



Project Based Learning (PBL) Based Lesson Study for Learning Community (LSLC) in kindergarten

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Abstrak

Adanya kesenjangan pendekatan pembelajaran yang diterapkan guru dalam menstimulasi kemampuan matematika awal anak usia dini. Tujuan penelitian untuk mendeskripsikan penerapan pendekatan Lesson Study for Learning Community (LSLC) berbasis Project Based Learning (PBL) dalam pelaksanaan pembelajaran stimulasi kemampuan matematika awal anak. Metode penelitian adalah kualitatif deskriptif pada anak kelompok B di TK IT Fathul Ilmi Palembang. Hasilnya, LSLC berbasis PBL yang memiliki tahapan pembelajaran; plan, do, see dan redesign dalam proyek pembelajaran matematika awal. Tahapan tersebut ternyata bukan hanya memfasilitasi anak untuk menguasai kemampuan matematika awal secara optimal saja, melainkan juga memfasilitasi anak mengembangkan interaksi, komunikasi dan kerjasama antar teman dan guru, serta pengembangan karakter peduli dan empati kepada teman dalam menyelesaikan proyek matematika bersama. Penerapan LSLC berbasis PBL membuat pembelajaran di TK Fathul Ilmi menjadi aktif dan interaktif, sehingga penerapan LSLC berbasis PBL direkomendasikan kepada guru dan stakeholder dalam pembelajaran matematika awal anak usia dini.

Kata Kunci: *lesson study for learning community; project based learning; matematika anak usia dini.*

Abstract

There is a gap in the learning approach applied by the teacher in stimulating early childhood math skills. This study aims to describe the Lesson Study for Learning Community (LSLC) application based on Project Based Learning (PBL) in the implementation of learning to stimulate children's mathematical abilities. The method used is descriptive qualitative in group B children in IT Fathul Ilmi Kindergarten Palembang. The result is that PBL-based LSLC has learning stages; plan, do, see, and redesign mathematics learning projects. These stages facilitate children to optimally master early mathematical abilities and develop interaction, communication, and cooperation, as well as the development of caring characters and empathy for friends in completing math projects together. The application of PBL-based LSLC makes learning in Fathul Ilmi Kindergarten active and interactive, so the PBL-based LSLC is recommended to teachers and stakeholders in early childhood mathematics learning.

Kata Kunci: *lesson study for learning community; project based learning; early math for young children.*

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INTRODUCTION

Ideally, mathematics skill is easy to be mastered by early childhood. Mathematics concept is concept that is close to children daily problems which is introduced through fun learning. Reviewed from the nature of mathematics, it is a fun concept, which is automatically mathematics is easy to be mastered by early childhood. Initial mathematic skills will be easy to master, if children are often given many chances to solve simple problems together in daily life. Like when children are facing problems "arrange a stack of clothes into the wardrobe". Children will arrange it according the provided lockers. The shirts are arranged in the shirt wardrobe, trousers are arranged in the trousers wardrobe, underwears are arranged in the underwear wardrobe, and so on. Those simple problems in daily life are easy to be solved by children together.

Indonesian children are not happy, their learning methods are not accustomed to thinking but are given more knowledge, are not given the chance to work together, discuss, and communicate strategies and solutions (Julie & Gierdien, 2020). In fact, early childhood must be used to think, work together, communicate, discuss in learning so that they can solve their own problem well. Most of the kindergarten children are not yet achieve initial mathematics skills indicator. One of the teachers improvement in teaching is not apart from learning activities practices (Ilma et al., 2015). Teachers are demanded to master curriculum, materials, choosing the proper learning method especially in kindergarten, also able to manage the class well, so that the active, innovative, and fun learning can be achieved.

The current government through the LPTK is promoting the development of a new curriculum in accordance with National Higher Education standards and KKNI. The fulfillment of these standards can undoubtedly have a positive impact on improving the quality of a teacher and learning in Indonesia. Collaborative work is conducted using profession development approach called *Lesson Study*. Fellow team members help each other from planning to preparation for a joint project in learning, implementing and reflecting on results and products. Simultaneous achievement of quality and equivalence encourages the development of teacher professional skills, schools currently become places for teachers as professional who learn from one another (Ilma et al., 2015). So that school reformation through PBLbased *lesson Study for Learning Community* (LSLC) is needed, in this case is building theme adjustability learning in Kindergarten and and early young children characteristic.

