Addressing Challenges: Lesson Study Method in Teaching Practice Course[1]

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ABSTRACT

The aim of this study was to explore challenges in implementing the lesson study model in teaching practice course and to discuss solutions, providing insights into addressing these issues. Lesson study is a Japanese form of professional development that allows teachers to plan and examine lessons collaboratively. In this study, case study was selected as a research method. The study group consisted of six preservice teachers in their final year and taking the teaching practice course. The study process took 10 weeks and the lesson study groups met three times a week. As data collection tools, classroom observations, voice recordings and interviews were used. The obtained data were analyzed by content analysis method. When the findings were examined, having six preservice teachers in one group caused some problems. It is recommended to reduce the participant numbers in each group for future lesson study implementations.

***Keywords**:* Lesson study, preservice teachers, teaching practice course.

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Ders İmecesi Yönteminin Öğretmenlik Uygulaması Dersinde Kullanılmasında Karşılaşılan Güçlükler

ÖZET

Bu çalışmanın amacı, öğretmenlik uygulaması dersinde ders imecesi modelinin uygulanması sürecindeki zorlukları araştırmak ve bu zorlukların çözümüne yönelik öneriler sunmaktır. Ders araştırması, öğretmenlerin dersleri işbirliği içinde planlamalarına ve incelemelerine olanak tanıyan Japonya temelli bir mesleki gelişim modelidir. Bu çalışmada araştırma yöntemi olarak durum çalışması seçilmiştir. Çalışma grubunu son sınıfta öğrenim gören ve öğretmenlik uygulaması dersini alan altı öğretmen adayı oluşturmaktadır. Çalışma süreci 10 hafta sürmüş ve ders imecesi grupları haftada üç kez bir araya gelmiştir. Veri toplama aracı olarak sınıf içi gözlemler, ses kayıtları ve görüşmelerden yararlanılmıştır. Elde edilen veriler içerik analizi yöntemiyle analiz edilmiştir. Bulgular incelendiğinde altı öğretmen adayının aynı grupta yer alması bazı sorunlara yol açmıştır. Gelecekteki ders imecesi uygulamaları için her gruptaki katılımcı sayısının azaltılması önerilmektedir.

***Anahtar Kelimeler**:* Ders imecesi, öğretmen adayları, öğretmenlik uygulaması dersi.

GİRİŞ

Teacher training programs are pivotal in molding effective educators. The emphasis on creating conducive learning environments, providing ample practice opportunities, and ensuring student success, as highlighted by O'Neil and Boyce (2018), forms the cornerstone of these programs. Strategies such as enhanced supervision, feedback mechanisms, and reflective practices are employed to significantly contribute to the development of self-efficacy among preservice teachers (Anderson et al., 2022). In the context of effective initial teacher education, Velle (2021) underscores the importance of incorporating reflective practice, spacing and interleaving techniques, and structured school experiences in the formulation of teacher identity. This emphasis aligns with the notion that preservice teacher training should extend beyond theoretical knowledge, encouraging practical applications within real classroom settings. Moreover, Wiedermann (2020) establishes the positive impact of classroom management training programs on student academic competence through the development of prosocial skills. To maximize the efficacy of preservice teacher training programs, it is essential to focus on teachers' pedagogical content knowledge, as highlighted by Baumert et al. (2010). This knowledge not only enhances students' learning gains by activating cognitive processes but also provides individualized learning support.

The 2010 report by the National Council for Accreditation of Teacher Education further advocates for the centrality of pedagogical practice within teacher education curricula, emphasizing the need for preservice teacher candidates to engage in practice-based applications within real classroom environments (NCATE, 2010). This hands-on experience forms a bridge between theoretical knowledge and the practical challenges educators face in authentic teaching settings (Giebelhaus & Bowman, 2002). To achieve success in this field, teacher preparation programs offer chances for prospective educator preservice teachers to gain practical experience in genuine classroom settings (Kamens, 2007; Michael et al., 2018).

