve lesson design preparation (media selection for apperception and leading activities, time, mastery of concepts). The students still having difficulties in implementing the training and measuring of 21st-century skills.

1. Introduction
Learning in the 21st century has experienced rapid development and poses several complex challenges [1]. 21st-century learning now aims to develop student competencies/capabilities [2][2–5]. Students need those qualifications/competencies so that they can compete in the future [6]. Capabilities/competencies also make students more successful in their further education/careers later [6].

Experts have explained some of the competencies that students must have. Greinstein (2012) explains that there are three main competencies that a person must have to compete in the 21st century: life and career skills, learning and innovation skills, and information, media, and technology skills [4]. The same thing was also expressed by the World Economic Forum (2015), in which the WEF article divided them into three main parts, namely foundational literacies, competencies, and character qualities [5]. The most recent OECD released the OECD Learning Compas, where they divided it into four things, namely Skills, Attitude, Knowledge, and value [7].

Increasing student competence can be done through several learning models that have been proven or are still being developed by experts. Many alternative learning methods can be used to improve student competence. Bell (2010) gave an example of using project-based learning to prepare students to compete in the 21st century [8]. Project-based learning provides students with the experience to solve a problem by providing real solutions [8]. Another example is that problem-based learning can increase student interest in a STEM field [9]. Of course, there are still many models that can be used, but the point is that good learning is learning that can fulfil/serve students' rights [10].

A teacher will realize good learning if the teacher has sufficient competence/skills. Teacher competence can be built since the teacher is in pre-service (during the study period) [11]. Cultivating pedagogical basics and other competencies take place when the teacher is in the pre-service stage.
that if the teacher's competence is built since they are at the pre-service stage, they will carry it until they become teachers. Professional training for teachers/prospective teachers can increase the teaching profession's competitive and social status [10].

Increasing teacher competence can be done through lesson study. Lesson studies allow teachers to collaborate to improve the learning carried out [12,13]. The use of lesson study is maximum if the teacher is reflective. The reflective nature allows the teacher to reflect on his learning and improve it in future meetings. Refine active learning will increase teachers' opportunity to bring their students into understanding [14]. The reflection will have an impact on improving the chances to achieve the specified learning objectives.

During the pandemic era, the preparation of teachers through First Field Practice Training was held online. The purpose of doing it online is, so that prospective teacher students have the competence/capability to carry out online learning when they go to school in the second field practice training in school.

2. Method
This study aimed to describe the increase in student activity during online-Field Practice Training through reflective essays and lesson studies. The research was conducted on 20-30 July 2020. The research carried out was included in the Class Action Research. The research subjects were six students who took online-First Field Practice Training. Each student had the opportunity to become a model teacher two times. In online-First Field Practice Training, students made reflective essays at each meeting. Student lesson plan data is measured using a rubric developed by (Huong & Linh, 2017) [15]. Lesson plan value data were analyzed using the Gain Score [16].

3. Results

3.1. Results of Implementation Online-First Field Practice Training through Lesson Study
In implementing the online-First Field Practice Training, students were divided into two groups consisting of 3 people. Each group will later act as a lesson study team. Implementation of online-First Field Practice Training was conducted in two cycles. In the first cycle, students have the opportunity to become a model teacher once. Then there will be improvements in the second cycle. Table I shows the learning materials used in this activity.

| Cycle | Meeting | Material                        |
|-------|---------|---------------------------------|
| I     | 1       | Biodiversity                    |
|       | 2       | Bacteria                        |
|       | 3       | Bioprocess in Cells             |
|       | 4       | Composition of Blood            |
|       | 5       | Plant Tissue                    |
|       | 6       | Virus                           |
|       | 1       | Biodiversity                    |
|       | 2       | Bacteria                        |
|       | 3       | Protein Synthesis               |
| II    | 4       | Structure and Function of       |
|       |         | Circulatory Organs              |
|       | 5       | Plant Tissue                    |
|       | 6       | Virus                           |
In the first cycle, improvements/comments from observers or supervisors in general were.

- In the Lesson Plan section, write the allocated time so that the model teacher can carry out learning on time.
- Apperception does not have a connection with content so that it seems separate.
- It is necessary to choose learning media that is appropriate with the taught material.
- The model teacher is still nervous when carrying out learning (the model teacher's first appearance in doing online learning)
- There are still technical problems, thus prolonging the learning process.
- Mastery of learning materials needs to be improved again.
- The teacher must be more observant if there are students who have questions.
- The teacher must give students clear instructions so that they do not experience difficulties in carrying out the teacher's instructions.

