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Exploration of Teaching Methods in the Implementation of Early Mathematics Teaching and Learning (PdP)

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Abstract

The National Standard Preschool Curriculum (NSPC) (Revised 2017) describes the disciplines of knowledge that provide Early Mathematics learning experiences encompassing the concepts of pre-numbers, numbers, number operations, money values, time, shape and spatial for preschool children. The implementation of teaching and learning (PdP) of Early Mathematics is mandatory based on the importance of each conceptual scope with 40 minutes time allocation for teaching in a week. The goal of Early Mathematics PdP is to foster children's interest in math skills through various activities and daily experiences. In addition, children are also expected to master basic math skills and improve thinking and problem solving skills. However, there are various challenges and obstacles faced by preschool teachers in implementing Early Mathematics PdP. Among the main challenges underlined by previous researchers are the teacher's attitude, knowledge level of Early Mathematics concepts, teacher's mastery of pedagogy and knowledge of children's development. Thus, this concept paper explores the practices and challenges faced by preschool teachers in rural areas. Based on the review, several suggestions for improving Early Mathematics PdP were also identified to overcome the challenges of preschool teachers; for example, participation in workshops and competency training for preschool teachers. It is expected that this concept paper contributes ideas to overcome teacher problems as well as intensify studies in the field of Early Mathematics at the preschool level.

Keywords: Early Mathematics PdP Constraints, Role of Preschool Teachers, Suggestions

Introduction

The teaching and learning process (PdP) is a development of children's knowledge and experience to understand and live life in the future. Children learn in their own way or style. Accordingly, it also helps children excel in academics (Munawir, 2021). The learning process at the preschool level is managed by a preschool teacher as a curriculum implementer, and assisted by a Pupil Management Assistant (PPM) for all preschool disciplines, except the discipline of Islamic Education which is taught by a qualified teacher.

Furthermore, the term teacher can be defined as an individual who is responsible for teaching children aged four to six years from the beginning to the end of the teaching and learning process in the classroom (Ahmad, 2016). The process encompasses the

implementation of PdP in several pillars including Science and Technology with an emphasis on scientific knowledge, skills and attitudes as well as mathematical knowledge and skills. It contains the disciplines of Early Science and Early Mathematics, where the discipline of Early Mathematics includes the concepts of pre-numbers, i.e., concepts of one-to-one correspondence, comparison, serialization and pattern (certain number pattern or objects arranged) as well as consistency. In addition, the concepts of number, number operation, money value, time, shape and spatial are also contained in the curriculum (Connie & Juppi, 2019; Tasripin et al., 2021). Based on the time allocation set in the NSPC Revised 2017, the implementation of Early Mathematics PdP is mandatory based on the importance of each conceptual scope for 40 minutes of teaching in a week.

The implementation of Early Mathematics PdP is based on the theory of constructivism pioneered by Lev Vygotsky. Around the 1980s, Vygotsky introduced the concept of scaffolding in the teaching of Early Mathematics. The concept explains the social role of teachers such as knowledge, attitudes, thoughts, and value systems owned by individuals through the interaction between teacher and preschool children in the classroom (Jeffrey, 2014). This is one of the main steps in creating good interaction through effective teacher pedagogy practices. Its importance is explained via the effective and planned implementation of Early Mathematics PdP.

According to Rusdawati (2019), children will acquire and build three new knowledge from learning Early Mathematics which includes the fields of physical, logical-mathematical and social knowledge. In the field of physical knowledge, children can understand learning about objects in the environment and their characteristics (color, weight, size, texture, and other characteristics) through observation. Subsequently, in the field of logical-mathematical knowledge, children can identify the concepts of similarities or differences between two groups, more and less as well as amount and classification of objects. Children can also comprehend the concept of socialization such as obeying the rules of behavior in various situations. Meanwhile, Amy (2019) explained the importance of Early Mathematics learning based on findings of previous studies. Among the importance of learning Early Mathematics is to prepare children for primary and secondary school level learning. The findings of the study found that there was a statistically significant relationship between the mathematical ability of preschool children and the mathematical achievement of teenagers. Preschool children who master Early Mathematics well can obtain excellent achievement in Mathematics as teenagers (Watts et al., 2014). In fact, the mastery of Early Mathematics skills at the preschool level also helps them improve children's developmental domains such as reading and writing skills (Duncan et al., 2007).