In Turkey, the course which provides preservice teachers with the opportunity to experience field practice is called the "Teaching Practice Course". This course enables preservice teachers to practice their content knowledge and pedagogical knowledge in real school settings. Teaching practice is a mandatory two-semester course in the final year of a teacher education program (HEI, 2018). Preservice teachers are assigned to a supervisor and a public school in groups at the start of the year in this

course. Under the guidance of a faculty member (supervisor) and a public-school instructor, a group of preservice teachers is required to prepare lesson plans and implement the lesson in a class every week. However, the studies in this field have revealed that there are various problems in the teaching practice course (Kırksekiz et al., 2015; Koç & Yıldız, 2012; Seçer et al., 2010). One of the common problems preservice teachers are faced with after teaching the lessons is lack of feedback (Paker, 2008). In the teaching practice process, feedback from instructors, supervisors and peers is important and helpful for professional development (Bowman & McCormick, 2000; Zeichner, 2007). Besides not giving feedback, another big problem that preservice teachers face is the indifference of the supervisor/instructor towards preservice teachers; supervisors do not visit the schools enough and school instructors are usually unwilling to attend the lessons to observe preservice teachers (Çermik et al., 2011; Ozdaş, 2018). Çepni and Aydın's research in 2015 highlighted that the teaching practice course's instruction hours were inadequate, leading to a lack of practical teaching opportunities for preservice teachers. In the usual order, every week a different group member prepares and teaches the lesson while the other preservice teachers are only expected to be present in the classroom.

There are several models that serve as tools for the enhancement of teachers and teacher candidates in their professional growth (Bamrungsin & Khampirat, 2022; Gutierez, 2016; Richards & Farrell, 2011; Sevinc & Lesh, 2021). Lesson study, one of the models in initial teacher education, supports the development of preservice teachers and can effectively address challenges encountered in teaching practice courses. (Cajkler & Wood 2019). Lesson study is an alternative program which offer opportunities for teachers to engage in professional development. Since the early 1960s, the lesson study model known as "Jugyou Kenkyuu" has been considered as the most important part of the professional development of Japanese teachers (Chong & Kong, 2012). Lesson study started to draw American researchers' attention in the 1990s (Stigler & Hiebert, 1999) and has been actively applied in the USA since then (Lampley, 2015). In the last two decades it has been used as a professional development of teachers, and studies have been carried out in many different countries such as the UK, South Africa, and Indonesia (Dudley, 2013; Ono & Ferreira, 2010; Saito et al., 2006). Lately, studies in this area have been carried out by some researchers in Turkey as well (Baki, 2012; Bozkurt, 2015; Özbek, 2020).

Theoretical Framework

Lesson study is a Japanese teaching model that involves teachers collaboratively planning, teaching, observing, analyzing, and revising single-class lessons (Hieber et al., 2002; Lewis et al., 2006; Ono & Ferreira, 2010; Yoshida, 1999). This model is usually conducted in small groups (three to six teachers) that include teachers of the same grade (Back & Joubert, 2011; Cerbin & Kopp, 2006; Richardson, 2004). To enhance teaching through lesson study, teachers need to collaborate to plan a lesson, observe the teaching and learning process during the lesson, evaluate the content and implementation of the lesson, and utilize these insights to create a more effective lesson (Ogegbo et al., 2019). In short, it is a context-based, learner-centered, development-oriented, teacher-led collaborative classroom professional development (Ono & Ferreira, 2010).

Studies are carried out with preservice teachers as well as with inservice teachers in the context of lesson study (Akerson et al., 2017; Chokshi & Fernandez, 2005; Fernandez, 2010; Juhler, 2018). According to Sumarti et al. (2015), the implementation of a lecture model rooted in lesson study enhances the professionalism of preservice teachers. Juhler (2018) indicates that the use of lesson study during the field practice in teacher education influences preservice teachers' ability to begin improving pedagogical content knowledge.

Implementing lesson study model in the teaching practice courses in Turkey, can offer solutions to challenges encountered during the application. This model provides immediate feedback from peers and supervisors right after the teaching session, ensuring that at least one knowledgeable advisor remains with the group throughout the entire process (Fernandez, 2010). Additionally, in lesson study, all the members of the group prepare the lesson plan collaboratively and thus, the lesson study engages each group member every week in the process (Ono & Ferreira, 2010). The Teaching Practice course framework can be improved by incorporating the lesson study model, as suggested by Günay et al. (2016). This approach can enhance the pedagogical and professional aspects of the teaching process. As a result, using lesson study for preservice teachers' professional development is thought to eliminate such problems.

In Turkey, several researchers have started to conduct studies on lesson study in the last few years (Baki & Arslan, 2015; Güner & Akyüz, 2017; Karabuğa, 2018; Koçak et al., 2021). However, these studies have primarily

focused on the effectiveness of the lesson study model in various contexts, without delving into a thorough examination of challenges encountered in its implementation or providing recommendations for their resolution. Therefore, this study aims to explore challenges in implementing the lesson study model in teaching and to discuss solutions, providing insights into addressing these issues.

