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DEVELOPMENT OF HIGHER ORDER THINKING SKILLS MODULE
AMONG PRESCHOOL CHILDREN: PLAY

ANIS NORATISHA MOHAMAD ISA

This page is submitted
in partial fulfilment of the requirements for a
Bachelor of Science with Honours
(Cognitive Science)

Faculty of Cognitive Sciences and Human Development
UNIVERSITI MALAYSIA SARAWAK
(2015)

The project entitled ‘Development of Higher Order Thinking Skills Module among preschool children : Play’ was prepared by Anis Noratisha Mohamad Isa and submitted to the Faculty of Cognitive Sciences and Human Development in partial fulfillment of the requirements for a Bachelor of Science with Honours (Cognitive Science)

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ACKNOWLEDGEMENT

First of all, in the name of Allah s.w.t, the most merciful and the fullest of love I would like to express my gratitude to Allah s.w.t for His guidance and bless as I finally finish my Final Year Project and complete my final semester. I wish to express my sincere thanks to my supervisor, Assoc. Prof. Dr. Norsiah Fauzan, for giving me support, motivation, idea and knowledge along my third year in UNIMAS.

For my family, especially my parents those never give up giving me support to be strong to finish and achieve all this. Besides, to all my fellow friends that helps me to complete this research and other beloved course mates. A heartfelt thanks to my research partner Yusrina, Anis and Farahin who always being cooperative in collecting data and contributing ideas.

A special thanks to Cikgu Latiffah for giving me opportunity to conduct this research in Tabika Kemas and also special thanks to Principle of Tadika Sri Mawar. Not to forget others assistant from both kindergartens for giving good cooperation to me and ease my research. Last but not least, to Faculty of Cognitive Science and Human Development, Universiti Malaysia Sarawak (UNIMAS) especially Final Year Project coordinator and others who involved and give guidance and support during the process of completing this study directly or indirectly.

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ABSTRACT

The main aim of this research was to observe the technique used by preschool teacher in the development of Higher Order Thinking Skills (HOTS). To promote and understand HOTS, this research prepared a module for development of HOTS based on children interest.

Basically, all the activities were prepared based on researcher observation during collecting data duration for about two weeks in Tabika Kemas and two days in Tadika Sri Mawar to test the module. The activities were originally from the kindergarten curriculum itself. The feedback from the children was measured by using emotional and social checklist either. The data was collected by using video recording to ensure no data missed. Besides, the module used Bloom Taxonomy three domains of learning which were affective, cognitive and psychomotor as an additional reference. In research involved two phases, which first phase was done at Tabika Kemas and second phases was done at Tadika Sri Mawar. This research was hopefully can give extra knowledge about the advantage of higher order thinking among parents and society.

keywords: higher order thinking, preschool children

ABSTRAK

Tujuan utama kajian ini adalah untuk mengkaji teknik yang digunakan oleh guru prasekolah dalam peningkatan Kemahiran Berfikir Aras Tinggi (KBAT). Untuk menggalakkan dan memahami KBAT, kajian ini telah menyediakan modul untuk pembangunan KBAT berdasarkan minat kanak-kanak. Pada asasnya, semua aktiviti telah disediakan berdasarkan pemerhatian penyelidik semasa mengumpul data untuk dalam tempoh dua minggu di Tabika Kemas dan dua hari untuk menguji modul pelaksanaan di Tadika Sri Mawar. Semua aktiviti adalah daripada kurikulum tadika itu sendiri. Maklum balas daripada kanak-kanak dikaji dengan menggunakan senarai semak emosi dan sosial. Data juga dikumpul dengan menggunakan rakaman video untuk memastikan tiada data yang tercicir. Selain itu, modul yang digunakan merujuk tiga domain pembelajaran Bloom Taksonomi iaitu afektif, kognitif dan psikomotor sebagai rujukan tambahan. Dalam kajian ini, ia melibatkan dua fasa, iaitu fasa pertama yang dijalankan di Tabika Kemas dan fasa kedua telah dilakukan di Tadika Sri Mawar. Fasa kedua adalah pelaksanaan modul yang telah diubah dan ditambah pada fasa pertama. Kajian ini diharapkan dapat memberikan pengetahuan tambahan mengenai kelebihan berfikir aras tinggi di kalangan ibu bapa dan masyarakat.