3.2. Result of Making Lesson Plans by Prospective Teacher Students

Table 2 shows a summary of the lesson plan students' value made during cycles 1 and 2.

| No | Students Name | Value First | Value Second |
|----|---------------|-------------|--------------|
| 1  | Students A    | 81.0        | 90.5         |
| 2  | Students B    | 57.1        | 85.7         |
| 3  | Students C    | 57.1        | 66.7         |
| 4  | Students D    | 71.4        | 81.0         |
| 5  | Students E    | 66.7        | 85.7         |
| 6  | Students F    | 47.6        | 61.9         |
|    | Average       | 63.5        | 78.6         |

Based on Table 1. The mean value of lesson plans obtained at the first meeting was 63.5, and at the second meeting was 78.6. Furthermore, the N-Gain test was carried out, which showed a gain score of 0.41. This score is in the medium category. So the conclusion is that the increase is moderate.

4. Discussion

4.1. Use of LS in Improving the Quality of online-First Field Practice Training

Lesson Study is a collaborative teacher professional development program [13,17]. Lesson studies provide opportunities for teachers to reflect on their learning activities. During teaching, the teacher can take various kinds of lessons [18], especially learning how to manage the class, attract student attention, and bring students into learning. Lesson studies are also very important for junior teachers. With lesson study, junior teachers can find gaps between the theories they learn in lectures and the real conditions [19]. Lesson Study makes teachers meet, work together, and collaborate [20,21] to produce the best learning.

The lecturer can train Lesson Study for prospective student educators. There are six essential reasons why Lesson Study needs to be introduced to future student educators so that they can apply it in school; (1) sustainably maintaining the professionalism of educators, (2) there is a need for autonomy and discipline, (3) as a principle of fulfilling student learning rights through quality learning, (4) having collaborative principles, (5) having openness principles, and (6) education must be done as well as possible [22].
Many studies explain the role of Lesson Study in developing abilities. The research result of Kartal, Ozturk, & Ekici (2012) conducted in Turkey, shows that based on observations and self-assessment measures, Lesson Study can improve the pedagogical abilities of these prospective educator candidates [23]). Another study conducted by Yildiz & Baltaci (2017) through case study research showed an increase in the TPACK of educators who taught Fractal geometry through Lesson Study [24]. Research conducted by Lucenario, Yangco, Punzalan, & Espinosa (2016) shows that lesson study is an effective method for developing educators' pedagogical abilities and student learning outcomes on concept understanding and problem-solving [25]. Xu (2015), in his research, shows that the use of lesson studies can improve the pedagogical abilities of language educators [26]. Research conducted in Ireland by McSweeney & Gardner (2018) shows that in addition to enhancing educators' pedagogical abilities, Lesson Study can also increase student learning outcomes [27].

4.2. Use of Reflective Essays to Improve the Quality of Online-First Field Practice Training

The use of reflection could increase teachers' awareness to improve their learning quality. Research by Lotter and Miller states that teacher reflections on practical teaching experiences during professional development programs add new knowledge about how teachers learn instructional strategies through teaching in collaborative groups [28].

Several reflections put forward by students also showed that they realized their weaknesses and would improve them in the future. The need to become a better teacher is demonstrated by student number 1.

“Kegiatan pembelajaran sudah berjalan baik dan lancar, akan tetapi saya masih butuh banyak belajar dan mendalami materi sebelum melakukan pembelajaran agar dapat memberikan informasi dan penguatan materi yang baik”

"Learning activities have gone well and smoothly, but I still need a lot to learn and deepen the material before doing the learning so that I can provide good information and reinforcement of the material."

Based on student number 1, the student feels that his learning has done well, but he still wants to improve himself, especially in the mastery of the learning material.

Another interesting thing, after this sentence, student number 1 just explained the weakness of the learning he was doing.

“Selain itu, waktu untuk pembahasan LKS saya juga masih terlalu lama, seharusnya bisa dipersingkat dan disesuaikan dengan waktu tatap muka di sekolah”

"Besides, the time for discussing my worksheets is still too long. I should shorten and adjust it to the face-to-face time at school."

This response shows that the student wants to improve learning but has an inappropriate flow of thought. The student should first realize his weakness and then look for ways to enhance his understanding. The reflective thinking process follows the opinion (Sünbül and Kurnaz, n.d.) regarding the stages of reflective learning shown in Figure 1.
In principle, a reflective teacher will be aware of what is happening in his class to think critically about improving the course, making students learn, and evaluating their students. With reflective learning, teachers will also actively access what they know, what they need to know, and how they bridge the gap [30].

5. Conclusion
This study concludes that students' lesson study and reflective essays during the online-First Field Practice Training on campus can improve the quality of learning carried out by students. The improvement in the quality of students' lesson plans can also enhance the quality of learning. Besides, students are also used to reflecting on their knowledge and skills, which will help the prospective teacher's student career when they are already working.

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