

CREATIVE THINKING AMONG PRESCHOOL CHILDREN

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Abstract: The main purpose of this research is the development of higher order thinking skills' module with emphasis on creativity for the preschoolers. In the development of HOTS module, pedagogical documentation were carried out to make the students' thinking and creativity visible. It opens up the possibility of shared reflection with the children who are naturally creative, inquisitive and exploratory in nature. The ongoing dialogues and sharing with the teachers and children on the learning process throughout the pedagogical documentation enables the researchers to plan the learning experiences and development of new techniques for the teaching of HOTS or creativity among young children. The module emphasized on the learning environment and students' engagement in learning with emphasis on play and nature. Through play, the children seems to more creative through their engagement with social activities, conversation and scaffolding. These conversations allow educators to further their "understanding of the concepts children are building, the theories they are constructing and the questions they are posing. Results shows that children have better thinking skills and creativity when given freedom to learn and scaffolding from teachers. Observation shows that learning environments such as classroom and friends and teachers creativity in facilitating and external resources are critical factors for the development of higher order thinking

Index Terms— Pedagogical documentation, Creative thinking, Higher order thinking, HOTS curriculum

I. INTRODUCTION

Early education is the basis for continued learning (preschool malaysia,n.d.). As stated in [1] in her study address that child's early experience affects their brain's development and learning. However, the common problem with the system of education in Malaysia is its examination orientation at every level of education, from kindergarten to higher secondary. Meanwhile, Malaysian's Ministry of Education, Tan Sri Muhyiddin Yassin said that it is important to change the curriculum from exam-oriented towards thinking critically[2] . He also stress that 70% of Malaysian's students student cannot answer question out of text book [3] . Government planned to

change the curriculum to improve childhood education and to minimize focus of using exam-oriented in school and motivate students to think critically. In this study, we believe that children can get creative through their engagement with activity and social activity which then affects higher order thinking skills. A module will be continuously developed by using pedagogical documentation.

II. PROBLEM STATEMENT

This examination oriented culture in our system of education is a barrier to critical thinking. The children lacked the ability to think and solve problems in a less familiar environment or when faced with complex and challenging issues. There is a need to develop higher order thinking among the children and the best time to start is at an early age. Providing experiences at an early age affect brain's development and learning.

Another issue that needs to be addressed is the quality of the early childhood education. Children that experience low quality environment do not perform well in elementary school [4]. Another issue that needs to be stressed is insufficient research of higher order thinking among pre-school children compared to research toward students in primary and secondary school. As government want to transform the educations curriculum from exam-oriented towards thinking critically, then there should be a lot of research on pre-school's education because early education is the foundation of learning.

III. OBJECTIVE

The main objective of the study to develop a module based on higher order thinking skills among pre-school children.

Specific objective

- To observe technique used by pre-school teachers in the development of higher order thinking
- To observe childrens' thinking behaviour and social interaction during class activity.

- To develop a module based on children's interest and learning style.
- To implement pedagogical documentation as a formative assessment method
- How does pedagogical documentation contribute towards pre-school children's learning?

IV. SIGNIFICANCE OF THE STUDY

This study provides a preliminary guideline on the development of pedagogy and module of higher order thinking for preschool children. Teachers should take an advantage from this module development and continuously improvise based on children's needs. Other significance is to develop a module or planned experience based on the children interest. It follows Reggio Emilia's method which focus on children's interest itself. The development of the module were based on observation on the children's thinking and behavior, social interaction with the peers and during play