It is contrary to children in IT Fathul Ilmi Kindergarten who have early mathematics skills that develop optimally. After the initial identification, the fact is teacher used *Project Based Learning* (PBL) based *Lesson Study for LearningCommunity* (LSLC) approach to teach initial mathematics skills. One of the reasons the researchers researched children in TK IT Fathul Ilmi. Reviewing several result of research about that approach, then the research results revealed that *Lesson Study for LearningCommunity* (LSLC) (Keow & Chap, 2015) has principles in the implementation of *lesson study* in learning which is; there is interaction that happen among learners in solving a problem. Other research result proves that *Project Based Learning* (PBL) according to (Gulay, 2015) is efektifive to be used in learning process starting from early childhood until colleges. This means that PBL based LSLC is effective to be used in early childhood learning which is adjusted to children development with stage of *lesson study*.

Based on the research results, LSLC can positively influence math skills because, according to (Isoda, 2010), it is a problem-solving approach in lesson study in learning mathematics. Meaning that children will be provided with simple math problems in learning mathematics so that lesson study helps children solve these simple problems together with the learning community. The meaning will have a good effect on optimal mastery of mathematical skills.

The study results also prove that PBL also improves mathematical ability; according (García, 2016) PBL will also have a positive effect on the creation of collaboration and learning outcomes. The interaction between children will stimulate cooperation in completing projects together. PBL will certainly affect cognitive development and early childhood mathematical

abilities, which are discussed in greater depth in this study, including moral and religious values, physical motor language, social, emotional, and art.

Research result also proves that PBL also improves mathematic skills, according to PBL will also give positive effects towards the creation of collaboration and *learning outcomes* achievement. With the interaction between children, it will stimulate the occurrence of collaboration in finishing project together. This certainly will affect the cognitive development, early mathematical abilities of early childhood are discussed more deeply in this research, moral and religious values, physical motor language, social emotional, arts.

Previous research has proven that LSLC has a positive effect on the implementation of children's mathematics learning in the scope of elementary to tertiary education, while this research focuses on implementing LSLC in kindergarten. Previously, other studies stated that PBL also had a positive impact on children's mathematical abilities. In contrast, this study aimed to describe more deeply the implementation of PBL-based LSLC together in learning to stimulate early mathematical abilities in group B children in kindergarten.

The advantages of this research are (1) PBL-based LSLC is applied in the context of early childhood learning, especially in Kindergarten. Usually tend to learn from students in college. (2) Mathematical skills focused on the implementation of LSLC are usually mathematical skills, namely HOTS (Higher Order Thinking Skill), while in the application of LSLC in this study, the mastery of early childhood math skills is in the stage of concrete thinking. In this case, it is essential to involve concrete objects in the implementation of PBL-based LSLC. (3) Then LSLC is applied based on PBL (Problem Based Learning) based activities. The advantage of implementing PBL-based LSLC in Fathul Ilmi Kindergarten will be an alternative solution to the gap in the learning approach applied by teachers in stimulating early childhood math skills. Considering the importance of this research, the researcher aims to describe the Lesson Study for Learning Community (LSLC) based PBL approach to implementing learning to stimulate children's early mathematical abilities in group B children at IT Fathul Ilmi Kindergarten Palembang.

METHOD

The method used in this research is descriptive qualitative method. The research subjects are 13 children group B IT Fathul Ilmi Kindergarten Palembang, South Sumatera. Researcher involved various collaborators including parents, teachers and staff at TK Fathul Ilmi, *Team Lesson Study* FKIP UNSRI, Students of PG_PAUD, S2 mathematic students, S2 English. Researcher play a full role starting from preparation, implementation, data collection from informants, analysis, to reporting. The study duration of approximately 10 months (March-December 2019) from the proposal until the reporting is made. The research design can be seen in the figure 1.

This research procedure was conducted first by data collection technique, data analysis, until interpretation of data. The data collection method in this research was conducted with 3 manners that are: observation, interviews, documentation, preliminary studies. The data analysis technique according to (Bengtsson, 2016; Papadopoulou et al., 2014) was conducted in three stages that are: Data reduction, data display, and data verification. Interpretation of data used triangulation (Carter et al., 2014; Zuze & Weideman, 2013) which is: triangulation of data resource and methods.

