



# INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN PROGRESSIVE EDUCATION & DEVELOPMENT



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To Link this Article: <http://dx.doi.org/10.6007/IJARPED/v11-i2/12881>

DOI:10.6007/IJARPED/v11-i2/12881

**Received:** 07 February 2022, **Revised:** 10 March 2022, **Accepted:** 23 March 2022

**Published Online:** 08 April 2022

**In-Text Citation:** (Ariffin & Iksan, 2022)

**To Cite this Article:** Ariffin, R. 'Aqilah M., & Iksan, Z. H. (2022). Teachers' Knowledge in the Practice of Lesson Study and its Challenges. *International Journal of Academic Research in Progressive Education and Development*, 11(2), 157–173.

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**Vol. 11(2) 2022, Pg. 157 - 173**

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[www.hrmars.com](http://www.hrmars.com)

ISSN: 2226-6348

## Teachers' Knowledge in the Practice of Lesson Study and its Challenges

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### Abstract

Lesson study is one of the approaches in the Professional Learning Community (PLC) that can improve teacher professionalism as well as student's learning and performances, but teachers at the same time face various challenges in making this approach a success. Therefore, the level of knowledge of teachers in lesson study and the challenges faced are questioned. This study was conducted to identify the level of knowledge and challenges of teachers in lesson study through a questionnaire distributed to 32 respondents. The findings of this study show that there is a high level of knowledge of teachers about lesson study as well as a low level in the challenge of teachers to implement the lesson study. The biggest challenges faced by teachers are in terms of time carrying out the learning studies, as well as challenges in terms of collaboration between group members. This study can help to contribute to Professional Learning Community (PLC) activities to be improved and increase the progress of education in Malaysia on par with the other developed countries.

**Keywords:** Lesson Study, Teaching and Learning, Teacher Collaboration, Professional Learning Community, 21st Century Learning.

### Introduction

Lesson study is a practice in the Professional Learning Community (PLC) founded in Japan, aimed at improving teaching and learning through collaborative activities of teachers (Lee et al., 2017; Iksan, 2017). It first became known since Japan got the highest score for mathematics subjects surpassing America and Germany in the Third International Mathematics and Science Study (TIMSS) in 1995, subsequently studied by various countries around the world through research and seminars. It focuses on observation of student learning (Seleznov et al., 2020), not aimed at finding fault with teachers as is often concerned. By understanding the practice of this learning study, teachers can be more open and positive towards observations during open classes (Iksan, 2017), thus more ideas can be shared and suggested among teachers.

The Ministry of Education Malaysia (MOE) hopes to make the teaching profession a professional career and a top choice by empowering it through the improvement of teachers' professionalism (Ministry of Education Malaysia 2016). Various benefits of lesson study have been identified especially on the quality of teacher professionalism (Gutierrez, 2016; Vossen et al., 2019) which also contributes to improving student performance in various subjects in

school in terms of inquiry, high-level thinking, and 21st century learning practices (Dogan et al., 2016; Huang et al., 2017; Katz, 2014; Owen, 2016; Vossen et al., 2019). Therefore, this learning study is one of the best PLC approaches to improve the quality of education in Malaysia.

### **Lesson Study Approach in Teaching and Learning Process**

Teachers' knowledge of lesson study is very important so that it can be done smoothly, in turn can achieve the mission to improve student achievement. However, only a few teachers from a school were selected to follow the course on the lesson study through the PLC course (Mazlan, 2017) and caused the process of knowledge transfer to other teachers is not comprehensive. It was also held in a very short time resulting in less detailed descriptions and a lack of in-depth understanding such as an understanding of its importance, its focus on student learning, and an understanding that it needs to be done consistently. Teachers' understanding is important so that they not only they know about the lesson study superficially and the steps needed to be done, but holistically so that it can give meaning to teachers and their practice can be preserved.

Although lesson study has many positive effects, there are some constraints faced by teachers and schools where teachers lack of understanding and sufficient knowledge about PLC. Teachers also find it difficult to adapt in collaborative activities, they lack of motivation and self-efficacy, and lack of knowledge and skills on good teaching and learning approaches (Keong et al., 2019). On top of that, schools also face poor time management problems, financial problems, passive teachers, as well as still adopting traditional teaching and learning methods (Zhang et al., 2016).

