Need Analysis: Development of the Learning Cycle 5E Model to Improve HOTS in Early Childhood Student

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Abstract. This research aims to analyze the needs for developing a learning cycle 5e model to stimulate higher order thinking skills (HOTS) in early childhood. Needs analysis is used to identify the materials or things needed to develop a product. This research uses a qualitative approach by conducting literature studies and field studies. A literature study was carried out by collecting literature related to educators' strategies for stimulating HOTS in early childhood. The field study was carried out using interview techniques which aimed to determine the understanding and situation of schools in implementing learning that can stimulate children's HOTS. Interviews were conducted with PAUD educators in 5 PAUD agencies in Jambi City. The results of the analysis show that there are teachers who still do not understand HOTS for early childhood so that its implementation is still not optimal.

Keywords: Learning cycle, HOTS, Early childhood

1   Introduction

Nowadays technology is developing very rapidly which requires the younger generation, including young children, to be able to think critically, creatively, productively and competitively. Early childhood in the age range of 4-6 years, are in the process of growth and development, experiencing changes in learning abilities by mastering higher levels of aspects of movement, thinking, feelings and interactions both with each other and with objects in their living environment. The biggest challenge is how to develop learning, especially those that require higher order thinking skills (HOTS), namely how children solve a problem by analyzing, how to try to find a solution, using various ways to solve it and seeing whether the efforts made are right.

Higher Order Thinking Skills (HOTS) is the ability to think critically, reflectively, metacognitively and creatively, which is called high-level thinking ability [1]. In Bloom's taxonomy, cognitive development is divided into 6 levels, first is remembering, second is understanding, third is implementing or applying, fourth is analysis, fifth is evaluating or assessing, and sixth is creating. In Bloom's cognitive theory the lowest level is remembering and the highest level is creating. This cognitive level is divided into 2 levels, Lower Order Thinking Skill (LOTS) and Higher Order Thinking Skill (HOTS). LOTS is the area where someone carries out low-level thinking which

includes remembering C1, understanding C2, and implementing C3. Meanwhile, HOTS is an area where someone does high-level thinking which is included in 3 areas after lower order thinking skills, namely analyzing C4, evaluating or assessing C5, and creating C6. The view of early childhood in society is that children are not yet able to master higher order thinking skills (HOTS) and are shackled by the theory of stages of child development. In fact, Vygotsky, in structuralism theory, said that children are able to exceed the limits of their abilities if they are scaffolded or given space by teachers, parents or people who are more capable. Children have great curiosity so it would be a shame to only focus on low-level thinking skills (LOTS). Also, young children have strong memory and thinking power that must be simulated.

Developing Higher Order Thinking Skills (HOTS) skills is quite important because children are at the golden age stage where proper stimulation will be able to optimize all domains of children's development, including thinking abilities. The HOTS Skills concept includes the concepts of remembering, understanding, applying, analyzing, evaluating and creating. This High Order Thinking Skill (HOTS) is not only applied to adults but can also be stimulated from an early age. Children who have an understanding of critical thinking can form a character who thinks broadly and is able to adapt according to current developments. There is still a tendency for teachers to teach in schools to emphasize many lower-level thinking skills with answers that come from books or memorizing [2]. So that they are unable to have reasoning power and develop other alternative answers that have implications for the teaching and learning process [3].

In a learning process, determining the right learning model is very important. Because it is related to the process and outcomes of student learning later. Children who have an understanding of critical thinking can form a character who thinks broadly and is able to adapt according to current developments. The reality is that there are still many educators or teachers who do not understand and provide appropriate stimulation in early childhood development. Teachers still use low-order thinking skills (LOTS). This ability only uses the ability to remember, understand and apply. Teachers still view that giving as much material as possible to children and asking them to remember it is their main task. There are still teachers who do not realize that children miss out on learning many things when teachers do not provide challenging activities and involve children in the process of gaining knowledge.

The questions that arise are mostly at the level of knowledge, not yet questions at the level of understanding, application, analysis or evaluation. Lack of concrete learning models, which reflect the application of a scientific approach as expected. The result is that children receive less quality services, so they are less able to develop and use higher order thinking skills in learning[4]. The activities designed by educators are limited to coloring, cutting, pasting, and so on. This activity falls into the area of lower order thinking skills (LOTS). In fact, in the digital era until now we have entered a disruptive era which requires various competencies that are different from before [5]. The abilities that must be possessed must be higher than before, therefore the learning design for early childhood is also designed for learning that is oriented towards higher level thinking abilities [6].

To optimize students' problem solving abilities and understanding of mathematical concepts, a solution is needed, including the use of learning models. Currently, there are many learning models that can be used, one of which is the Learning Cycle 5E learning model [7]. The learning cycle model consists of several stages, namely engagement (generating interest and curiosity), exploration (exploration), explanation (explanation of concepts), elaboration (application of concepts), and evaluation (evaluation). The learning cycle is a student centered learning model which is a series of activity stages (phases) which are organized in such a way that students can master the competencies that must be achieved in learning by playing an active role.