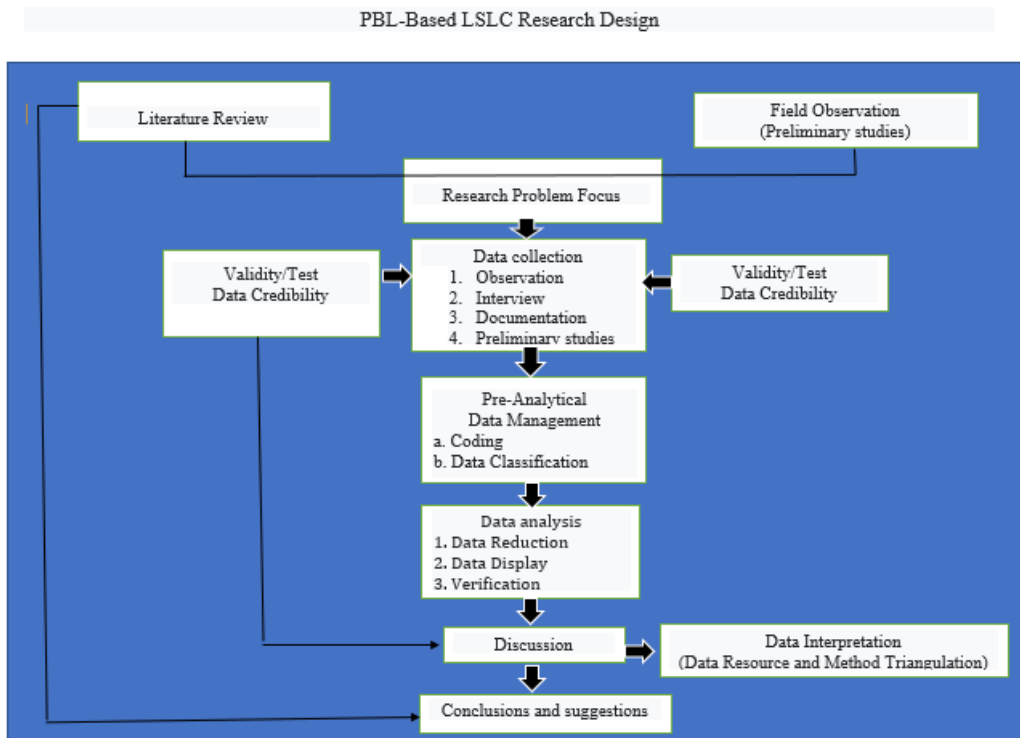


Figure 1. PBL-based LSLC Research Design

RESULT AND DISCUSSION

The findings of this research obtained is that the implementation of PBL based LSCL in initial mathematic learning of early childhood, it is obtained its implementation procedure which are *plan, do, see& redesign*.

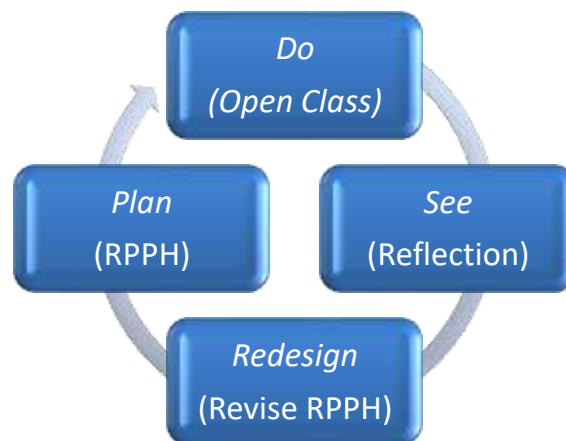


Figure 2. PBL based LSLC Scheme at Fathul Ilmi Kindergarten

Plan Stage

Plan was conducted twice started from August, 13 2019 which was attended by kindergarten teachers, researchers and team Lesson study of early childhood education study program . The second *Plan*, in September 21, 2019 was conducted after there is briefing by guide in the event of *jumping task visa* making in State Junior High School 1 Palembang, then changed back included things that are considered important. After being re-examined, there are few additions and substractions so that the designed *Plan* designed has been based on as expected.

