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Project Based Learning using LSLC in the Implementation of Initial Mathematics Learning for Early Childhood

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Abstrak

Pembelajaran matematika awal bertujuan agar anak dapat dengan mudah menguasai keterampilan matematika awal. Ini akan mudah, jika anak sering diberi banyak kesempatan untuk memecahkan masalah sederhana dalam kehidupan sehari-hari. Hal ini berbanding terbalik dengan fakta bahwa anak TK belum mampu mencapai indikator kemampuan matematika awal. Hal ini disebabkan oleh pendekatan guru dalam pembelajaran matematika awal menggunakan pendekatan klasikal. Oleh karena itu, tujuan dari penelitian ini adalah *Project Based Learning* (PjBL) berbasis *Lesson Study for Learning Community* (LSLC) dalam pelaksanaan pembelajaran matematika awal pada anak usia dini di TK IT Fathul Ilmi. LSLC berbasis PJBL memiliki tahapan pembelajaran; plan, do, see dan redesign dalam proyek pembelajaran matematika awal. Hasil penelitian yang diharapkan adalah LSLC berbasis PJBL dapat diterapkan dalam pembelajaran matematika awal anak kelompok B TK IT Fathul Ilmi. Hal ini dikarenakan adanya pembelajaran yang aktif dan interaktif di TK sehingga LSLC berbasis PjBL direkomendasikan kepada guru dan *stakeholder* dalam meningkatkan kemampuan matematika awal anak usia dini.

Kata Kunci: LSLC, *Project Based Learning,* Pembelajaran Matematika

Abstract

Initial mathematics learning aims to make children can easily master initial mathematics skills. This will be easy, if children are often given many chances to solve simple problems in daily life. It is inversely to the fact that kindergarten children are not yet able to achieve indicator of initial mathematics skills. This is caused by teacher approach in initial mathematics learning using classical approach. Therefore, the purpose of this research Project Based Learning (PjBL) based Lesson Study for Learning Community (LSLC) in the implementation of initial mathematics learning in early childhood in IT Fathul Ilmi Kindergarten. PJBL based LSLC has learning stages; plan, do, see dan redesignin project of initial mathematics learning. The result of research which is expected is that PJBL based LSLC can be implemented in initial mathematics learning of children in group B IT Fathul Ilmi Kindergarten. This because there is active and interactive learning in Kindergarten so that PjBL based LSLC is recommended to teachers and stakeholder in improving early childhood inital mathematics skills.

Keywords: LSLC, Project Based Learning, Mathematics Learning

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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. Inital 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 (Zulkardi, 2016). In fact, early chilhood 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 (Sato, 2014; Putri, 2015). Teachers are demanded to master curriculum, materials, chosing 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. 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 achivement of quality and equivalence encourages the development of teacher professional skills, schools currently become places for teachers as professional who learn from one another (Sato, 2014). So that school reformation through PJBLbased *lesson Study for Learning Community* (LSLC) is needed, in this case is building theme adjustability learning in Kindergarten.

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 Base Learning* (PJBL) based *Lesson Study for LearningCommunity* (LSLC) approach to teach initial mathematics skills. 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 Base Learning* (PJBL) according to(Gulay, 2015)is efefctive to be used in learning process starting from early childhood until colleges. This means thatPJBL based LSLC is effective to be used in early childhood learning which is adjusted to children develoment with*lesson study*stage.

Based on the research result that LSLC can provide positive effects to mathematics skills because according to(Isoda, 2010)it is a problem solving approach in *lesson study*in mathematic learning. Meaning that in mathematics learning, children will be provided by simple mathematical problems so that *lesson study*really helps children to solve that simple problem together with their learning community. This will provide good effects to mathematics skills mastery optimally.

Research result also proves that PJBL also improves mathematic skills, according to (García, 2016) PJBL will also give positive effects towards the creation of collaboration and *learning outcomes*achivement. 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.

Those results prove that LSLC has positive effects towards the implementation of children initial mathematics learning. Related to the importance of initial mathematic skills mastered by children, this research aims to review deeply aboutPJBL based LSLC in the implementation of initial mathematics learning in children of IT Fathul Ilmi Kindergarten.

State of the art of this research are (1) PJBL based LSLC is implemented in the context of early childhood learning, especially in Kindergarten. It usually tends to learning from students until colleges. (2) So that mathematics skills which is focused on the implementation of this LSLC is usually mathematic skills which is HOTS (Higer rder Thinking Skill), while in the implementation of LSLC in this research, the mastery of initial mathematics skills of early childhood is in stage of concrete thinking. In this case it is important to involve concrete objects in the application of PPA-based LSLC. (3) Then LSLC is applied based on activities based on PPA, usually based on PBL (Problem Based Learning). Based on the elaboration above, the implementation of PJBL based LSLC in IT Fathul Ilmi Kindergarten can provide great benefits for intellectual property and as a source of information about how the application of early childhood mathematics learning with the PJBL based LSLC approach.

METHODS

The method used in this research is descriptive qualitative method. The research subjects are 13 childen ofgrade B IT Fathul Ilmi Kindergarten. 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: filling out questionnaires, interviews, and documentation. The data analysis technique according to(Curtis, Gesler, Smith, & Washburn, 2000; Huberman, Oaks, & Publications, 1999)was conducted in three stages that are: Data reduction, data display, and data verification. Interpretation of data used triangulation which is: triangulation of data resource and method.