In addition, learning Early Mathematics also provides an understanding of the concept of concrete objects. By mastering and comprehending it, children will learn abstract mathematical concepts more easily. Therefore, children can improve their ability to think logically and be able to solve various problems (Zaida, 2018). Moreover, the mastery of each scope of skills in the discipline of Early Mathematics is crucial as early as preschool age. The role of preschool teachers is also important to impart information related to learning Early Mathematics concepts as well as improving children's understanding (Nadirah et al., 2020). Thus, this concept paper explores the role and challenges faced by preschool teachers in the implementation of Early Mathematics PdP.

Role of Preschool Teachers

Preschool teachers play an important role from the beginning to the end of the PdP process in the preschool class. The Day School Management Division of the Ministry of Education Malaysia (BPSH, KPM) has outlined several guidelines for the role and duties of preschool teachers. The role of the preschool teacher refers to a number of aspects including PdP management, namely implementing PdP activities and assessment according to the recent curriculum measures, creating and stimulating the instinct of curiosity and interest to explore among preschool children as well as selecting and providing teaching aids (BBM) or appropriate equipment (Ministry of Education, 2018).

To begin with, it is recommended to implement PdP activities and assessment according to the latest curriculum measures based on the NSPC Revised 2017 encompassing six content standards: pre-number experience skills, i.e., the concepts of matching, comparison, serialization, pattern and consistency; and five other content standards, i.e., the concepts of number, number operation, money value, time, shape and spatial. All six content standards are in line with international standards for early numeracy learning in early childhood education (Ministry of Education, 2017). In fact, the curriculum description is more advanced due to the content of additional skills including the concept of numbers, such as counting, counting forward and backward, counting all and counting strategies, involved in addition and subtraction calculations (Priyadarshini et al., 2019). Nevertheless, Abdullah et al (2021); Said and Jamian (2012) revealed that not all preschool teachers received further exposure regarding the curriculum. This situation affects the student-centered strategies, the frequency of using exercise books and workbooks and is only subject to writing and coloring activities. This clearly shows that there is a lack of mastery of the curriculum among preschool teachers.

Furthermore, preschool teachers play a role in creating and stimulating the instinct of curiosity, and interest in exploring among preschool children. Exploration activities can be carried out based on the selection of appropriate PdP approaches and strategies. According to Andre and Daniela (2018), exploratory and interesting activities can be included in Early Mathematics PdP by selecting appropriate strategies. Among the suggested activities is to introduce the concept of money value by implementing a student-centered strategy through buying and selling activities. Children will play the role of seller and buyer. In addition, children also tend to learn informally which is mastering and improving other skills such as socializing skills with friends. As a result, new knowledge can be built based on the experience of playing as a learning process. According to Abdul Rasid and Zulkafli (2008); Said and Jamian (2012), teachers are more inclined to traditional teaching using blackboards and pens and tedious strategies causing children to focus less during PdP. This situation does not attract children's interest in learning Early Mathematics and creates problems in the mastery of basic skills.

Moreover, preschool teachers have the role of selecting and providing appropriate and up-to-date BBM and equipment according to the needs and development of children. The function of BBM is to highlight the concept of a topic in Early Mathematics. For example, teaching number operations involving addition or subtraction using a set of small stones. Teaching number operations is easier with the help of BBM as children can witness the demonstration process by preschool teachers (Farhanah & Alias, 2021). However, the findings of Yildiz and Feride (2019) discovered that 20% of their study participants had difficulty preparing BBM due to budget constraint despite the fact that they had planned to buy different materials for different activities. In addition, they also experienced difficulties in

obtaining relatively limited and expensive material resources. Meanwhile, the remaining 80% did not experience any problems in providing appropriate BBM in Early Mathematics PdP.