V. Background of the study

A. HOTS in Malaysia

There are several strategies applied by Ministry of Education (MOE) in order to inculcate HOTS. They implement Integrated Curriculum for Secondary School (KBSM) that "introduced critical thinking skills, in 1988, the Vision 2020 in 1991, the Critical and Creative Thinking Skills (KBKK) in 1996, and the concept of "smart school" in 1997" [5]. Main purpose is to produce people who have high thinking abilities. Further strategies used to promote HOTS that are the release of Preliminary Report of the Malaysian Education Blueprint 2013-2025 [6]. There are three main aspects been focused that is written curriculum, taught curriculum and examined curriculum. However research in 2012 for Preliminary Report of the Malaysian Education Blueprint 2013-2025 showed negative result that actually does not promote HOT [7]. Previous research showed some factors that limits the nurturing of HOT skills among student are the time factor such as time consumed to reflect justify and question about the issue and teacher's lack of understanding on the concept of HOT in teaching of thinking. Teaching of HOTS require more time as the children will have to go through the process of learning how to think. On the contrary, there is a conflict between the thinking curriculum and the assessment which seems to limit the answer given by student based on scheme which consequently limits thinking skills). Another factor to be considered is the learning environment such as desk arrangement and learning space that may influence or limit students' thinking .

B. Quality of pre-school education

In the development of creativity, it is best to enhance their thinking skills by applying play based approach. There are four teaching methods in Malaysian preschools which are

Montessori, traditional methods that focus on academic, Waldorf method which focus play-based approach and international preschool that are based on their own curriculum . Basically, there are two types of teaching either academic based or play based. Play-based teaching style is said to be better than educational-based [8]. In Islam, Prophet Muhammad had divided life of a child into three categories, which Each last for seven years [9].). During the first seven years,

Prophet Muhammad focus for the children to play as their source for happiness and joyful learning [10]. Meanwhile, during play activity, children can build individual development. Research had shown that children show better performance in play-based activities compared to formal activity]. During the play-based activity, children become more focus on solving the problem compared to children during formal activity which easily get distracted [11]. Thus, module developed will be on children's interest that focus on play based activities such as story telling, and building block. Children that fully engage with task have more involvement with activity and thus provide better learning experience .

C. Pedagogical Documentation in pre-school

"Pedagogical documentation is a method used to capture children's learning experiences systematically through observations, transcriptions of classroom interaction and analyses of their work products, and then share these with the children through visual representations that provoke reflection" [12]. Thus, pedagogical documentation can help teachers capture critical moments among children.

VI. METHOD

A case study using qualitative approach was used to gain better understanding of the children's learning strategy and planned the development of a module for teaching thinking and creativity among the preschoolers.

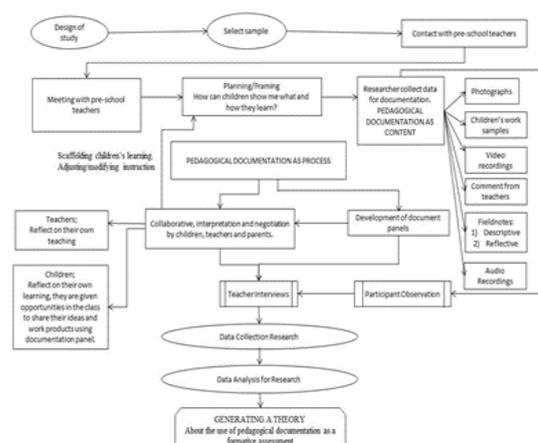


Figure 1 shows the flow chart throughout the three phases of the study started from a survey and pedagogical

documentation, development of HOTS module until the trial or implementation of activities from the module

A. Data Collection Procedure

A case study using observation and pedagogical documentation were used to capture children's creativity and thinking skills especially during play and social interaction. By observing and recording using video, audio recording and writing notes Researcher can directly explore on children's expression or movement and capture children's thinking. Then, all the artifacts such as children's art work were kept for data analysis. The study were carried out in three phases from January until April 2015. Data collection such as picture, children's art work and field notes was conducted at Tabika Kemas at Kampung Bukit Rawa, Kulim, Kedah. There are 18 students consist of 5 boys and 13 girls. Range of students' age is from five to six years old. In the phase 2 of the research, discussion and brainstorming with the project members were based on the documentation and artifacts collected before the development of the module. In the third phase, the module were put on trial at Tadika Sri Mawar in Kuching.



