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The Analysis of Early Childhood Teachers' Pedagogical Content Knowledge

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ABSTRACT

Pedagogical content knowledge (PCK) is the essential need of teaching and every teacher had to prioritized it for their teaching preparation. For early childhood education teacher, it is not only about knowledge of curriculum, instructional strategies and content, but also knowledge of students understanding. Teachers need to pay attention for all aspect in learning activities. With the awareness of PCK, teacher will have good performance while teaching and it will affect children understanding towards the subject. This research use descriptive quantitative methode to describe pedagogical content knowledge of 135 early childhood education teacher's in Pekanbaru City that has been chosen by purposive sampling technique. Data collection and processing using google form. From four indicators of PCK, knowledge of student understanding score is the highest at 3,25, knowledge of instructional strategies score is 3,15, content knowledge score is 3.07 and knowledge of curriculum is the lowest with score 2,89. Emphaty and the ability to understand children comprehension in learning is pivotal for early childhood teacher. Young children don't always express thought and emotion verbally, so teacher should also observed non verbal language and be thoughtful in order to help them understanding the subject. Early childhood teacher should gain more practiced and learn to enhance their knowledge of curriculum.

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1. Introduction

Early childhood education has faced many reforms in recent years. The changes and challenges have led to new requirements for pedagogy and for sure enhance the need of the professional competence of teachers. Much often, early child teachers are underestimated compare to other teachers who teach in formal level of education, although their role just as important as other teachers in teaching and

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enhancing student ability. This presumption mostly based on the learning activity in early childhood which contain a lot of art and playing activity such as dancing to the rhythm, singing, clapping hands, and playing games based on theme or subject that makes learning activity seems unformal and playful. Moloney (2010) suggest that primary school teacher had a relatively high social status, while early childhood teacher is rather different due to a perception that the infant class is akin to 'playschool'. Because of that, they receive different respect than teacher in higher classes in the school.

0-6 years old children develop very quick and this crucial time become the basic of composing early childhood learning curriculum. Every aspect are designed concerning the developmental level of cognitive, social, emotional, motor ability, moral and art of children (Novianti, 2012). For that early childhood teachers should have good pedagogical knowledge, as well as communication skill and broad understanding about children development. Beside good mastery of subject matter knowledge, other competencies that every teacher should have is the basic understanding about students. How they learn and develop, also how students gain speaking ability and use it to express themselves, that is very crucial in education. Besides that, all professional teacher had to be able to use that knowledge in designing curriculum that consider children needs, the appropriate content, and also the social aim of education: the subject matter that diverse student, in classroom management, assessing student performance, and the use of technology in learning (Darling-Hammond et al., 2005).

Pedagogical competence is the capability of teacher to address learning, which consist of planning, perpetration and assessment of student's learning outcomes. Teacher should have these competencies if they want to gain doing their professional role (Rahman, 2014). Training, direct experience from daily teaching and eagerness to study will make teacher become qualified and competent. (Lucenario et al., 2016) to develop the capability of teachers in order to develop teaching and increase knowledge can be done with the working out together in practice delivery through peer learning and make sure that they're working in good work climate which is necessary to improve the knowledge and skill of PCK.

Improved PCK is able to articulate teacher content knowledge as well as knowledge in academic doamin with general pedagogical knowledge (Sousa, 2011; Shulman, 1986a). In addition, pedagogical content knowledge (PCK) forms a knowledge base for teachers to guide teachers' decisions and actions in the classroom (Atay et al., 2010).

Early childhood teachers are getting more demanded to have good competencies in teaching. One of the reasons is because nowadays more and more parents have realized the significant of early childhood education as the foundation of children development and learning ability. As the understanding spreading out in our society, parents become more selective to choose school which has certain advantages and best teachers for their children. Furthermore, the empirical studies had found the characteristics of effective teachers which are 1) the ability to

understand curriculum purposes and objectives, 2) having a broad knowledge of pedagogic strategies, 3) eager to motivate all students, 4) observing students well, 5) giving effective feedback, 6) assessing student success, 7) understanding content knowledge of the subject and aware of what it worth to gain progress (Jones et al., 2017).