CHAPTER ONE

INTRODUCTION

This research was focusing on the importance of higher order thinking skills among preschool children. Therefore, this research was about to develop a module of higher order thinking skills among preschool children age 5 and 6 years old. Two preschool was chosen which were Tabika Kemas (hometown) and Tadika Sri Mawar (current). Many parents had lack of knowledge on how important to develop higher order thinking. Therefore, with this research can help parents gain knowledge more about how important in developing higher order thinking among their children.

Higher order thinking is one of the concepts of learning (education) based on learning taxonomies such as Bloom's Taxonomy and this type of learning required more on cognitive processing. Higher order thinking involved remembering, understanding, applying, analyzing, evaluating and creating. Higher Order Thinking Skill (HOTS) teach children the skills to be a critical thinker instead of just memorizing facts. From practicing HOTS, children can find solutions to the new problems.

In phase one, learning module was observed among preschool children at Tabika Kemas. 30 children among 5-6 years olds were involved in these activities. The observation duration was done for 2 weeks and all activities was observed and recorded. Second phase, 22 children from Tadika Sri Mawar was involved. Duration for second phase only required two sessions.

In developing higher order thinking skill, young children were given a module for them to take a part. List of activities for them was based on the curriculum from the kindergarten itself. The researcher observed which activity attract more interest towards the

children. From that, the module was implemented based on play-based learning and brain-based learning. After implement, the module was tested again. The feedback from the children was recorded and analyzed. In addition, this module involved them to move their body part and at the same time improve their motor skills.

System education for pre-school in Malaysia aims to nurture students' potential in aspects of development, mastering basic skills and developing positive attitude as preparation to enter primary school. Most all preschool teachers are well trained in teacher training colleges under Teacher Education Division (TED) of Ministry of Education (Ministry of Education, 2004). In preschool education, a teacher needs to create activities that suitable for children's self-development, abilities, talents and children's interests. The suitable activities must involve children being active in learning and having fun. Statement by The National Preschool Curriculum state that 'the preschool curriculum promotes the intellectual, languages, social, art and creativity, psychomotor, cognitive and spiritual development of the children' (Ministry of Education, 2003).

Problem Statement

Most of the kindergartens were cognitive oriented emphasizing of traditional instructed which means the curriculum was standardize for teachers to follow. All guidelines were provided and teachers need to follow. The curriculum of the kindergarten should involve play-based learning as children love to play. According to Gmitrova (2003), play had been one of the components that well-established in the nation's early of childhood education.

Kindergarten children age between 4 to 6 years old should not be burdened and stressed with performance exam oriented. Most of children were forced to learn because most of the parents came from academician background. Education was really important but many people, parents especially had lack of knowledge about HOTS.

Therefore, this research emphasize development of module HOTS emphasizing on child centered guide learning. The development of module was based on children's interest and what they love to do. Child centered was approach begins with each children needs and make children become active learner (Fauzan, 2014).

Objective

The main objective of this research was to observe the technique used by preschool teacher in the development of higher order thinking.

The sub-objective of this research:

- To develop module based on play based activity.
- To develop module based on children interest.

Definition of Terms

Below are the terms that will be focus in this research:

Higher Order Thinking

- Higher Order Thinking will be activated when individuals face unfamiliar problems or questions and dilemmas. These skills include critical, logical, reflective, metacognitive and creating thinking (King, Goodson & Rohani, 2009).

Preschool

- Preschool was early childhood program in which children combine learning with play in a program run by professionally trained adults. Preschool provision was divided into Nurseries (i.e. childcare) for children from birth to four and kindergarten for children from four to six (Miller, 2009).

- Pedagogy
- The interactive process that takes place between the educator and the child to enable quality learning to take place (Fauzan, 2014).

Pedagogical Documentation

- A tool for meaning making so that learning could be made visible (Fauzan, 2014).

Play

- Play often defined as activity done for its own sake, characterized by means rather than ends, flexibility, and positive affect (children often smile, laugh, and say they enjoy it) (Smith and Pellegrini, 2013).
- Children defined play based on the absence of adults and the presence of peers or friends (Hewes, 2006).