METHODOLOGY

Case study, which is one of the qualitative research designs, was employed as the research design in this study. Yin (2009) defined a case study as an in-depth empirical investigation of a contemporary phenomenon within its real-life context, particularly when the distinction between the phenomenon and context is not clearly discernible. Case study enables researchers to study the real-life environments of participants (Creswell, 2013). The reason why the case study was chosen in this study is that the research focused on the detailed and in-depth observation of six participants experiencing the process of lesson study while they were teaching for the first time.

Participants

Six participants were involved in the research, all of whom were fourth-grade preservice teachers enrolled in the Science Education Department of the Faculty of Education at a public university. These preservice teachers, upon graduation, would be eligible to begin their teaching careers as science teachers for grades five to eight. The selection of these participants, along with the researcher, formed the lesson study group. The lesson study practices were conducted within the framework of the 'Teaching Practice 1' course, a mandatory component in the final year of the teacher education bachelor's degree program. This course provides preservice teachers with the opportunity to gain practical teaching experience under the supervision of an experienced teacher, marking the first time they engage in teaching within a real classroom environment.

All participants shared a similar educational background, having completed identical courses and accrued the same number of course credit hours. To enhance the diversity of the group, preservice teachers were purposefully selected using the maximum variation sampling method based on their GPAs. During the recruitment process, participants were thoroughly informed about the research goals, methods, and the voluntary nature of their participation. Each participant was required to provide written

informed consent, which emphasized their right to withdraw from the study at any time, without any repercussions.

Lesson study procedure

The study process took 10 weeks, and the lesson study group met three times a week. The first meeting was designated for research and preparation, the second for the first implementation, reflection, and improvement, the second implementation, and finally, the last meeting for reflection and record filling.

Before the first research lesson, the preservice teachers collectively determined the instructional activities suitable for the curriculum objectives of the week and prepared their lesson plans under the supervision of the researcher. During the preparation step, the preservice teachers first examined the curriculum objectives and determined the activities suitable for teaching in the classroom. Lesson plans were prepared within the framework of the 5E model. The preservice teachers decided amongst themselves who would carry out the implementation process and concluded the preparation step after finalizing the lesson plans, which took approximately two hours to complete.

Each research lesson step consisted of two lessons, each lasting 40 minutes, as detailed in Table 1. The researcher and the class teacher were present in the classroom during the research lesson steps, alongside the six preservice teachers. However, only the instructor directly participated in the research lesson process. Both the researcher and five preservice teachers observed the lesson and took notes. Step three and step four were conducted on the same day. After the first implementation, the preservice teachers and the researcher held a one-hour meeting. Both the preservice teachers and the researcher presented their reflections on the research lesson during this session. Following the review of the first implementation, the lesson plan was rearranged for application by a different preservice teacher immediately after the meeting, in a separate class at the same grade. The reflection step meetings occurred right after the research lessons. During this final step, a general assessment of the lesson study cycle was made by analyzing the observation notes of the preservice teachers and researcher in a two-hour session, as outlined in Table 1. Each preservice teacher and the researcher shared their opinions about the lesson study process. Improvements that could enhance the lesson plan were noted after the discussions to be considered in the next lesson study cycle.

In the course of this study, a comprehensive total of 20 distinct research lessons were implemented. Each preservice teacher actively contributed to the lesson study process by taking the lead in a minimum of three research lessons. This ensured a rich and diverse set of experiences, allowing for a thorough exploration of the lesson study model's effectiveness across various teaching scenarios.

Table 1. One lesson study cycle

Dates	Lesson study steps	Time	Curriculum objective
March 8	Research and preparation	120'	7.4.1.2. Inquiries into the alteration of ideas related to the atom concept from past to present day.
March 13	Research lesson 1	(40+40)'	
March 13	Reflection and Improvement	60'	
March 13	Research lesson II	(40+40)'	
March 13	Reflection and filling the records	120'	

Data Collection Tools

Data were collected throughout the entire semester in which the participants were enrolled in the Teaching Practice 1 course. Triangulation, a method crucial for ensuring the validity of the data (Bogdan & Biklen, 2003), was implemented through various sources, including field notes, observations of weekly lesson study meetings, and a focus group interview. During the Teaching Practice 1 course, the researcher observed the preservice teachers in research lessons and meetings. The researcher attended the meetings as a participant observer, actively engaging within the natural environment (Dewalt & Dewalt, 2002). During these observations, the lesson plan was also noted by the researcher and the preservice teachers. To address potential biases and enhance objectivity, a preservice teacher made copies of the lesson plan for all participants and the researcher. This practice, known as field notes in qualitative research, aimed to document and observe activities during the lesson study process. However, it was acknowledged that simultaneously observing and taking notes during this process might be challenging (Jackson, 1983). To overcome this challenge, all lesson study meetings and interviews were audio recorded.