The findings of Keong et al (2019) also found that teachers face challenges in terms of stress due to a handful of school administrations who are reluctant to accept ideas and suggestions from teachers, practice autocratic school management, unskilled in holistic school management, as well as less adopting a collaborative culture. Good leadership in a school can make collaborative efforts better (Settaraming et al., 2012). Thus, leaders need to make changes so that the impact can be passed on to teachers, hence producing a school that excels in terms of management, implementation, and student performance.

Although several studies on the knowledge and challenges of teachers on PLC practices and lesson study have been implemented, ongoing research still needs to be done to see how the approach can be effective in Malaysia. The implication of this study is to provide a source of reference to the Ministry of Education Malaysia, Teacher Education Division, as well as all parties in education in Malaysia to make continuous improvement.

Therefore, this study aims to obtain information related to the level of knowledge of lesson study and the challenges faced by teachers in the implementation of lesson study practice.

### **Professional Learning Community (PLC)**

PLC is the practice of collaborating in matters related to learning (DuFour, 2004), which has deep concepts and needs to be carefully observed in holistic learning using reflection and problem solving (Fullan, 2016). It involves cooperation from all relevant parties in order to be successful and provide improvement on student performance. Combining the models of Hord (1997), Fullan (1990), and Huffman and Hipp (2003) the PLC Basic Module by the MOE Teacher Education Division (2006) has been produced as a manual for teachers in Malaysia to practice

PLC and adopt a collaborative work environment. The three main ideas targeted in the practice of PLC culture are based on DuFour (2004) in Figure 1.

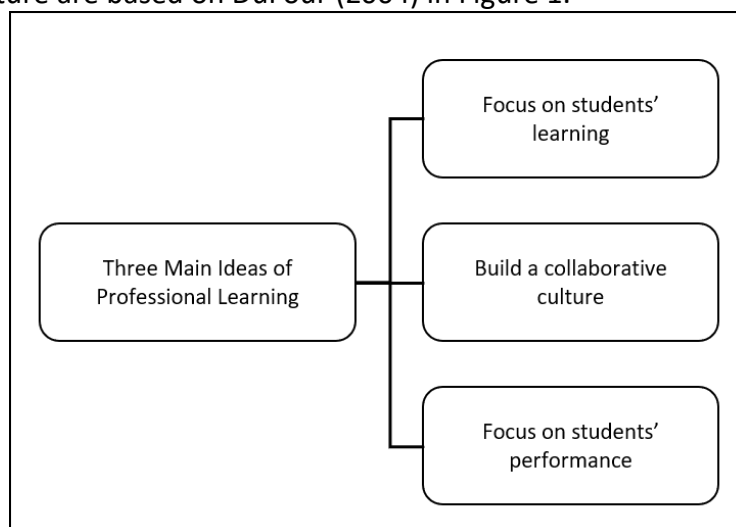


Figure 1. The three main ideas of the Professional Learning Community by DuFour (2004)

The three main ideas of the PLC are focusing on student learning, building a collaborative culture, as well as to focus on performance as attached in Figure 1 (Bakar and Hamzah, 2019; DuFour, 2004). Schools need to pay more attention to student learning than teacher teaching, as well as creating a culture of collaboration between teachers (DuFour, 2004) so that knowledge can be shared and can contribute to the improvement of teachers' knowledge as well as the value of professionalism. The third main idea of PLC by DuFour is to focus on students' achievement through proper assessment methods as the effectiveness of PLC can be seen on students' achievement after it is implemented (Hassan et al., 2018). These three main ideas should always be given attention and put focus on to achieve the objectives of the PLC.

### **Professional Learning Community (PLC) Development Strategies**

Initially, as stated in the PLC Basic Module, there are four types of best practice sharing, namely Lesson study, Peer Coaching/ Instructional Coaches, Learning Walks, and Teacher Sharing Sessions. Later, several additions to other practices were included in the Standard Operating Procedure of Initiative 11 - Continuing Professional Development (PPB) of the Professional Learning Community (PLC) by MOE namely Video Critique and Data Analysis. After that, the Book Club was introduced in 2016.