Finally, the role of preschool teachers to stimulate and motivate preschool children to learn needs to be put into practice. Ahmad and Tengku Kasim (2020); Syafiqah and Tengku Sarina (2020) explained that preschool children spend more time at school than with their parents at home. The period can affect children's Early Mathematics achievement in the mastery of basic knowledge and skills as well as influencing student behavior based on the teacher's positive behavior and attitude. The attitude of teachers who often motivate children and express positive words can encourage children's learning process. It also helps in shaping good attitudes and morals either directly or indirectly. However, previous studies by Nasir and Efendi (2016); Tan and Mohamad (2019) indicated that preschool teachers, especially special education preschools, have problems in terms of attitude, self-efficacy and pedagogy during teaching in preschool classes. This causes a negative impact on the overall development of children from physical, emotional, spiritual, intellectual and social aspects. As a result, the teacher's role as a motivator for children is not fulfilled.

Challenges of Preschool Teachers

The difficulty of preschool teachers playing an effective role in teaching the discipline of Early Mathematics is undeniable. Teachers are the main catalyst in imparting knowledge and skills of Early Mathematics concepts to preschool children effectively and comprehensively. Based on previous research, there are several challenges in teaching Early Mathematics from the aspect of preschool teachers' attitudes, mastery of mathematical concepts, mastery of preschool teachers' pedagogy and knowledge of child development. These four aspects are explained in the following sections.

Aspects of preschool teachers' attitudes. Research findings by Azmi et al (2019) found that 11.36% of preschool teachers gave negative comments in terms of the orientation state obtained from five observation sessions. This exhibited the negative attitude of preschool teachers towards the teaching of Early Mathematics. Ideally, this attitude should be avoided in teaching pedagogy as it may affect the mastery of children's skills. In addition, 65.91% of preschool teachers gave positive comments, while 36.36% often gave encouragement to children during Early Mathematics PdP. The findings demonstrated that most of the respondents were positive in the implementation of their teaching. As a result, children will enjoy learning. Children's emotions can be indirectly controlled well by preschool teachers based on the prominent positive attitudes.

Subsequently, Jennifer and Faridah (2020) reported that preschool teachers as their study respondents exhibited positive attitude during PdP causing the learning atmosphere to be fun and effective. All positive actions and attitudes of preschool teachers are observed by children as their role model. The attitude of preschool teachers is also one of the challenges in teaching Early Mathematics as it can affect children's learning (Oliver & Lars, 2018). Furthermore, the positive and negative attitudes of preschool teachers may influence the teaching of Early Mathematics. Their negative attitude towards Mathematics is likely to lead to the selection of uninteresting mathematical activities and less effective delivery. In fact, they are less likely to support children engaging in mathematical thinking. On the other hand, a positive attitude will encourage enthusiastic delivery of knowledge. The positive qualities of preschool teachers should be displayed in the implementation of PdP as negative qualities are not beneficial for preschool teachers and children. Therefore, it will have a good impact on the teaching of Early Mathematics.

Aspects of knowledge of Early Mathematics concepts. This aspect becomes one of the challenges for preschool teachers. The delivery of mathematical concepts to children should use unlimited forms of language. Arnida et al (2019) stated that a few preschool teachers only understood some Early Mathematics concepts and processes supported by existing materials, but they did not understand other mathematical concepts through terminological explanations. As a result, preschool teachers often use inefficient language. This shortcoming is caused by their failure to understand the goals and concepts of mathematical development. Haizan et al (2022) supported that opinion and explained the use of inappropriate language when explaining the concept of Early Mathematics will give a different picture and meaning to preschool children. For example, preschool teachers introduce complex terms compared to simpler terms in explaining the concept of repetitive patterns.