Pedagogical Content Knowledge (PCK) concept firstly brought out by Shulman (1986) who argued that PCK is the combination of teachers' subject knowledge and teaching knowledge that will affect teaching process. The pedagogical and content knowledge (PCK) is connected in a complicated way that goes beyond either content knowledge or pedagogy knowledge. PCK includes how to explain a certain subject and delivered it to students to make the understand. PCK is crucial for early childhood teachers. Not only about the content, but it also determines the teaching performance. However, it is found that experience in teaching give advantage to the learning process and outcomes. The findings in past decades have inspired the strive to describe an effective teacher's competencies and knowledge, noting that most of the literature on this subject frequently argues that the knowledge base of expert teachers is not only broader than the inexperienced teachers, but also more related and interlaced (Darling-Hammond, 2011; Olfos et al., 2014).

Guerriero (2013) describe that teaching is an enrich knowledge profession with teachers as 'learning expert.' As professionals in this profession, teachers can be counted on processing and evaluating knowledge suitable for their professional practice and to consistently upgrade their knowledge base to enhance practice in the classroom and to meet new teaching needs. Because of it, along the years of their teaching experienced, the early childhood teachers should continue to develop their pedagogic skill to fulfil the demand of education progress worldwide. In the context of curriculum revolution, early childhood teachers should be able to bring out K13 (Curriculum 2013) to the class and integrate six domains of child developmental aspect and embed them into curriculum. But there are still weaknesses found in practice such as the lack of skill in assessment and evaluation, keeping children attention along the learning time and use the latest information to enhance the subject delivered to children. To address this issue, this study applied PCK survey to examine early childhood teachers' pedagogical content knowledge in Pekanbaru.

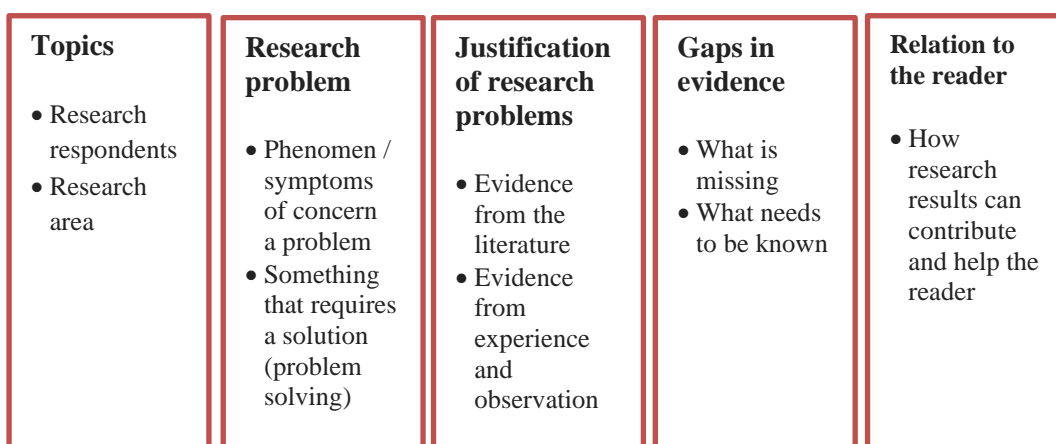
Based on the above description of the study of Pedagogical Content Knowledge with a sample of PAUD teachers in Pekanbaru City, it is deemed necessary to study the level of PCK. As is well known the competency of PCK teachers is important to be increased in order to support their profession as a professional educator.

2. Methodology

The purpose of this study was to determine early childhood teachers pedagogical content knowledge. This research uses a quantitative descriptive approach using

survey methods. Quantitative research aims at gathering numerical data and generalizing it across groups of people or to explain a particular phenomenon (Babbie, 2009). The study was conducted in Pekanbaru City in January 2020.