Significant of the Study

Developing of higher order thinking among young children was important in their daily life. From developing higher order thinking from the module provided, children improvement towards their performances in decision making and critical thinking was observed. Therefore, from this research parents or caregiver can realize the important of developing higher order thinking among their children. In a glance, the significant of this research:

- Development of module through pedagogical documentation.
- Development of emergent curriculum based on observation of children interest.

Documentation was the way to learn further on how students think and learn.

According to Earl and Hannay (2011), by applying pedagogical documentation “teachers are

becoming innovators in their own right”. In developing the emergent curriculum and pedagogical considerations, the main success key was parental participation and children as rich, resourceful and leaders of their own learning (Fauzan, 2014).

Scope of Study

This research was focus on children age 5 to 6 years old. The children from Tabika Kemas, Perak was chosen in this research to observe the activity and develop the HOTS module while the children from Tadika Sri Mawar were chosen to test the module. For Tabika Kemas, they were 30 children involved while 22 children involved in Tadika Sri Mawar.

Limitation

The short duration of collecting data might affect the consistency of the results. The time taken for collecting data was limited as researcher need to follow the kindergarten schedule. The feedback from the children was different from time to time as they need time to get engaged with the researcher and give positive feedbacks towards the activities. Besides, the curriculum used by both kindergartens was different. Therefore, some of the activities provided were same and the activities were not variety.

CHAPTER TWO

LITERATURE REVIEW

Higher Order Thinking Skills

According to Forster (2014), Higher Order Thinking skills are very important as thought processes are needed to make decision and solve problem in our daily life. Higher Order Thinking will be activated when individuals face unfamiliar problems or questions and dilemmas. These skills include critical, logical, reflective, metacognitive and creating thinking (King, Goodson & Rohani, 2009). Thinking is not a natural function like sleeping walking and talking. In fact, not all children are lucky to learn important thinking skills from their parents or surrounding (Puchta, 2012).

Thinking can be defined into different meaning according to different individual. According to (Beyer, 1987 cited by Geertsen, 2003), thinking is a mental process where something can be change in the mind in order to make some sense out of experience. Thinking is the process to use information for analysing data that need for problem solving. A philosophy once said “It is a critical openness to new ideas as one explores their logical foundations” (Geertsen, 2003). Besides, different from (Presieisen, 1987 cited by Geertsen, 2003) point of view, thinking is like receiving external stimuli through the sense that will be followed by internal processing.

Development of brain in children is extremely important especially for the first three years. This is supported by Chiam (2008) who stated that research in neuroscience revealed that experience of a child during early years are very important. Geertsen (2003) also stated that thinking is mental manipulation of sensory input to formulate thought, reasoning or

judge. In addition, interactions with people and surrounding stimulus or objects will help children gained different experiences to help development of the brain.

School system in Australia, focused on five contexts of learning which are communicating, personal futures, social responsibility, world futures and thinking (Forster, 2014). From this listed contexts, higher order thinking skills can be develop. Successful skills of higher order thinking showed in performances, explanations, decisions and product that related to knowledge and experience. (King, Goodson & Rohani, 2009). In teaching higher order thinking, students manage to get life skills which are benefit for them to improve their knowledge, thinking skill and self-esteem (King, Goodson & Rohani, 2009). From what had been stated, it shows that higher order thinking is really important in developing a good decision making skills in our daily life.

In Florida, Florida Comprehensive Assessment Test (FCAT) was established as learning outcomes to develop higher order thinking skills. The goal is to ensure students make well in reasoning, thoughtful and making decisions (King, Goodson & Rohani, 2009). In this test, the example use that related to development higher order thinking is reading, calculating and social studies. Therefore, there will be many ways in developing higher order thinking in a form of test and activities.

In developing higher order thinking among young children, it should start in classroom. According to Marzano (1993), teachers can use variety strategies to initiate thinking among children. In addition, all the strategies can involve cognitive processes and employed in a wide range of strategies (Marzano, 1993). Higher order thinking also can be related into some criteria. According to Ivie (1988), higher order thinking can be related into three criteria which involve the utilization of abstract structures for thinking, the organization

of information into an integrated system and the application of sound rules of logic and judgment.