Do Stage

The implementation of do in October 14, 2019 the situation of Palembang City is full of fog with visibility of approximately 5 meters. The children were coming to school even if not complete (9 children). All of this because of participation of parents and principals and all teachers so that the *open class* can run well without any. While other schools were closed because of instructions from the Ministry of Education. The *open classevent* was started in 7.30 WIB and finished in 9.00 WIB. The children are happy after conduct three activities of share task and jumping task; **First**, pulling lines and match figures according to the writings and all children did it properly. **Second**, arranging family lineage (jumping task), the result is all children were able to do it, but the figures arrangement are still inverted. **Third**, sticking in front of the class, all children are pointed to stick the figure in its arrangement and all children did it. Overall, the implementation of open class learning process was run well, fun, and children already start to ask for help to their fellows. After the learning, children are happy, because after conducting their activities, teachers has started to change step by step of children behaviour to help each other, and say tahnk you after being helped by their friends. This activity was attended by pricipal of IT Fathul Ilmi Kindergarten, teachers, researchers, *Team Lesson Study* FKIP Unsri, Students of PG_PAUD, S2 mathematic students, S2 English, and all of them followed the activities well andin orderly manner.

See Stage

After finishing the open class, it is continued with reflection. Each who attended as an observer gave input for the improvement that had been conducted, also the school principal did not miss giving appreciation to FKIP Unsri who conducted this activity. It should be underlined that teachers are not assessed in teaching, but kindergarten children when conducting learning work on sharing tasks and jumping tasks. The teacher says, children if they cannot work on the problem say the word to your friends with sentences "**Please Teach Me**". Children who are asked to help by friends must help. After being helped, the children must say thank you to their friends. (teachers keep saying to them who cannot finish their word to say to their friends "**Please Teach Me**"). This is where the children want to help their friend who can not, finally can look happy on the happy child's face because it can complete the tasks given by the teacher well. All children (learning *communities*) learn from one another in order to achieve common purposes.

Redesign Stage

After the open class was conducted well, there was redesign. After redesign, there was reflection to see what has been conducted by teachers and what has not been conducted by teachers in learning implementation. There are any weaknesses or strengths or not in this stage? Teachers are allowed to express how they feel during the learning process. This will become input for future learning, as we expect. Redesign will be held again with the team to review what was suggested in the reflection that will be included in the *Plan*.

After the result is obtained, then the next step is data analysis. In the data analysis there are data reduction, data display, and data verification. (1) Data Reduction: In the data reduction, is choosing stage and chose all data related to research focus. The data which is related to intital mathematic learning implementation to early childhood, and data related toPBL based LSLC. (2) Data Display: Data display is conducted to present data comparisons which are from field record, interview record, and documentation record related to the chart 1.