Interview was used in conjunction with observation, documents, and other methods. A focus group interview with six participants about the lesson study process was conducted at the end of the semester. The goal of this approach was to gather comprehensive, multifaceted, and in-depth qualitative data regarding participants' viewpoints, experiences, ideas,

perceptions, attitudes, and behaviors regarding the given subject (Krueger, 1994). The interview, lasting about two hours, was audio recorded.

Data Analysis

Qualitative data analysis is a meticulous process that involves organizing raw data, searching for patterns, and categorizing information (Patton, 1990). In this study, the process of coding and theme development aimed to extract meaningful insights from the collected data. The coding process began with the transcription and accumulation of data obtained through various methods, including field notes, interviews, and observations of lesson study meetings and lessons. Codes were systematically developed by scrutinizing the data and creating pattern codes that encapsulated the essence of the information. Each piece of data was assigned a code, forming the initial layer of analysis. Following the coding phase, codes were systematically grouped into overarching themes. Themes emerged through an in-depth analysis of coded data, aiming to uncover patterns, connections, and recurring concepts. This iterative process involved revisiting the data and refining themes until they accurately represented the essence of the participants' experiences and the overarching objectives of the study. To enhance the rigor of the analysis, both researchers independently participated in the coding and theme development process. Continuous cross-checking and discussion were conducted until a consensus was reached. This collaborative approach helped mitigate individual biases and ensured a robust and comprehensive analysis.

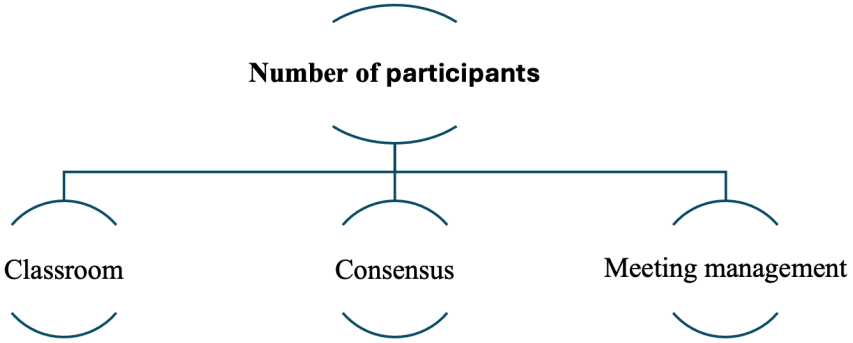
RESULTS

In this section, results of the analysis of the data obtained through observations, field notes and interviews during the ten-week lesson study process are presented. As a result of the analysis, four main themes and various codes emerged. These themes are Number of participants, Weekly cycle, Data collection and Improvement. All themes and codes are explained with the help of direct quotes from the data sources.

Number of participants

The lesson study group included six preservice teachers and the researcher in this study. This theme consists of codes related to the number of participants.

Figure 1. Number of participants



Classroom

Since the lesson study model requires observing a teacher and evaluating the implementation of the lesson plan by other teachers, all teachers in the group are supposed to be in the classroom during the implementation. In our study, the additional seven people in the class naturally caused some problems. With the increase of the individuals in the classroom, one of the challenges the group faced was finding a seat. In some cases, several chairs had to be brought into the classroom before the lesson, which caused a waste of time and energy. Furthermore, the presence of seven outsiders at the same time in the classroom created a big distraction for students at the beginning of the research. The students were eager to meet the preservice teachers, tried to ask for help during the research lessons or wanted to sit next to them. One of the teachers pointed out at the meeting:

Today during the break one of the children said he had never seen that many teachers in his class at time same time. I noticed that some of them (the students) couldn't stop staring at us throughout the whole lesson.

Another problem was that many individuals and chairs interfered with the implementation of activities in several research lessons. Some of the activities required space for students to act in front of the class, but the additional individuals and chairs made this difficult. One of the teachers indicated how this became challenging during the meetings:

We prepared a drama activity to teach the sensory system. For this activity, I had to choose six students and prepare a classroom environment conducive to drama. But because of the extra chairs that were brought for us, I could not create enough space. The other teacher who taught earlier

today had a chance to teach in a bigger class so she didn't have a such problem, but unluckily for me, I could not carry out the activity properly.