Higher order thinking involves critical thinking. Critical thinking is conceptualized as an operative example of Higher Order Thinking which can be accounted due to reliable and validated tests (Miri, David & Uri, 2007). Miri, David and Uri (2007) also state that critical thinking involves many skills, for example individual identifying the source of information, analyzing credibility, reflecting on whether the information is consistent with their prior knowledge and drawing conclusions based on their critical thinking.

Pedagogical Documentation

One of the ways to learn on how student's think and learn is pedagogical documentation (Fauzan, 2014). As stated by Turner and Wilson (2010), through documentation students will reflect on their learning throughout all the process, thus the potential for engagement and learning will be increase. Documentation will be include child's work in different stage of completion which includes photography work, comment or feedback from teacher or adults while they are with the children and feedback from the parents about their activity (Seitz, 2008).

According to Fauzan (2014), the interactive process that takes place between the teachers and the child to enable quality learning to take place is called pedagogy while a tool for meaning making for making learning visible is called as pedagogical documentation. Therefore, pedagogy and pedagogical documentation are two different concepts. Teachers or educator plays important roles in collecting evidence for children's learning. Through observation, teachers or educator will learn on how children react and think throughout all the process of learning. As supported by Bowne, Cutler, DeBates, Gilkerson and Stremel (2010), pedagogical documentation in the field of education, is the process on how to gather evidence

or information of children’s learning throughout the process of observations, work plan and conversation transcripts between children and teachers or educator. Children’s and teachers go through the process of reflections, then the data will be analysed, interpreted and shared through such means as dialogue.

Furthermore, children are developing their critical higher-order or metacognitive skills. Besides, children are able to understand the expectations and become partners in the process of determining how to express their ideas and make their thinking visible in the best way. In capturing evidence to document student thinking and learning, it can be a web or other visual representation. Images such as photograph, painting, video or other visual objects are useful tool because they can provide many different view of a child’s thinking and learning than written materials (Fauzan, 2014).

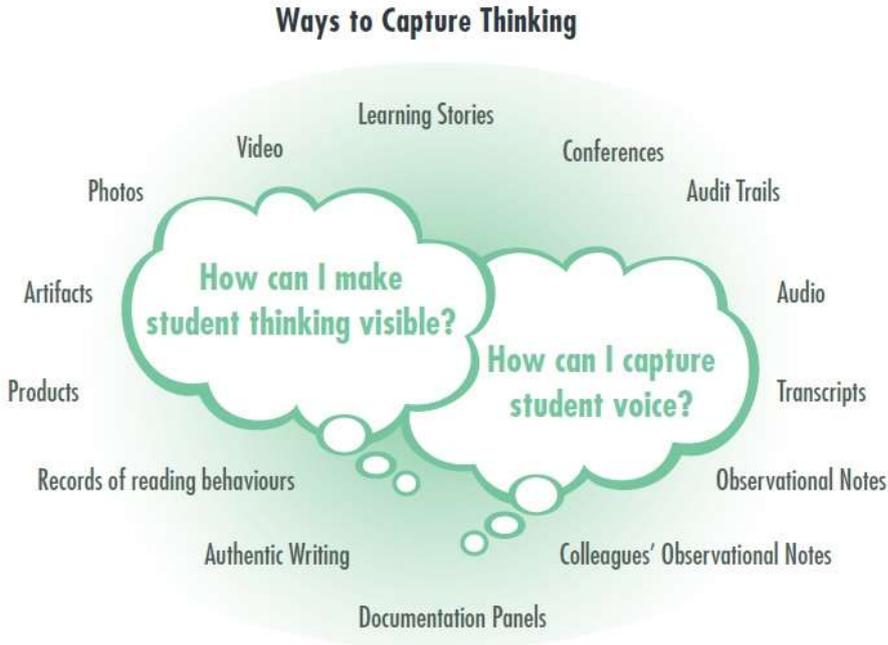


Figure 1. Example of ways on how to capture thinking.

Capture thinking especially among young children is important as they need to learn a new thing. From getting know what their thinking about, we will help them to learn a new

thing automatically. In this phase, children always ask about the thing that new to them. For example ‘why’, ‘how’ and ‘what’ questions. As shows above, there are many ways to capture thinking such as photos, video recording and record of reading behaviors.