According to the National Preschool Teaching Report by the School Inspectorate and Quality Assurance (SIQA) (Ministry of Education, 2012), there were preschool teachers who did not master the curriculum and content as well as mathematical concepts to the extent that they had failed to give understanding of the curriculum content to preschool children (Aini Haziah & Zanaton, 2018; Björklund & Barendregt, 2016; Figueiredo, Gomes & Rodrigues, 2018; Nixon et al., 2017; Suyanto, 2017; Norly, 2015). This issue indicates that the teachers do not have the proper preparation to perform their duties as an educator (Xu, 2015). This has a significant impact on children in understanding mathematical concepts and methods of solving mathematical problems.

In addition, Yildiz and Feride (2019) explained that some preschool teachers lacked knowledge in planning and organizing curriculum content in the field of Mathematics education. Some teachers also expressed difficulty in understanding the content of Early Mathematics since there were also children with special needs in their preschool classes. Preschool teachers experienced difficulty in teaching Early Mathematics curriculum content to children with special needs. Children deficiency can deviate the mathematical concepts and indirectly complicate the Early Mathematics teaching. Azmi et al (2019) stated that the level of mastery of mathematical concept skills among teachers was at a moderate level. The aspect of mathematical content mastery is important for every preschool teacher, especially those in special education. Procedural and conceptual skills and knowledge should be fully mastered in fulfilling mathematics learning content to achieve meaningful learning for preschool children. Clearly, the role of preschool teachers in mastering the knowledge of Early Mathematics concepts is important to ensure effective Mathematics learning for children.

Aspects of teachers' pedagogical mastery. Pedagogy can be described as a field of knowledge related to teaching principles and methods, teacher skills and knowledge, organizational management, classroom management, curriculum and syllabus as well as assessment, rehabilitation and enrichment processes (Mok, 2011). Voon and Amran (2021) found that preschool teachers still used conventional teaching in learning Mathematics. Conventional teaching is through memorization techniques and teacher-centered implementation. In fact, some preschool teachers did not provide hands-on learning or meaningful real learning. They also failed to apply a precise understanding in the mastery of concepts according to the procedures and terminology of Mathematics. As a result, preschool teachers tend to conduct Early Mathematics activities based on learning topics incompetently. In addition, the implementation of skill assessment in this discipline does not encourage children's natural thinking to form clear concepts in learning.

Furthermore, studies by Abd Ghani and Nor (2020); Rink (2002) exposed that not all experienced preschool teachers have efficient pedagogical skills. An excellent preschool teacher should have efficient pedagogy and a long period of service. An efficient mastery of the pedagogical skills of a teacher should be based on two main characteristics, namely skills and in-depth knowledge about the lessons that will be taught to children. The effective mastery of pedagogical skills can help teachers deliver lesson content so that children can easily understand the concepts of Early Mathematics.

According to Norshafinaz and Faridah (2018), the challenges of preschool teachers include the entire pedagogical aspect in PdP. Some preschool teachers faced difficulties in planning the teaching process in terms of mastering the knowledge and understanding the content that needed to be taught as well as teaching methods. They also found it difficult to implement teacher pedagogy if there is improvement in teaching quality, evaluate the achievement of PdP objectives and simultaneously and continuously evaluate the children's development domains holistically during the implementation of teaching in the classroom.

Aspects of child development knowledge. According to Smith and Chao (2018), the teaching process does not only relate the representation of mathematical concepts to the real situations, preschool teachers also need to understand and recognize the personality, background and children development level so that the content of the lesson is easily mastered by the children (Ma'rufi et al., 2018; Nurmelda & Roslinda, 2020). It is a challenge for preschool teachers to understand the personality, background and children development level. In addition, teachers also face the challenge of adapting knowledge of child development to the period of PdP, considering the positive impact on increasing teachers' professional knowledge, which can help improve children's performance is very convincing (Gasteiger et al., 2019; Haesung & Jinkyung, 2020). Moreover, there are preschool teachers who do not understand the basic development of children, especially in the teaching of Early Mathematics in preschool, thus marginalizing the true principles of Developmentally Appropriate Practice (ABP). This situation clearly shows that preschool teachers fail to translate the understanding of Early Mathematics content based on the level of cognitive development of children (Berry et al., 2016; Cueto et al., 2016; Jain et al., 2017; Zang, 2015).