By using a student centered learning approach, educators can build students' knowledge. Building knowledge in students is also the beginning of scientific-based learning. Through the 5E Learning Cycle model, we can create learning activities that are not boring so that there can be good interactions and reciprocal relationships between teachers and students or students and other students, so that the learning process will be fun because students become active, can train students to interact with each other and collaboration with classmates [8]. Learning Cycle emphasizes students' ability to use scientific inquiry in seeking knowledge or meaningful learning experiences based on constructivism. The learning cycle consists of a series of activity stages (phases) which are organized in such a way that students can achieve the competencies that must be mastered through active learning [9]. Therefore, the application of learning cycle 5e in early childhood classes needs to be developed first. This article aims to analyze material needs in developing the 5e learning cycle learning model. The analysis stage is part of the learning model development stage.

2   Method

This research is a type of descriptive qualitative research. The purpose of conducting the analysis is to determine the needs needed to develop a 5e learning cycle learning model that can improve children's HOTS. Analysis was carried out using literature studies and field studies. The literature study was carried out by collecting literature related to educators' strategies for improving higher order thinking skills (HOTS) in early childhood. Interviews were conducted with PAUD educators at 5 PAUD agencies in Jambi City at Rizani Putra Kindergarten, Pembina 2 Kindergarten in Jambi City, Yunico Kindergarten in Jambi City, Kembar Lestari Kindergarten, and Kirana Kindergarten. Data analysis uses Miles and Huberman, including data reduction, data presentation, and data verification.

3   Result and Discussion

3.1 Needs Analysis through Literature Study

Researchers have conducted a literature study regarding educators' strategies for stimulating high-level thinking skills (HOTS) in early childhood. The findings show that

the teacher's strategy in stimulating children's HOTS is by implementing the STEAM model or known as science, technology, engineering, art and mathematics [10]. It can use loose parts too [11]. Stimulation is also carried out through various other learning models such as project-based learning [12]. STEAM-based interactive poster media and animated video media [13], [14].

Based on literature studies, the 5e learning cycle learning model has never been applied in PAUD. The model that is usually used to stimulate children's HOTS is the STEAM model. Therefore, referring to the results of literature studies, researchers developed the learning cycle 5e to stimulate high-level thinking skills in early childhood.

3.2 Needs Analysis through Interviews

In this interview activity, the research team prepared several indicators to see the needs of the field in developing the 5e learning cycle model to stimulate high-level thinking skills in early childhood. This interview was conducted with early childhood educators in 5 schools in Jambi City such as Rizani Putra Kindergarten, Pembina 2 State Kindergarten, Yunico Kindergarten, Kembar Lestari Kindergarten, and Kirana Kindergarten. The description can be stated as follows:

Table 1. Field Interview Results for Needs Analysis

Aspects asked about	Conclusion of Interview Results for 5 Schools
Have you ever heard the term HOTS?	Based on the results of interviews with 10 teachers in 5 schools. 5 out of 10 already know and understand HOTS
In your opinion, do you think HOTS can be applied to learning in kindergarten?	Of the 5 teachers who understood HOTS, 3 answered that it could not be applied to early childhood, while 2 teachers answered that it could be applied with the STEAM model and learning media.
If HOTS can be applied in kindergarten, what is needed for its application to learning?	Designs or guides and methods for teachers because teachers have to learn first so that they can be implemented
Have you implemented learning that can stimulate HOTS in early childhood students?	2 out of 5 schools have implemented the STEAM and loose part models.
Do you know the learning cycle 5e model?	Based on interview activities, 5 schools did not yet know the 5e learning cycle model. Teachers usually use center, area and group models.

Based on the results of interviews regarding the need to develop a learning cycle 5e model to improve high-level thinking skills (HOTS) in early childhood, there are teachers who still don't know high-level thinking skills (HOTS). Some teachers or educators think that HOTS is not suitable for early childhood. The models commonly used are central, area and group models. The model commonly used to stimulate HOTS in early childhood is the STEAM model. Teachers or educators do not yet know the 5e learning

cycle model. Teachers need a design or guide for implementing high level skills stimulation (HOTS) in early childhood program.

Discussion

The interview results showed that teachers did not know HOTS. Teachers' knowledge of the concept of high-level thinking skills in the realm of critical thinking is still relatively low, this is also based on several causes, namely never having received information about the concept and development of creative thinking skills in the learning process, level of education, many teachers do not have the initiative to develop knowledge. Very few teachers have the ability to package learning containing higher order thinking skills (critical thinking and creative thinking). This condition shows that the teacher's ability to package learning based on higher level thinking skills (critical thinking and creative thinking) still does not meet expectations. Most teachers do not know in depth the concept of critical thinking skills and creative thinking, which has an impact on their teaching habits that do not use various learning models [15]. In fact, teachers are facilitators in learning activities and provide an environment that supports children's activities [16]. Including developing children's HOTS skills. To create students who have HOTS, teachers must also have high-level thinking skills. Research shows that children with teachers who apply thinking skills can improve children's thinking abilities [17].

4   Conclusion

Based on the research results, it can be concluded that schools and teachers need to develop learning models that can improve high-level thinking skills in early childhood. The results of the analysis show that there are teachers who still do not understand HOTS for early childhood so that its implementation is still lacking. Therefore, teachers and schools need to develop learning models to improve HOTS for early childhood.

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