In addition, there are many other practices in PLC that are practiced in other countries namely Horizontal Group and Vertical Group Meetings, Problem Solving Groups, Critical Partner Groups, and also Teacher Learning Groups conducted in 2019 (Ke-Du, 2019). Recently, MOE has launched the PLC Kit as a convenient for teachers. Among the entire PLC collaborative tools, focus has been given to only 13 collaborative tools in the PLC Kit along with the procedures to be carried out by teachers in Malaysia as shown in Figure 2.

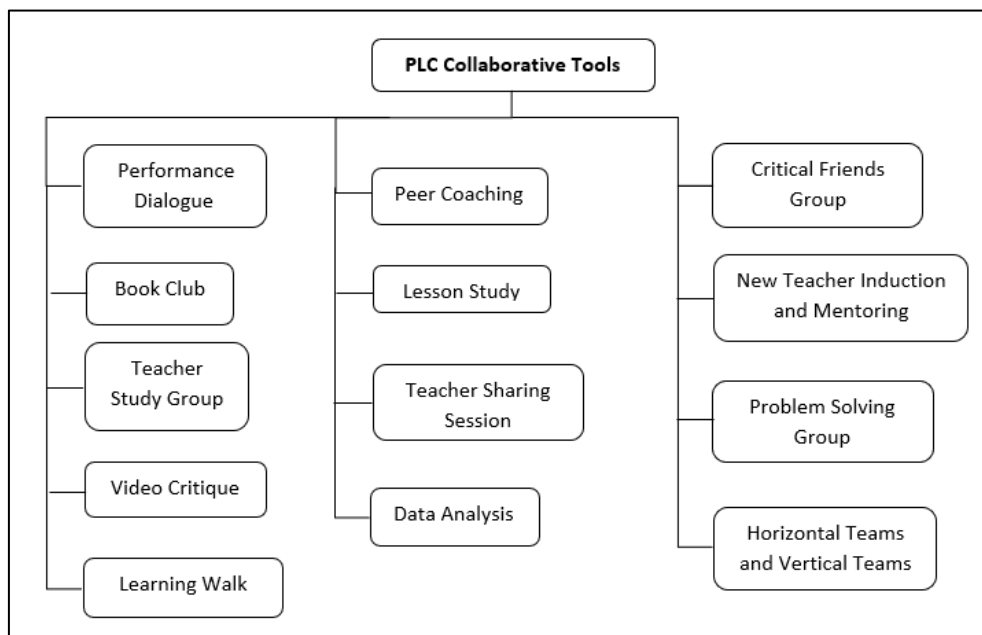


Figure 2: PLC-focused collaborative tools in Malaysia in the PLC Kit (MOE 2019)

Figure 2 shows the 13 PLC collaborative tools focused in the PLC Kit for use by teachers in schools. To fulfil the Ministry of Education’s (MOE) call for the success of the PLC program, the Program Implementation Calendar is framed in the Standard Operating Procedures as a reference and guideline for teachers in Malaysia. Following the launch of KIT PLC in 2019, teachers need to record PLC activities conducted through the SPLKM website. This method is more effective and systematic to manage and monitor PLC activities so that its implementation can be done consistently and orderly.

Based on the data from the Teacher Education Division, there were 141,309 PLC activities were held in Malaysia until 2021. Meanwhile, for lesson study activities in Malaysia, there were 6,041 activities were conducted until 2021. These data indicates that teacher professionalism improvement activities through PLC collaborative tools are becoming more widespread and actively carried out. It is also a positive phenomenon in an effort to improve the quality of education in the country.

### Lesson Study as a Collaborative PLC Tool

Lesson study is a collaborative tool of PLC which is a collaborative activity of teachers and the involvement of experts to make improvements in teaching and learning plans (Iksan, 2017; Lee et al. 2017). This lesson study process involves five steps, namely identifying learning challenges that arise, planning the lesson, implementing lesson plans and making observations, reflections, and improving lesson plans. The lesson study cycle is attached in Figure 3.