Furthermore, the National Association on the Education of Young Children (2009) stated that preschool teachers need to take into account the needs of the children's development levels in terms of age to match their needs. A professional preschool teacher needs to be knowledgeable and competent in all aspects of child development (Brown et al., 2017). Therefore, preschool teachers should focus on learning outcomes by emphasizing what children need to know, understand and do based on the PdP process that has been implemented (Gess-Newsome et al., 2017; Norfaezah et al., 2017). Meanwhile, Abd Ghani and Nor (2020); Ennis (2004) stated that a preschool teacher should have knowledge about the characteristics of children as well as knowledge about educational goals as it is an important element in recognizing the effectiveness of PdP on the children. This relationship is important in fulfilling the desired goals and objectives in the education system of a country. Therefore, preschool teachers as implementing members should have psychological knowledge to be able to understand and pay attention to the differences in the characteristics of children's abilities and development. Preschool teachers should also be sensitive to the positive changes that occur on children as a result of the learning received. In relation to that, the description above clearly shows the need for further research in filling gaps in Early Mathematics PdP, especially on the problems of preschool teachers and improvements that need to be implemented as below.

Suggestions for Improvement

The Early Mathematics PdP process can be carried out effectively and attract children interest through several suggestions for improvement. This concept paper presents some suggestions for improvement from previous studies related to the implementation of the PdP in the following section.

Suggestion 1: Preschool Teacher Self-Training

Teacher professionalism improvement training involving preschool teachers greatly influences their understanding of the importance of the skill domain on children in preschool education which increases the confidence and personal attitude of teachers in implementing PdP (Chia, 2017). Excellent preschool teachers from various education levels need to be given continuous training and pedagogical strengthening courses to implement PdP according to various disciplines in preschool education. Through the Training Management System of the Ministry of Education Malaysia (SPLKPM), every preschool teacher is given the opportunity to train themselves and improve individual professionalism in several means such as reading books, involvement in innovation, attending e-PPB courses and so on. The calculation of credit hours by SPLKPM after attending training and courses also has a motivating effect on preschool teachers to further increase their level of professionalism.

In addition, preschool teachers are also suggested to take the initiative to attend training and courses organized by various agencies such as KEMAS, Department of National Unity and Integration, non-governmental organizations (NGOs) and the private sector. There are various trainings and courses related to preschool education offered. Nevertheless, preschool teachers should be wise to grab the opportunities to acquire this new knowledge even if it involves high expenses. The involvement of teachers in such training greatly affects their understanding of the importance of the skill domain on children in preschool education as well as increasing the teacher's confidence and personal attitude in implementing it (Chia, 2017). Shulman (1987) identified seven types of knowledge needed by teachers for teaching purposes, namely pedagogical content knowledge, curriculum knowledge, educational context knowledge, knowledge of student characteristics, and knowledge of educational goals. Therefore, teachers not only need to master a pedagogical content knowledge for teaching, they should also be equipped with curriculum knowledge to design and prepare lesson plans for Early Mathematics PdP. With self-efforts or efforts from the State Education Department (JPN) or District Education Office (PPD) in providing motivation and encouragement, preschool teachers will not overlook on receiving new knowledge according to the recent educational developments based on the educational needs of preschool children.