The sample in the study of PAUD teachers totaling 135 respondent. The sampling technique used was purposive sampling, namely sampling taking into account the criteria of the sample / respondent in a population member (Sugiyono, 2017). Data collection and processing using google form. The research design can be seen below as follows:



Picture 1. Research Flow

3. Results and Discussion

PCK is an important part of teaching and learning, at the beginning it mainly used for natural sciences. But as the theory develop, we can see that PCK is adaptable and can be used for other subject, such us language and also the early childhood education. The definition of PCK were expanded by several theorist. According to (Marks, 1991; Depaepe et al., 2013) there are for central PCK components: 1) knowledge of student understanding, 2) knowledge of curriculum, 3) knowledge of instructional strategies and 4) content knowledge.

Indonesia declared “Indonesia Emas” in 2045 with target that in the future Indonesia will be able to compete with other nation and overcome problems such as corruption and poverty. In order to reach the goal, all aspect of education need to be concerned and developed. According (Darling-Hammond, 2011) competent teacher are important factors that affect student achievement. Thus, teachers’ PCK need to be developed so they competencies will enhance. In line with this idea, Indonesia Emas can come true if teachers in all level of education have good PCK, so children and all people of Indonesia will learn better and in future we will have competitive and competent human capital. PCK is an important part of teaching and learning, at the beginning it is mainly used for natural sciences. But as the theory develops, we can see that PCK is adaptable and can be used for other subjects, such as our language and also the early childhood education. Harlen et

al., (1997) states that the strong content knowledge of a teacher will have a positive influence on making decisions related to changes in teaching strategies. This is intended to create better learning opportunities. A teacher who has good content knowledge will be able to construct material elements simultaneously in working memory, pay attention to the child's knowledge by giving direction, the material is not delivered at once or consider prerequisite knowledge. Apart from just knowing the teaching material to be provided, a teacher must understand and be able to integrate content knowledge into knowledge about the curriculum, learning, teaching and students (Council, 1996).

The definition of PCK was expanded by several theorists. According to Marks (1991); Depaepe et al., (2013) there are for central PCK components: 1) knowledge of student understanding, 2) knowledge of curriculum, 3) knowledge of instructional strategies and 4) content knowledge. PCK for PAUD teachers can be shown in the Table 1:

Table 1. Assessment Criteria

Criteria	Value
Very High	3.0 – 4.0
High	2.0 – 2.9
Average	1.0 – 1.9
Low	0.0 – 0.9

Table 2 shows that PCK score is 2,89 in high criteria and 3,25 in very high criteria with the average 3,09. It means the PCK of early childhood teachers is in very high criteria. Although there are still weaknesses in learning process, but it is not really significant. Knowledge of student understanding score is 3,25 which is the highest among other PCK component.

One of the most important subjects that the early childhood teacher should have is child development. Phases of children development, developmental task and developmental characteristic in every phase in children live were discussed and studied. As one of the must-do for teacher daily, they have to do assessment that is different from the assessment conduct by formal teacher in elementary, junior high school and high school. Novianti et al., (2013) conclude that the difference of assessment in early childhood happened because the young children had a very rapid development which make every age group such as 4-5 years old, 5-6 years old-had their own development characteristic dan also specific learning needs. Another reason is because the young children hasn't been able to do paper and pencil test, so the assessment require teacher ability to observe children activities while they are learning and playing. From the daily observation and assessment, teacher will gather data about how student learn the subject, their understanding, difficulties and how they process the knowledge.

Table 2. Pedagogical Content Knowledge of Early Childhood Education Teacher

No	Indicators	PCK Score	Criteria
1	Knowledge of Student Understanding	3.25	Very High
2	Knowledge of Curriculum	2,89	High
3	Knowledge of Instructional Strategies	3.15	Very High
4	Content Knowledge	3.07	Very High
Average		3,09	Very High

One of the criteria that teacher had a proper knowledge of student understanding is they make sure that all children had equal opportunity in learning. In this recent year, most of early childhood teachers in Indonesia use a play-based curriculum in their programs. First, it was started in 2004, when the Directorate of Early Childhood Education Development introduced BCCT. It is a play-based curriculum, using learning centers to support children's holistic development (Alatas et al., 2013). In BCCT, there are terms of density (play frequency) and intensity (length of play time).