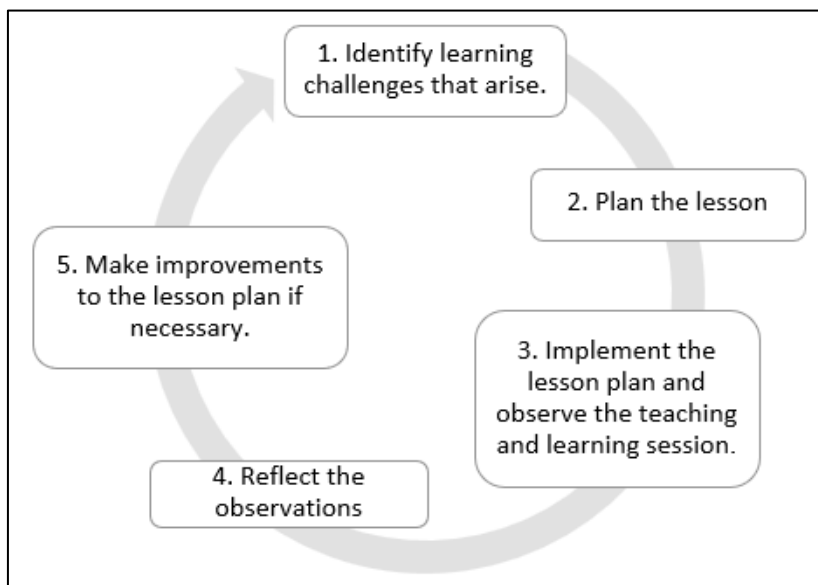


Figure 3: Lesson Study Cycle.

Based on Figure 3, the first step in lesson study cycle is to identify challenges or problems in learning that arise by having discussions with collaborative members. These challenges are then listed, then appropriate learning strategies and approaches are identified. Then, teachers need to make a learning plan in the second step based on the learning challenges and approaches that have been discussed to be implemented.

Next, the lesson plan is implemented in the third step. In this step, one teacher acts as the instructor, while the other group members conduct observations. This observation should be done in front of the class rather than on the side and back of the class, as it will make it easier for teachers to see more clearly how students react when the teaching process is carried out in terms of facial expressions and how they interact with their classmates (Lewis, 2002).

Afterwards, critical and in-depth reflection is done by discussing how many learning challenges have been overcome, what goals have been achieved and not yet achieved, and what problems have arisen in the open class session. Through this discussion, teachers can make improvements in the learning plan for the next lesson study cycle and problems in learning such as problem-solving skills among students can be overcome and improved (Keong et al., 2018).

Through a continuous lesson study cycle, knowledge of pedagogical and disciplinary content, as well as teachers' inquiry skills and motivation can be increasingly enhanced (Vossen et al., 2019). Therefore, lesson study is very beneficial to both teachers and students and should be carried out properly and preserved in the practice of teachers.

### **Impact of Professional Learning Community (PLC) Practices on Teachers and Students**

Collaborative teachers from various backgrounds in PLC can have a positive impact especially in terms of pedagogical content knowledge, disciplinary content knowledge, as well as collective knowledge (Dogan et al., 2016; Vossen et al., 2019), in turn can change teachers teaching and practice. traditionally shaped to a more inquisitive approach. Furthermore, it is also very helpful in providing support to teachers to change their beliefs and practices for the better, provide positive emotions, reduce feelings of isolation, as well as give them a greater



sense of purpose (Cajkler et al., 2014; Ogegbo et al., 2019; Owen, 2016). The level of teacher's self-efficacy can also be improved in an inclusive learning environment, in terms of workload reduction and also the level of job satisfaction (Katz, 2014). In addition, the quality and professionalism of teachers can be further enhanced through the value of cooperation in the production of lesson plans, knowledge sharing, as well as reflection done in lesson study to build teachers of caliber (Iksan, 2017).

The goal of PLC is also to provide improved students' performance through the collaboration of teachers (Kusaini, 2018) because it depends on the quality of teaching of the teachers themselves and how the school handles it. Keong et al. (2019) in their study mentioned that schools that do not practice PLC are found to be less able to adapt to the environment, slow to progress, less effective in learning, slow to implement changes, and less able to trigger progress in the task. Therefore, PLC acts as an important collaborative activity to improve the progress and performance of students in Malaysia as expected.