As stated by Cremin, Burnard and Craft (2006), pedagogical themes involve three setting namely: Standing Back, Profiling Agency and Creating Time and Space. This pedagogical theme is a study to demonstrate how the teachers apply these themes pedagogically to develop the thinking aspects in their class. Standing back are giving learners chances to make a choice and making decision as this theme are reflecting about learners’ ideas in the creative learning process. Besides, standing back encourages teachers to observe and discuss about what their learners think about.

Profiling learner agency help young learners to think and develop their own decision. In this case, the teachers help to gather the volunteers and making a small group to help young learners become more independence in making any decision. This is important as the learners need to determine their own ways and direction for their works or future. The third theme will be creating time and space. All the children were given space and freedom to make choices in their own ways to learn.

Learning through Play

Play is the common activity in children’s world. By playing, children can develop their own brain development as children spontaneously involve occupying themselves (Burdette & Whitaker, 2006). Children are really active depend on other ages. Play can be define as activity that is done by using object play such as blocks, puzzles and dolls for its own sake and give the positive effects (Smith & Pellegrini, 2013).

Environment for children to get involve for activity need to consider as poor design of classroom and surrounding can give negative feedback of social interactions among children. In addition, outdoor activities also can attract children attention and automatically improve their brain development (Burdette & Whitaker, 2006). Enclosed and open space can be used to organize different kinds of activities. Different kinds of plays can be:

- Storytelling
- Role play
- Creative activities
- Music and dance
- Puzzles game
- Gardening

According to Miller (2009), from all the activities they play can help children get interact with their surrounding and environment through investigating, exploring and they will try out new things which can be similar with their interest and creativity.

The best learners and active learners in this planet are children. Learning can be in many ways including play, doing and thinking. Play is one of an important tool to facilitate children's learning. It can help children to learn and get know about surrounding and experience the joy. "Learning while playing is the key to teaching and learning" as stated by Miller (2009) supported the statement of play is a tool for children to learn. Besides, through play children can develop their physical, intellectual, social, creative and thinking abilities. "Learning through play" is an approach curriculum and planning promoted by many early childhood programs in Canada (Hewes, 2006). Therefore, it shows that in other country such as Canada, this curriculum programs had been starting for preschool programs.

Play help children learn in many ways. When children play, they develop many kinds of skills such as emotional, thinking and language. In the same time, they also develop ideas with the surrounding for example objects, people and situations. As stated by Smith and Pellegrini (2013), playing with an object helps children to try new actions and skills. This can help them to develop new problem solving skills.

Play-based learning in early childhood is a valuable, effective and appropriate pedagogy and good work has been done on the process of playful approach to early learning. Besides, being able to play is one of the key development tasks of early childhood (Hewes, 2006). Play is important as it give many benefit to children. Besides, play is the learning tool for children of all ages. According to Kopp (2010), play is the way for children to explore the world and learn about social skills and grow emotionally.

Adult and children both will face a problem. Trough play, children will learn on how to solve the problem because in different problem, they need to think different ways. As supported by Kopp (2010), play is the work for children because when children play, they will face different possibilities and become more flexible in thinking and solve problem. In addition, children can adapt with different types of situation accordingly. In addition, children need other person to help them answering what question they need to know and think about. Therefore, someone needs to accompany them while they are playing. This statement supported by Fauzan (2014) stated that it is important when children have a guide while doing activities as children learn well when they have someone to respond with, guide and extend their play.

Below were the examples of teachers' role in play:

- Teachers should be provide a place and arrange the time and materials such as puzzle and drawing book that necessary for them to play. The place provided can be indoor or outdoor environment.
- Each child has different type of attitude. Therefore, teachers should observe each child's performance and response if they need guide while playing.
- Teachers should encourage the children to act freely and understand about what their feel.

The role of the teacher or practitioner in child education also had been supported by Miller (2009) which states that teachers need to set up strategies that will involve appropriate interaction with children. These strategies can enable learning process to take place. Besides, these interactions will be effected by practices implicit in the social context in process of learning.