Consensus

Sometimes six participants mean six different ideas. Although different perspectives and opinions help in generating a better idea and creating a better solution to a problem, sometimes it becomes quite challenging. When different participants with unique personalities work together, a little amount of conflict is acceptable, since diversity (maximum sampling) can create a certain level of disagreement. Particularly in determining the type of activity at research and preparation meetings, each teacher could come up with a different activity for a topic. It took several hours and many discussions for the group to come to a consensus. Besides being time-consuming, it was also exhausting for the teachers. One of the preservice teachers explained:

Sometimes it is not easy to decide which activity to choose, so it can be difficult to find the activity that everyone agrees with. For example, we were torn between modeling and simulation activities in the last meeting, and it took a lot of time to decide. When I got home after the meeting, my mind was about to explode.

Meeting management

At the preparation and reflection stages, sometimes it was hard for the researcher to keep up with the conversation and manage the discussion. When two or more teachers started to talk at the same time, the group became disorganized. Or when a preservice teacher talked too much, the others started not to listen to that teacher and lost interest. In this situation, other teachers started to talk in pairs. That made it hard to control and maintain the group discussion. As one of the preservice teachers stated:

A two-hour long meeting is a quite long time to prepare a lesson plan, but when everybody talks about something else other than the topic which is discussed, the meeting takes more time than it should.

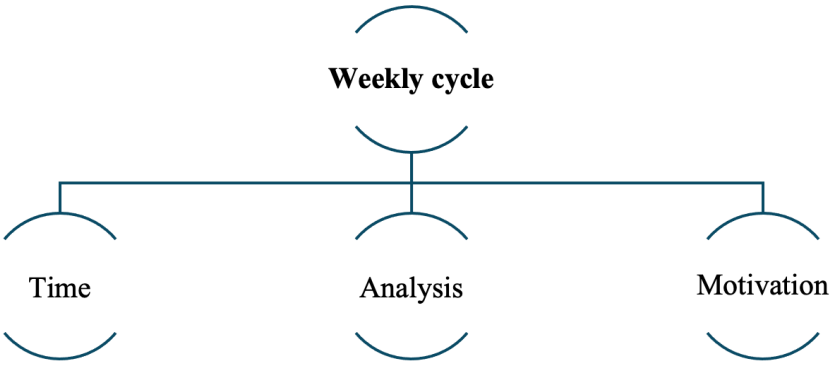
After getting through an intense school day, the teachers felt relaxed and wanted to talk about something other than the lesson study. Particularly at the reflection meetings, the preservice teachers tended to go off topic from discussing the research lessons. When the teachers were distracted once, they started to talk about other topics irrelevant to the ongoing discussion. The researcher noted:

Today the meeting took more than three hours; the teachers kept bringing up irrelevant topics because of their concern about the upcoming midterm exams.

Weekly cycle

Every week, the five lesson study steps were used in the research. The first step, "research and preparation", took place on the campus several days before the research lesson. The other four steps took place at the middle school within the first research lesson day. It took roughly eight hours to complete a whole lesson study cycle. This theme consists of the codes related to the weekly cycle.

Figure 2. Weekly cycle



Time

The lesson study group met twice a week. The first meetings took place on the campus and were completed in two or three hours. However, the second meetings lasted for an entire day. With the addition of the transportation time and breaks between classes and lesson study steps, the five-step cycle was time-consuming for both the researcher and the preservice teachers. One of the teachers explained:

Tuesdays were overwhelming. I got up at seven in the morning and I spent all day in between classes and meetings. The research lessons and reflection meetings went on again and again till the end of the day, and it was very exhausting and time consuming. In the first weeks, it was helpful but as we progressed more, the second research lessons became unnecessary and a waste of time.

Analysis

All the lesson study meetings were recorded, and the data were analyzed

weekly by the researchers. The three meetings and two research lessons were transcribed, the irrelevant data were removed and then the remaining data were analyzed. It was very demanding to analyze that amount of data every week.

Motivation

The preservice teachers participated voluntarily. They were aware of the benefits of lesson study and how it could improve their teaching skills. Thus, they were enthusiastic and highly motivated. However, sometimes spending too much time on one lesson plan caused the preservice teachers to lose their motivation. The teachers indicated that:

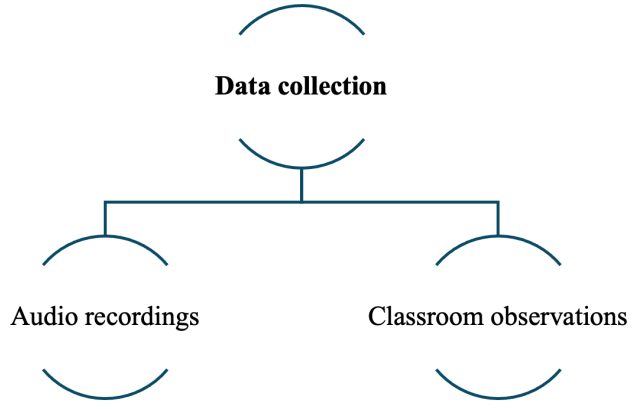
Some weeks we were so busy because of other courses. I agree with my peers, lesson study became so exhausting in these weeks.