Nevertheless, there are some constraints that arise in the effort to make this PLC a success. The issue in schools is still practicing traditional teaching and learning methods, less efficient in time management, and difficult to get attention and support by the community as well as having financial problems and less active teachers (Zhang et al., 2016). On the teachers' side, there are issues of insufficient knowledge and understanding of PLC, difficulty adapting to collaborative activities, lack of ability to reflect critically, and difficulty deciding if collaborating (Browne, 2014). Time constraints, lack of instructional materials, and lack of support by institutions are also contributing factors to a less effective lesson study culture (Ogegbo, 2019). Therefore, all levels in education need to have awareness and play a role in helping each other by doing their best in every effort that is to be done to minimize the problems that exist and ensure the smooth running of the effort.

In conclusion, the collaborative approach of teachers in PLC has many advantages in terms of the way teachers work, job satisfaction, knowledge in the field of teaching, as well as in terms of teacher psychology and motivation. It is also beneficial to student learning because the sharing of ideas can further develop the quality of teaching and learning. However, the application of this strategy also has its own consequential issues that need to be investigated and addressed.

### **Research Questions**

The research questions for this study are as follows:

- What is the demography of the respondents?
- What is the level of knowledge among teachers in Lesson Study?
- What are the challenges faced by teachers in the practice of Lesson Study?

### **Research Objectives**

In order to answer the research questions, the objectives of this study are as follows:

- To identify the demography of the respondents.
- To examine the level of knowledge among teachers in Lesson Study.
- To investigate the challenges faced by teachers in the practice of Lesson Study.

### **Methodology**

This study employed a quantitative survey design. According to Watson (2015), quantitative survey is a method of obtaining information about a phenomenon in the form of numerical

and computational as well as obtaining more meaningful results through statistical analysis. To meet the objectives of the study, the researchers used a survey method in the form of a questionnaire.

### **Research Instruments**

This study used a questionnaire as an instrument that consist of three parts, namely Part A: Respondents Demography, Part B: Knowledge in Lesson study, and Part C: Challenges in the Implementation of Lesson Study. A four-point Likert scale questionnaire was used for Sections B and C, which consisted of 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, and 4 = Strongly Agree. In addition, open-ended questions are also given in Section C to enable respondents to list other challenges they faced other than those found in the questionnaire.

### **Validity and Reliability**

To obtain the validity and reliability, the questions in Part B: Knowledge in Lesson study were adapted from the study of Mazlan (2017) with some improvements. Meanwhile, for the questions for Part C: Challenges in the Implementation of Lesson study were constructed by the researcher. The questions used in this study have obtained content validation from two experts in Universiti Kebangsaan Malaysia who are skilled in the field of PLC and lesson study.

### **Sampling**

In this study, a random sampling technique was used that the sample consists of teachers in Malaysia to give equal opportunity to all respondents to be selected as study respondents (Sharma, 2017). The questionnaire form was adapted in the form of Google Form and distributed to teachers through Telegram, WhatsApp, and Facebook Messenger applications. Questionnaires were given to respondents remotely due to the constraint to have a face-to-face sessions of questionnaire distribution to comply with the COVID-19 Movement Control Order. Accordingly, feedbacks from 32 respondents were obtained.

### **Data Analysis**

Data were analyzed descriptively using the IBM Statistical Package for Social Science (SPSS) Statistics 23. Frequency analysis was applied to the data in Part A: Respondent Demographics. Meanwhile, Part B: Knowledge in Lesson study, and Part C: Challenges in the Implementation of Lesson study were analyzed using frequency analysis and mean center tendency to identify the level of knowledge and level of challenges in lesson study implementation. For frequency analysis, the answer choices SD = Strongly Disagree were combined with D = Disagree. Whereas, the answer choice SA = Strongly Agree is combined with A = Agree.

### **Findings**

A total of 32 study participants, namely teachers from various fields were involved in this study. The participants provided responses related to demographics, their knowledge in lesson study, and challenges faced in the implementation of lesson study in schools.

### **Respondents' Demography**

A total of 32 respondents of the study that were obtained consisted of teachers from various fields. Table 1 shows the demographic factors that were obtained namely teaching period, age, academic achievement, and as well as the subjects taught.