Suggestion 2: Multilateral Support and Cooperation

In addition, the support and cooperation of various parties is crucial in ensuring that Early Mathematics learning goes well, leaving a positive impact on preschool children. Therefore, it is suggested that school administrators provide autonomy to preschool teachers to use existing special rooms in the school such as Mathematics laboratories for Early Mathematics PdP. Moreover, preschool teachers should also be given autonomy to use the existing BBM under the Mathematics Committee. From the aspect of financial funds, it is encouraged that the school administrators assist in channeling financial funds from the Parents and Teachers Association (PIBG) for the purpose of purchasing BBM for preschool classes. The use of diverse

BBM is essential to encourage children's active involvement in learning Early Mathematics. All assistance provided by PIBG is in line with the association's role to help achieve the school management aspirations and to express various ideas and suggestions for improving school management.

In fact, the ministry, JPN, PPD and private education agencies also have their respective roles. The support and cooperation provided is a contributing factor to the development of children's Early Mathematics skills and other domains. For example, the role played by the ministry in the Teacher Professionalism Division, MOE is to plan training and special courses centrally and regularly. Among the training and courses planned is the English Professionalism Improvement Training Program (Mentor Mentee) for Preschool Teachers. The program focuses on two main targets, which are the main trainers who have been appointed and all new and experienced preschool teachers. Such training and courses will provide added value to teachers from the aspect of curriculum reform and also preschool education pedagogy.

Finally, research in the field of pedagogy and preschool curriculum that includes Early Mathematics components by various parties whether MOE or the private sector also supports effective Early Mathematics learning. This effort needs to be implemented as the research data can be used as a guideline for implementers and administrators of organizations such as schools, lecturers at Teacher Education Institutes (IPG), Higher Education Institutes (IPT), Private Higher Education Institutes (IPTs), Curriculum Development Division (BPK) and related agencies to streamline and improve the effectiveness of preschool education curriculum in Malaysia (Abd Ghani & Md Nor, 2020). Therefore, increasing the level of competence and professionalism of preschool teachers in implementing PdP will be more effective and interesting.

Suggestion 3: Interactive Teaching Aids

Subsequently, Tasripin et al (2021) suggested the use of interactive games for improving Early Mathematics PdP as one of the appealing types of BBM. The results of their study on children showed positive implications for number learning, where children who still did not recognize numbers (one to ten) managed to know all the numbers at the end of the study. The effectiveness of interactive games for preschool children was proven. This is supported by the findings of Abdul Halim (2007) that the use of computers appealing features such as the use of various graphics, large fonts, colorful diagrams, and various sound effects can attract children to learn. Since most children have now been introduced to the technology tools such as mobile phones and computers by their parents since early childhood, the use of interactive games is very suitable for them.

Suggestion 4: Periodic Monitoring

Improvement needs to be implemented by all parties, not only the preschool teachers but also monitored by superiors. Therefore, Abd Ghani and Nor (2020) suggested periodic monitoring by the relevant officials which needs to be carried out at the school, district, state and ministry levels. Factors of lack of awareness, interest, cooperation, preschool management and coordination should be ignored. In this regard, every educator in the education system in Malaysia is directly involved in ensuring that the Early Mathematics PdP process in preschool runs smoothly and achieves its goals. In addition, periodic monitoring by monitoring officers must comply with a number of requirements, such as having specific

expertise in the field of early childhood education, complying with the uniformity of monitoring between other monitoring officers, always providing appropriate feedback to improve the PdP process of preschool teachers and being an individual who regularly attends various workshops and special monitor courses for school monitoring (Bacotang et al., 2020). As a result, monitoring at the school level will run smoothly and effectively, and preschool teachers will be able to carry out their duties in a guided manner.

Suggestion 5: Parental Involvement

Furthermore, efforts to improve the implementation of Early Mathematics PdP can be carried out through the involvement of parents. The active involvement of parents in Early Mathematics PdP as an improvement is strongly encouraged (Maisarah & Syaza, 2021; Ministry of Education, 2017). Nowadays, the role of parents is seen to be able to contribute to the academic achievement of children while in preschool. Good involvement is solid support and complimentary learning to help children achieve all their needs. Parents who help their children complete their school work, provide support and encouragement, provide a comfortable learning space, spend time with their children while studying and show good behavior to them are among the recommended actions of parental involvement and support at home. In addition, parents with expertise in Early Mathematics education of preschool children can share opinions and ideas with teachers in improving the quality of PdP in the classroom.