We spent one and a half day on lesson study each week. It was very helpful for our improvement; that is for sure, and we enjoyed it. The more student success increased, the more satisfied we became. But with all the other courses and duties we had, I wish there was a better, shorter version of this (lesson study).

Data collection

Data were collected during the whole lesson study process. The preservice teachers and the researcher took notes on the lesson plans every week, the research lessons and meetings were recorded, and at the end of the study, interviews were conducted. This theme consists of the codes related to the data collection.

Figure 3. Data collection



Audio recordings

At the beginning of the research, it was considered that audio recording would be adequate for recording the lesson study process. However, as mentioned above, when two or more teachers were talking at the same time, it was hard to understand some of the conversations by simply listening during the transcription. Furthermore, sometimes it was hard to tell who the voice belonged to. The researcher noted:

Some parts of the argument were extremely complicated to transcribe, and for this reason, this weeks' audio recordings have not been analyzed completely. In several parts, conversations were not clear, and it was tough to distinguish the voices.

Classroom observations

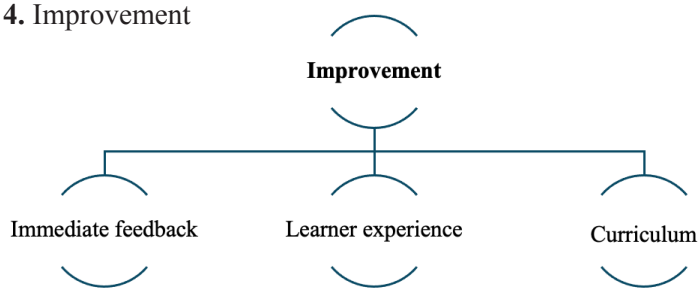
The researcher and each preservice teacher were given lesson plans before the research lesson so that they could take notes on the lesson plan. The preservice teachers were requested to write down their observations regarding the implementation of the lesson plan during the research lesson. However, no instructions or structured forms of what to observe and write were given to the preservice teachers.

I didn't write anything about pupils' specific reactions to the activity, I didn't know that I was supposed to. We developed the lesson plan based on the 5E model, so I only took notes about the incidents on every stage of this model.

Improvement

Lesson study is a professional development model and helps to improve teaching skills in different ways. Despite all the challenges, there have been some positive developments. Being engaged for long hours with a group every week, and discussion for an academic purpose improve preservice teachers' teaching skills. This theme consists of the codes related to the improvement.

Figure 4. Improvement



Immediate feedback

The preservice teachers who attended the research lesson were expected to take notes in order to give feedback to the teacher that taught the lesson. The reflection meetings were held right after the research lessons. Receiving immediate feedback from both the researcher and peers at each meeting greatly contributed to the professional development of the preservice teachers. One of the teachers pointed this out in the focus group interview:

We can learn from our mistakes; we can learn which parts of the teaching fail or which parts are successful thanks to the feedback we get after all the research lessons. It is more effective to get the feedback instantly.

Learner experience

While one teacher was implementing the lesson plan, the other five teachers were observing and collecting evidence of student learning. The preservice teachers were given the opportunity to experience the lesson plan they had prepared as a student. During the research lessons, by paying attention to the pupils, teachers were able to acquire a deeper understanding of how students learn or what they struggle with. The preservice teachers reflected their observations at the meetings:

They (students) had a lot of misconceptions about the atom and atomic models. I was shocked. We should do something about it; maybe we can come up with an activity about scientists like Dalton, Bohr, etc., and their atomic models.

I know what you meant; we all know. The explanation was quite accurate, but it was a little bit beyond the level of their comprehension. You should have given more examples and fewer explanations.

Curriculum

The preservice teachers taught seventh grades. The schoolteacher informed the preservice teachers of the topic and curriculum objectives one week before the research lessons, and thereby, the preservice teachers had enough time to prepare. The preservice teachers used the textbook, the internet and the curriculum while preparing their lesson plans. Thus, they learned the scope of the curriculum, teaching techniques, and limitations of the subjects. Two of the teachers were talking about the subject:

- How about we give an example of Archimedes' principle by explaining buoyancy?

- It is out of the school curriculum this year. They aren't supposed to learn buoyancy until eighth grade.