**Table 1**  
*Respondents' Demography (N=32)*

Demography Factors	Demography Categories	Frequency	Percentage (%)
• Teaching period	• Less than a year	1	3.1
	• 1-5 years	3	9.4
	• 6-10 years	8	25
	• 11-15 years	7	21.9
	• <b>More than 15 years</b>	<b>13</b>	<b>40.6</b>
• Age	• 24-30 years	4	12.5
	• <b>31-40 years</b>	<b>15</b>	<b>46.9</b>
	• 41-50 years	12	37.5
	• 51 years and above	1	3.1
• Academic Achievement	• <b>Bachelors' Degree in education</b>	<b>15</b>	<b>46.9</b>
	• Bachelors' Degree in other than education	8	25
	• Masters' degree in education	7	21.9
	• Masters' degree other than education	2	6.3
• Subjects Taught	• <b>Science (including Biology, Physics and Chemistry)</b>	<b>7</b>	<b>41.2</b>
	• Mathematics	1	5.9
	• Malay Language	3	17.6
	• Technological Design (RBT)	1	5.9
	• Islamic Studies	1	5.9
	• History	2	11.8
	• Business Studies	1	5.9
	• Arabic Language	1	5.9

Based on Table 1, the teaching period profile of the respondents show that the majority of respondents have served for more than 15 years which is 40.6%. As for the age profile, most respondents were aged 31 to 40 years (46.9%), and the fewest were aged 51 years and

above (3.1%). The majority of respondents have an academic achievement of a bachelor of education which is 46.9% and 41.2% of the respondents are Science subject teachers.

### Knowledge in Lesson Study

The knowledge in Lesson Study were about strategies, steps, observations, lesson study as a collaborative PLC tool, and collaborative practice. Table 2 displays The Level of Teachers' Knowledge about Lesson Study that have been analyzed using frequency analysis and mean center tendency.

**Table 2**

*The teacher's level of knowledge about lesson study.*

Items	Disagree (f /%)	Agree (f/%)	Me an
1. Lesson study is a teaching strategy using daily lesson plans.	2 (6.3%)	30 (93.8%)	3. 62
2. The steps in lesson study are identifying problems, planning strategies, conducting open classes, and reflecting.	0 (0.0%)	32 (100%)	3. 72
3. Lesson study is to examine the learning process of students during teaching and learning session.	0 (0.0%)	32 (100%)	3. 72
4. Lesson study is a tool in Professional Learning Community (PLC).	0 (0.0%)	32 (100%)	3. 72
<b>5. Reflection should be done immediately after the teaching and learning process.</b>	0 (0.0%)	32 (100%)	<b>3. 91</b>
6. I need to improve my daily lesson plan after the reflection session.	1 (3.1%)	31 (96.9%)	3. 75
7. Contribution of ideas and opinions by experts is required in the lesson study process.	1 (3.1%)	31 (96.9%)	3. 69
<b>8. Lesson study is a practice that needs to be implemented collaboratively.</b>	1 (3.1%)	31 (96.9%)	<b>3. 56</b>
9. Being open to the ideas of group members is important in the practice of lesson study.	0 (0.0%)	32 (100%)	3. 81
Average mean			3. 72
10. I know about PLC through workshops.	2 (6.3%)	30 (93.8%)	3. 44

Based on the descriptive analysis, the level of knowledge of teachers was the highest on the fifth item; the respondents know that reflection should be done immediately after the

teaching and learning process ( $M = 3.91$ ). Meanwhile, for the eighth item which is lesson study is a practice that needs to be implemented collaboratively, lowest mean value is gathered ( $M = 3.56$ ). Therefore, the average mean value of the overall findings on teachers' knowledge of lesson study showed at a high level ( $M = 3.72$ ).

### Challenges in the Teachers' Implementation in Lesson Study

Teachers' challenges in implementing lesson study were measured in terms of time, planning, collaboration, observation, exposure to lesson study, teacher workload, as well as support from school administration. Findings on teachers' challenges on lesson study activities are attached in Table 3.