In designing learning activities, teacher should consider these in order to give children the same opportunity in playing and learning. Furthermore Hartini, (2016) explain that the difference between traditional curriculum and BCCT is that BCCT more systematic and withhold specific guidance on theme and activities based on children's interest and development. Children also provided with supports before, during, and after play. Other than that, BCCT provide many selections of meaningful activities which leads children to actively participate. Teachers who understand children's development design all activities in learning center, as they realize that children learn best from their environment and experience. These teachers made learn and play activities fun and meaningful for children.

Knowledge of Instructional Strategies is the second highest score in early childhood teacher PCK's. As everybody know well, the early childhood classroom is unique and cheerful with the sound of clapping hands and children singing. It also lively with children's art like drawing, stamping, finger painting, and collage. There are various strategies used in early childhood classroom. Burger (2015) stated that based in research findings, It highlighted a variety of techniques that can be used to enhance acquisition of language, mathematical, and social-emotional skills, equipping tools for teachers, also as a knowledge base for decision-makers who in charge of implementing programs that serve children's multiple developmental needs. Specifically, the result shown that adults need to design many opportunities for children to develop and learn. These opportunities should consider children's needs, development, interests, and experiences also include possibilities for self-directed learning and adult-directed learning. Adults play an important role in children's development through communication and interactions with children when they can help children acquire new skills.

The early childhood teachers should be creative to choose different kind of instructional strategies to meet children needs. Manurung (2012) stated that there are no such perfect teaching strategies. To implement an effective teaching, creative teacher picks an effective learning- strategies that she thinks most fit, that can activate students, engage students and to keep their motivation in learning. Effective strategies are those teachers who able to transfer knowledge using communication and interaction into practical application.

Content knowledge is the teacher understanding of the subject taught. Early childhood teacher should possess the early childhood content. With score 3,07, early childhood teacher content knowledge is in very good category. Shulman (1986) suggest that “lack of content knowledge is likely to be as useless pedagogically as content-free skill” This statement point out the emergence of content knowledge in education. Content knowledge refers to theories, concept and principle in which teacher blend and serve in the classroom.

Ogar (2006) argued that researches show that students record the most gains when assigned effective teachers in term of content knowledge, in addition. Suggest that the primary purpose of teaching at any level of education is to bring a fundamental change in the learner (Tebabal et al., 2011; Odumosu et al., 2018). Loewenberg Ball et al., (2008) said that the mastery of subject that will be delivered to students is a must for teachers. The very basic in teaching is teacher competency. It's clear that the teachers who don't comprehend a subject well will not be able to help students learn this content. Early childhood teacher in Pekanbaru had better access to training and fostered through teacher's work group to discuss content knowledge and other subject related to teaching and learning

Knowledge of curriculum play important part in every learning activities. Early childhood education used the 2013 curriculum. The score for this components is the lowest among others, 2,89 in which teacher of early childhood education still have weaknesses and need to broaden their knowledge of curriculum and implement it correctly in order to deliver teaching and learning precisely for children. Rohita et al., (2019) conclude that kindergarten teachers still had low level of understanding of K13 for early childhood education. Teachers still having problem in implementing K13 and describe it in the form of daily, weekly and monthly lesson plan, also the assessment to know children development and comprehension.

4. Conclusion

The aim of this study is to investigate the pedagogical content knowledge of early childhood teachers in Pekanbaru. Based on the result, it can be concluded that overall, early childhood teachers' PCK is at very high level. The highest score is knowledge if student understanding, one of the strengths that early childhood teachers should have to embrace children and fill their learning needs. The lowest score is the knowledge of curriculum. It is not easy to comprehend and designed curriculum for early childhood due to the complexity of indicators, children

characteristic accord with age and variety of learning strategies. But teachers should keep on learning and practicing to enhances their knowledge of curriculum.

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