DISCUSSION

This study aimed to explore challenges in implementing the lesson study model in teaching and to discuss solutions, providing insights into addressing these issues. For this purpose, a ten-week study was conducted with six participants. During this ten-week period, the preservice teachers prepared 10 lesson plans, and they implemented each lesson plan in two different classes. At the end of the study, the data obtained through various sources were analyzed, and four main themes and various codes emerged. In this section, these findings are discussed respectively.

Lesson study involves a small group of instructors working together to design, teach, study, and refine a class lesson (Hieber et al., 2002; Lewis, 2002; Ono & Ferreira, 2010). This small group can consist of three to six teachers according to the previous research (Back & Joubert, 2011; Cerbin & Kopp, 2006; Richardson, 2004). Therefore, this study was conducted with a group of six preservice teachers. However, having six participants in a group caused some problems such as class seating arrangements, consensus on lesson plans and discussion management. As mentioned in the literature, increasing the number of group members decreases the effectiveness and productivity in the group (Çakmak, 2014; Edgerton & McKechnie, 2002). Burdett (2003) pointed out that in university student groups, when the number of members in the group reaches six, the group loses its effectiveness. Edgerton and McKechnie (2002) suggested that the number of members should be less than five for the group to be efficient. According to Morgan et al. (1970, as cited in Bertucci et al., 2010), group performance improved when one member was missing from a five-member group, perhaps because members believed that their contributions were more necessary. The study called "Why some groups fail: A survey of students' experiences with learning groups" argued that the reason why larger groups do not function is because they have difficulty maintaining cohesiveness (Feichtner & Davis, 1984). Consequently, peer collaboration studies stated that the ideal number of members in group work should be three or four (Lou et al., 1996; Strough et al., 2001). Especially in teaching practice lessons in actual classrooms, preservice teachers usually participate as a group, which can cause a distraction for pupils (Demir & Çamli, 2011; Saka, 2019). For this case, lesson study research suggested

that large lesson study groups could break into subgroups based on their grades (Fernandez, 2002). As the literature is reviewed, it is seen that most of the studies were carried out with groups of three or four participants (Matthews et al., 2009; Parks, 2009).

Lesson study contains a group of teachers working collaboratively to plan, teach and revise a lesson plan (Hieber et al., 2002). At the beginning of the practice, teachers meet and plan their lesson plan together, and after this, one teacher teaches the lesson plan in a real classroom while the other teachers attend to observe the implementation of the lesson and take notes (Lewis, 2002; Ono & Ferreira, 2010). After the lesson, follow up meetings are conducted to review and revise the lesson plan based on the reflections. Then, the improved version of the lesson is taught by another member of the group (Doig & Groves, 2011; Yoshida, 1999). Finally, the last meetings are held to reflect on and write up the final version of the lesson plan (Lewis et al., 2009; Stepanek et al., 2006). Lewis et al. (2009) carried out a study to improve mathematics instruction through lesson study with six teachers, and it took ten days to complete a lesson study cycle with two research lessons. On the contrary, the lesson study practice of Espinosa et al. (2018) consisted of the first three steps: planning, implementation, and reflection. Although the lesson study model consists of five steps, a second research lesson is usually optional. The most common steps adopted by teachers are planning, implementation, and reflection (Murata, 2011; Stepanek, 2001). According to Yoshida (1999), reteaching is a rarely used step of Japanese lesson study, whereas it is a very common lesson study feature in the US. Because of this, the steps of a lesson study may differ. One possible reason why some of the researchers adapt a shorter version of the lesson study cycle may be because the model is considered to be time-consuming (Espinosa et al., 2018; Yeap et al., 2015). As mentioned in several other studies, time constraint is a major challenge of lesson study (Fernandez, 2002; Yeap et al., 2015). According to the literature, the lesson study model requires additional meetings out of school and teachers and preservice teachers find it difficult to meet before or after school (Espinosa et al., 2018). Furthermore, the heavy curriculum and scheduled school programs could be another reason why the model is considered to be time-consuming (Ogegbo et al., 2019). According to the study by Espinosa et al. (2018), participants suggested that the model was time-consuming, so that it should be utilized on a once-a-month basis. Consequently, it is considered more efficient to study a new lesson study

cycle on another topic rather than continuing to rearrange the same lesson repeatedly, because reteaching requires time, and it becomes difficult to continue working on the same lesson plan as the curriculum continues with other subjects (Fernandez & Yoshida, 2012).