**Table 3**

*Level of teachers' challenges in lesson study.*

Challenges of lesson study implementation	Disagree e (f /%)	Agree (f/%)	Mean
<b>1. Not having enough time to conduct lesson study.</b>	12 (37.5%)	20 (62.5%)	<b>2.8</b> 4
2. Designing the best lesson plan to be applied in the teaching and learning session in the lesson study process.	16 (50.0%)	16 (50.0%)	2.4 7
<b>3. Collaborating with other fellow teachers.</b>	23 (71.9%)	9 (28.1%)	<b>2.0</b> 6
4. Observing student learning in the classroom during the open class.	24 (75.0%)	8 (25.0%)	2.0 9
5. Getting the cooperation of all teachers involved in lesson study.	23 (71.9%)	9 (28.1%)	2.1 6
6. Not getting enough exposure to lesson study.	14 (43.8%)	18 (56.3%)	2.6 6
7. Increased workload when conducting lesson study.	20 (62.5%)	12 (37.5%)	2.3 8
8. Not getting a strong support from the school administration.	21 (65.6%)	11 (34.4%)	2.1 6
Average mean			2.3 5

To measure the level of teachers' challenges in lesson study, a total of eight items were tested on respondents to answer the second research question as in Table 3. The highest mean value was shown for the first item which is the challenge in terms of not having enough time to conduct lesson study (Mean = 2.84). The lowest mean value was for the third item, which is the challenge to collaborate with other teachers (Mean = 2.06). Therefore, the

average mean value of the overall findings for the level of teacher challenge in lesson study showed a low level (Mean = 2.35).

## Discussions

The findings of the study are discussed according to the level of knowledge of teachers about lesson study and the level of teachers' challenges in lesson study.

### Discussions of the Level of Knowledge of Teachers in Lesson Study

Based on the findings of the study for teachers' knowledge in lesson study, it is found that the level of teachers' knowledge is high, and this finding is in line with the findings of Mazlan (2017). Majority of teachers know that reflection needs to be done in the lesson study cycle because it shows the highest mean value among all items. Lesson study is the process of observing student learning, for instance the way they learn something in the classroom, understanding their difficulties, their understanding about the lesson, as well as conceptual misunderstandings that may arise among students (Vermunt et al., 2019). Therefore, the purpose of the teacher in doing reflections is to identify what goals have been achieved and have not yet to be achieved in the implementation of the lesson plan, as well as issues that arise in the implementation session.

In addition to reflection, according to the mean values in the items, teachers were also found to have a high knowledge of other steps in lesson study, namely steps to identify problems, planning the lesson plans, implementing the lesson plans in open classes, make observations, and improving the lesson plans after reflection sessions. Knowledge and understanding of the steps of lesson study is important so that it can be carried out with the right method. According to Bhattacharjee (2015); Ansawi and Phang (2017), constructivist learning theory is the construction of understanding of surroundings based on experience and reflections conducted, where the process of accommodation and assimilation that occurs during lesson study makes better understanding among teachers about how students learn. Next, improvements can be made in the lesson plans without changing the actual concept of the teaching. Teachers' understanding of the importance of reflection and other steps in lesson study allows learning plans to be better designed in future cycles. In addition, the teacher's knowledge of the best and appropriate learning approaches and how students learn can be enhanced through repeated discussions in the session.

In the meantime, teachers in this study also do not know that lesson study needs to be done collaboratively. This is also related to the item of teachers knowing about lesson study through workshops that shown the lowest mean value. It is also relevant to the findings of Mazlan (2017), where some teachers do not have the opportunity to attend lesson study courses because not all are selected to participate. That is why many teachers only get the information about lesson study only from the sharing from teachers who attended the workshops. It is also possible that there is a lack of information due to insufficient time and teachers who attended the workshop are not very knowledgeable about lesson study as a whole (Mazlan and Mahamod, 2016). As a result, many teachers become less proficient in these collaborative tools because they lack of understanding on how to do the actual lesson study.

In this regard, teachers should be given a fair opportunity to participate in workshops and courses on lesson study so that their understanding is more robust and they can conduct this collaborative tool successfully. In the open-ended questions given, there were respondents who implemented Book Club and Teacher Learning Session to add knowledge

and improve understanding in teaching and learning. Therefore, to overcome this problem, teachers can also participate in both these collaborative tools to obtain more and complete information about lesson study, because collaborative is an element that is always discussed in the writing of books and journal articles, and can also be discussed together in the Teacher Study Group.

### **Discussions of the Level of Teachers' Challenges in Lesson Study**

Based on the analysis conducted, the challenges experienced by teachers in lesson study are low. Even so, the highest mean values were shown on the item "teachers did not have enough time to conduct lesson studies", indicating that many had problems in terms of time. Many teachers agreed on this statement, but there were also a large number of teachers who disagreed about it.