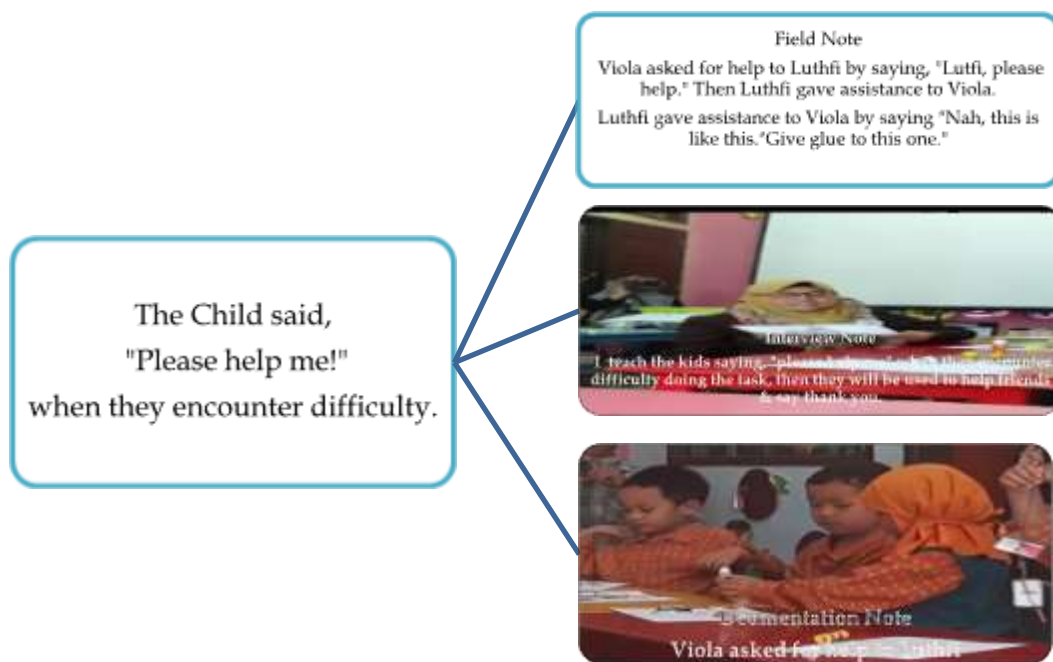


Chart 1. Display Data

(3) Data Verification: In the data verification process, after comparing data from various sources then it can be concluded a conclusion that the implementation of PBL based LSLC in initial mathematics learning in early childhood, the children are taught to say "please help me" when they are facing difficulties in working on a class project.

After the data analysis stage was conducted, then there was data interpretation which was conducted next by conducting triangulation. Triangulation conducted were data resource triangulation, and method triangulation. Data triangulation method was conducted by confirm the data from various resources. In this research, the sources are from children and teachers in class. While the method triangulation was conducted by confirm the data through method of observation, interviews, and documentation.

The result of research shows that there is interaction between children to another in working on class project. All this time, the children are usually helped by teacher when they got difficulties in finishing the tasks given. When learning in proceed, the children are started to help their friends who find difficulties. Teachers always remind the children if there are friends who need helps, we must help them. The children says "please teach me" eventhough there is children who is still shy to ask for help, even shake his head but then ask for help to his friends, and there is children who did it by themselves.

In line with the research of (Baldinger & Lai, 2019; Biesta et al., 2015) Teacher skills in teaching is how teacher place themselves according to their roles. Interaction between children will be created if teachers run their roles according to the portion. (Cunsa & Savicka, 2012) stated that interactive teaching and learning methods create the good interaction among learners. There is communication that happens and exchange of thoughts when interacting.

The result of research proves that teachers are most become facilitators and mediators for children when they are solving problems in joint project. Previously, the children are used to ask for help directly to the teacher, with the PBL based LSLC children are able to ask for help to others, not to teachers by saying "please help me".

This research result is supported by (Carlsen et al., 2016; Jacobson & Izsák, 2015) who stated that role of teachers in mathematics learning is as mediators when children find difficulties in the problem they are facing. And with result of research from (Reinke & Casto,

2020; Sumarni & Pd, 2013) which stated that the importance of teacher roles as motivator in learning activities. In addition, according to (Nanang et al., 2017) The role of teacher as facilitator in learning is very important because it is related to children skill mastery optimally. If it is connected to the research result, then in mathematics learning which uses PBL based LSLC, there role of teachers are as facilitators and mediators of children when the children found difficulties in joint project.

The results showed that the existence of PBL based LSCL in the implementation of initial mathematics learning can increase a high sense of concern for friends who are experiencing difficulties in working on a joint project. So that children who are given help shows happiness because of the care of their friends.

This is in contrary with the research result stated by (Butera et al., 2021; Ferreira et al., 2020) Social competence owned by people is depends on the teacher about what is taught and how to teach it. Sense of caring and gratitude can indeed be stimulated from the initial mathematics learning activities. When caring about friends who ask for help and need help. As (Toyinbo et al., 2016) stated that building new characters can be conducted after children finished the Elementary School. Infact, since Kindergarted age, character is actually can be built by integrate it to all learning activities which is integrative holistic. So that even in the initial mathematics learning activities, social competencies such as social care and gratitude can still be stimulated.

CONCLUSION

The conclusion is PBL based LSLC in IT Fathul Ilmi Kindergarten was conducted by plan, do, see, until redesign stage. Each stage are adjusted to the characteristics of children so that the application of PBL-based LSLC not only develops children's early mathematical abilities but also builds interaction, communication, collaboration, and character development of caring, empathy for friends. The limitation is that in collecting data, the research location is foggy, so that not all children are allowed to be present at school. The results contribute to the development of knowledge about how the process of implementing PBL-based LSLC in kindergarten.

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