At the beginning of the research, it was considered that audio recording would be adequate for recording the lesson study process. However, analyzing the audio recording of a six-person meeting became challenging. It was difficult to distinguish the voices and to eliminate the irrelevant parts without any visual aid. Visual aids such as video in addition to audio could help to capture details missed by other tools (Lemke, 2007). Therefore, video recording should have been used instead of audio recording. Video recording is a frequently preferred data collection tool in the lesson study process (Lewis et al., 2006). Video recording helps to capture both planned and unplanned situations that occur during the lesson study cycle, and hence, it provides researchers with all the details of the interactions between the teachers and students, or an authentic classroom environment (Baecher et al., 2012; McKenney & Reeves, 2014). Besides, choosing video recording instead of audio recording helps the researcher to capture the details of nonverbal communication (Marshall & Rossman, 2014).

Preservice teachers attend the research lessons and take notes during the implementation (Fernandez & Yoshida, 2012). In this study, the teachers were given lesson plans to write down their observations. A structured observation form was not used. This caused the preservice teachers to have some problems during the observation. When teachers are novice at teaching, teaching in a real classroom can be very complex and preservice teachers might have trouble in deciding what to observe (Karataş et al., 2020). Preservice teachers should focus on certain aspects of the lesson, since they cannot focus on everything at the same time (Richards & Farrell, 2011). As stated in the literature, teacher observation is a complicated performance evaluation which is affected by various factors (Johnson et al., 2019). Therefore, preservice teachers should evaluate each other according to certain criteria and clear instructions by using a simple and practical observation form (Adnot et al., 2017; Andrade, 2005; Dudley, 2013). Furthermore, supporting teachers by evaluating objectively has a positive effect on their development (Taylor & Tyler, 2012).

During the research lessons, while one preservice teacher was teaching the lesson, the rest of the preservice teachers were taking notes in order to

give feedback at the reflection meetings. Receiving immediate feedback from supervisors, instructors and peers has an important role in preservice teachers' professional development (Zeichner, 2007). Considering the lack of peer feedback and the indifference of the supervisors in traditional teaching practice courses, lesson study might have provided support in these matters. The preservice teachers obtained immediate feedback right after every research lesson from their peers and supervisor. Reflection and feedback enable preservice teachers to evaluate themselves, and thus, lesson study might have helped them to improve (Adnot et al., 2017; Rekalidou et al., 2014). During the research lessons, by paying attention to the pupils, teachers were able to acquire a deeper understanding of how students learn or what they struggle with. Lesson study facilitates teachers in seeing learning from students' perspectives, and it is important for novice teachers to develop their knowledge of students' understanding, and this knowledge can be developed by interacting with students in real classroom settings (Lee, 2008; Walter, 2013). A teacher's knowledge of the curriculum is another component of pedagogical content knowledge (Magnusson et al., 1999). Because preservice teachers prepared their lesson plans according to the curriculum objectives every week, they learned the scope of the curriculum, teaching techniques, and limitations of the subjects, at least for seventh grades.

CONCLUSION AND RECOMMENDATION

The aim of this study was to explore challenges in implementing the lesson study model in teaching and to discuss solutions, providing insights into addressing these issues. For this purpose, the lesson study model was implemented for ten weeks with the participation of six preservice teachers. As stated in the literature, a lesson study group can consist of three to six teachers (Back & Joubert, 2011). However, in the teaching practice course, the fact that there were six participants in the group caused some problems such as classroom seating arrangements, consensus in lesson plans, and meeting management. Therefore, conducting the lesson study model in the teaching practice course with as few people as possible will provide more efficiency.

The lesson study cycle used in this study consists of five steps. It took a lot of time to accomplish each step in one week (Murta, 2011). There are different types of lesson study cycles that do not contain the second implementation step. Considering that in the teaching practice course, preservice teachers need to prepare a lesson plan for a new topic each week,

a three-step cycle may be preferred. Furthermore, it was quite challenging to analyze the data which were gathered by using a voice recorder because of the mingling voices. In order not to have trouble analyzing the data, recording with a video tape is recommended instead of voice recording.

At first, the preservice teachers had difficulty deciding what to observe during their observations due to the lack of experience. Traditional classroom observations tend to focus on what the teacher does during the classroom activities. Lesson study observations focus on students and what they do in response to the instruction. At least until preservice teachers get used to learning what to observe and write, they can be given structured observation forms. After solving these problems and adapting the model for the teaching practice course, the lesson study model turned out to be a useful professional development model for preservice teachers, especially because it provided immediate feedback, deeper understanding about learners and an extensive knowledge about the curriculum. Considering the model's effectiveness, teacher training institutions can be encouraged to use the lesson study model for the teaching practice course.

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