In addition, teachers also stated that they encounter problems in terms of time in open-ended questions such as time constraints, long implementation process, problems to schedule time with the teachers involved, busy school hours, and tied to the task of running the program and clerical tasks. These findings support the study of Wolthuis et al (2020) that is, the statistical process of lesson plans in lesson study takes a long time to do. It also supports the studies of Ogegbo et al (2019) as well as Kim et al (2019) that teachers experience inadequacy of PLC implementation time. The time possessed by the teacher has been used a lot to do other tasks such as the teacher's main task which is to finish teaching the syllabus, marking student work, co-curricular activities and other responsibilities. Instructional time constraints in the subject also have an impact on lesson study. According to Jita and Ige (2019), less effective lesson study is due to the lack of instructional time of a subject.

The issue of teachers considering insufficient time in the implementation of lesson study is a challenge varies depending on the individual. This is because there are teachers who find time not a challenge. This finding is different from the findings of the study of Mon et al (2016) that teachers experience challenges in terms of time to do lesson study. This is because not all teachers face this problem. To overcome this, the effective way teachers work as well as good time management skills can also help make the lesson study process faster.

Moreover, it was found that teachers experienced the least challenges in terms of collaborating with other teacher peers. This is also related to the low mean value in the challenge item to get the cooperation of teachers involved in lesson study activities. However, in the open-ended questions, some teachers stated that they had difficulty maintaining the presence of group members while the lesson study was conducted. They also find it difficult to get the cooperation of collaborators and committee members and it is difficult to get common views and consensus. In collaborative activities like lesson study, the contribution of cooperation and commitment from teachers is very important to ensure the smooth running of the activities to produce good learning outcomes for students.

It is acknowledged that not all teachers deliberately do not participate in group discussions, but due to leisure time that is not the same as other teachers, and this is also closely related to the issue of time constraints as discussed. Thus, teacher collaboration can be supported by the school administration by rewarding teachers as motivation, planning lesson study activities regularly such as ensuring classes that cannot be attended by teachers have substitute teachers, lesson study activity time is not interrupted by other tasks, and help

teachers in terms of skills to collaborate and cooperate with other teachers (Inger, 1993; Khalid et al., 2016).

Furthermore, lesson study activities demand the nature of openness among teachers such as acceptance in differences of opinion, being flexible, and having a sense of responsibility in collaborative activities to succeed in a mission (Kasmawati, 2020; Silva and Morgado, 2005). Accordingly, the practice of mutual tolerance should be practiced so that there is no dissatisfaction among group members. In addition, lesson study activities also sometimes require teachers to attend meetings during class time, and there are respondents who stated that he faced problems with class control when it was done because no teacher controlled the classroom situation. This also contributes to teacher absenteeism when collaborative activities are carried out. If the school has a substitute teacher, they can be instructed to take care of the classroom by giving the students any assignments to be done in the classroom until the lesson time ends (Maskanah, 2018), so that the students' free time can be filled with useful things and bullying among students can be reduced.

The conclusion from the discussion of this study is that the level of knowledge of teachers about lesson study is high, while the level challenges of teachers in the implementation of lesson study is low. In addition, through this study, it can be seen that giving space for teachers to express their opinions through open-ended questions is important so that more information can be obtained and explored to answer the research questions.

### Conclusions

It is concluded that teachers have a high level of knowledge in lesson study, especially about the steps of reflection. Other than that, the least knowledge that teachers have about lesson study was about collaboration in that PLC tool. Meanwhile, the level of teachers' challenges in the implementation of lesson study is at a low level. Teachers' challenges vary according to individuals, whether a factor of the challenge gives them difficulty in the practice of lesson study or not. Regardless, the teachers have their own reasons for the difficulties they faced. The most major challenge faced by teachers was in terms of time, while the least challenge faced by teachers was related to collaboration between group members. However, there are also distinct issues in the challenge to collaborate expressed by teachers. Hence, it is recommended for the future study to investigate about the teachers's knowledge and challenges to conduct lesson study in the online learning nature as virtual and online learning is increasingly being carried out nowadays.

### Acknowledgement

Thank you to the Faculty of Education, The Universiti Kebangsaan Malaysia for providing support to conduct this research. This research received support from Teaching and Learning funding (Dana PdP, UKM 2021- PDI-2021-039).

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