RESULTS AND DISCUSSION

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

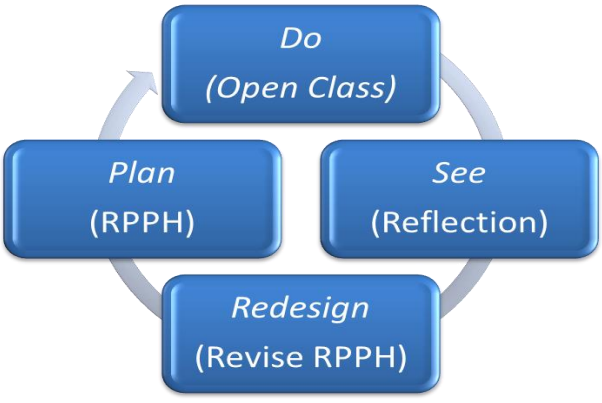

Figure 1. PjBL based LSLC scheme

Plan

Plan was conducted twice started from August, 13 2019 which was attended by kindergarten teachers, researchers andteam Lesson study PG-PAUD. 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

*T*he implementation of do inOctober 14, 2019 the situation of Palembang City is full of fog with visibility of approximately 5 meters. Alhamdulillah, 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 thatthe *open class* can run well without any. While other schools were closed becasue of instructions from the Ministry of Education. The*open class*event 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, stickingf 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

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 work 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.

Re-design

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. 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 toPJBL based LSLC. Then, the Data display is conducted to present data comparisons which are from field record, interview record, and documentation record related to the chart (Figure 2). Furthermore, In the data verification process, after comparing data from various sources then it can be concluded a conclusion that the implementation of PJBL 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.

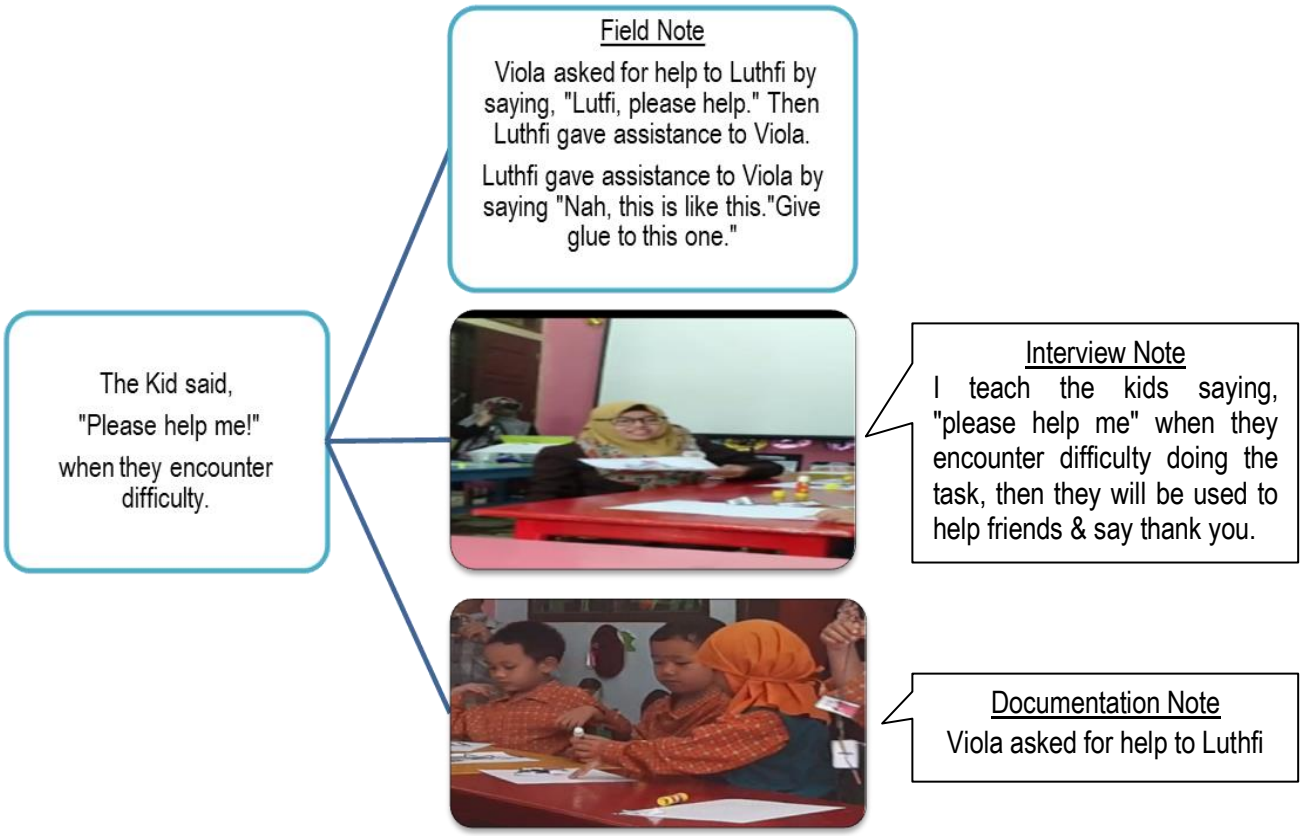

Figure 2. Display data

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 teriangulation 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 childrenare 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 theirselves.

In line with the research of(Baldinger & Lai, 2019) Teacher skills in teaching is how teacher place theirselves according to their roles. Interaction between children will be created if teachers run their roles according to the portion. (Cunska & 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 thePJBL 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 (Clarke & Roche, 2017)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(Sumarni & Pd, 2013)which stated that the importance of teacher roles as motivator in learning activities. In addition, according to (Nanang, Valcke, & Godwin, 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 PJBL 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 PJBL 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 (Han & Kemple, 2006)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 of this research is PJBL based LSLC in IT Fathul Ilmi Kindergarten was conducted by stage plan, do, see, until redesign. PJBL based LSLC in the implementation of initial mathematics learning gives positive effects so that there is interaction, communication, collaboration, and the development of concern character, empathy to friends and mastery of initial mathematics learning optimally.

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