Furthermore, parents can also get involved in children's learning by providing learning aids for Early Mathematics. Some parents have used daily items in their home as the easiest way to provide children the opportunity to participate in various mathematical activities. Examples of materials used include rulers and measuring tapes to measure the height, width and depth of objects around the house (Jay et al., 2018). From a strong support system from parents will guarantee high mastery of skills and academic excellence for their children. A study has proven that the active involvement of parents in children's learning can increase the achievement or children development and vice versa (Paezah & Faridah, 2017). Thus, support and cooperation is strongly encouraged especially in the implementation of Early Mathematics PdP and it is better if parents are given understanding and exposure beforehand about the importance of mathematical concepts in the children's development that will directly include aspects of important domains such as cognitive, physical, intellectual and social.

Suggestion 6: Diversity of PdP Strategies

In implementing the PdP process, there is no specific or best method and strategy to be applied in preschool to children with diverse backgrounds. Thus, it is suggested for preschool teachers to diversify strategies in PdP. PdP strategy is an organized teaching method to achieve the goals and objectives of the lesson that has been planned. It is also an effort to achieve an optimal learning outcome and also contributes to the effectiveness of Early Mathematics teaching. Therefore, preschool teachers should wisely choose specific strategies and methods according to the discipline of Early Mathematics such as integrating them with other pillars through learning activities as required in the NSPC Revised 2017. The nine strategies suggested according to the national preschool curriculum can be followed emphasizing three main strategies, namely thematic approach, project-based learning and PdP in writing learning centers (Ministry of Education, 2017). These three strategies will make PdP Early Mathematics more meaningful, effective and fun.

Conclusion

In conclusion, the major findings of this concept paper discusses the role and challenges of preschool teachers in implementing Early Mathematics PdP according to the NSPC Revised 2017. The findings involved of preschool teachers' attitudes, knowledge of Early Mathematics concepts by teachers, teachers' pedagogical mastery and child development knowledge. Preschool teachers need to understand and shoulder their roles and responsibilities well to implement an Early Mathematics PdP. They need to wisely choose appropriate methods, strategies and BBM to attract interest and be able to meet the needs of children in Early Mathematics PdP process. In addition, preschool teachers also need to be enlightened that learning Early Mathematics is able to solve children's daily problems in their lives. Using more creative and effective teaching methods or techniques, Early Mathematics PdP process will definitely be more interesting and fun. Subsequently, children will change their perception of learning and will consider the discipline of Early Mathematics as a fun learning process and looking forward for the activities every day. As a result, the level of student development will increased and the nation's educational aspirations will also be achieved. It is because Early Mathematics subject has an equally important role as mastery of language literacy as well as a play approach in almost all preschool classes (Morrison, 2018).

Early childhood mathematics education is one of the disciplines that is a priority for most countries as it contributes to excellent children performance in the skills of counting, reading and writing for the subsequent stage after completing education in preschool (Clements et al., 2016; Parks & Wager, 2015). The Early Mathematic subject under the Pillar of Science and Technology emphasizes scientific knowledge, skills and attitudes as well as mathematical knowledge and skills. Early Mathematical skills will be used by children throughout their daily activities in addition to gain new experiences as a result of their daily routines whether at school or at home.

Therefore, it is an expected suggestions that research related to the role and challenges of preschool teachers in Early Mathematics PdP can be implemented and further clarify. In addition, the research scope should be widen to different study locations such as in urban and rural areas. The findings of this study will certainly be more meaningful as it prompts various approaches to the preschool teaching in Malaysia. Finally, this concept paper is expected to enlighten the ministry, school administrators, parents and preschool teachers about the importance of effective Early Mathematics learning in preschool. Preschool teachers are also expected to improve their respective competences to ensure that the implementation of PdP is more relevant and significant in ensuring the achievement of children's holistic development.

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