Fig. 2 Three main phases in research

B. Informant and sampling Technique:

It involves both children and teachers at pre-school. Purposive sampling were used for selection of subjects because the objective of the study was to observe children from the age of five to six years old and to develop HOTS module based on the pedagogical observation.

Instrument: Data were collected by observation, field notes, interviews and document analysis from artifacts. Creativity were assessed using creativity rubric assessment adapted from Kuong, Puteh and Toran [13]

VII. RESULTS

The findings will be presented based on the objectives of the research. Three objectives of the study are to analyze the observation, document analysis and children behavior as a basis for development of module. Second objective is to develop a module for creativity among preschool children based on the pedagogical documentation. The third objective is to analyze the implementation of creativity module in pre-school. Some of data findings are presented in graphical form for easier understanding.

A. First Objective: To analyze the observation, document and children behavior as a basis for development of module Curriculum used in KEMAS

Data were collected during semester break in Tabika Kemas Kampung Bukit Rawa, Kulim, Kedah. There are two teachers that responsible for each Tabika Kemas. The concept of KEMAS is 'Learning through Play'. There are four approaches used in Tabika Kemas. Figure 7 below shows approaches used in Tabika Kemas.

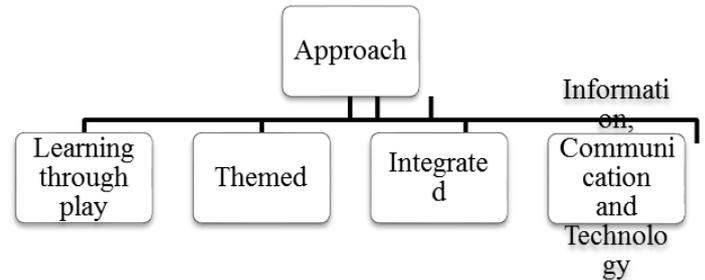


Fig 3 Approaches in Tabika Kemas

I. Children's Demographic Information

Tabika Kemas Kulim Kedah: There are 18 students consist of 5 boys and 13 girls at Tabika Kemas Kulim Kedah. There is more female student which is 13 students compared to only 5 students in the preschool. All the children are Muslim from rural background's area.

From the findings, most of the children live nearby the preschool. Most of the parents work on their own such as working at the farm. There are two children from this preschool lives with their grandparents. From the finding, highest qualification of their parents are at SPM level. Information from their teachers revealed that most parents were not concern on their children's education from home. Observation shows that only few parents inquire about their children's progress. For example, Informant 5's mother asks about the suitable book that she can use to revise.

Tadika Sri Mawar: In this research, a group of 6 years old children was chosen. There are 22 children consisting of 12 Male and 10 Female children. Compared to children in Tabika KEMAS Kg Bukit Rawa, there is greater number of male children than female in Tadika Sri Mawar. There are number of races in this preschool such as Malay, Chinese, Iban, Bidayuh and Dusun. The highest number is Chinese (12), followed by Malay (3) and Iban (3), then Bidayuh (2) and lastly Dusun (1).

II. Teachers and Pedagogy

Individuals that work in Tabika KEMAS must at least have diploma in early education. However, for teacher's assistant, the minimum requirement needed is Sijil Rendah Pelajaran (SRP). Teacher's assistant does not really teach, their main work is to prepare meals for the children. In Tabika KEMAS, there have their own schedule for children's meals.

Children will have their breakfast before they start their class and they will have another meal two hours later. At Tadika Sri Mawar, children have to bring their own meal. They can eat their meal during recess time.

Observation on pedagogical aspects shows that at Tabika KEMAS, important thing is to get children's interest during learning. She said that, normally student can only focus for five to ten minutes. So, it is essential for teacher to know the strength and weakness of their student. For example, informant 10 cannot express himself during class session, however during outdoor activities, he able to express his emotion. Similar to Informant 12, she refuses to interact with teacher, but when the researcher or her friends talk and work together with her, she able to interact normally and she can smile.

One of methods used by the teacher is scaffolding. Scaffolding follows theory of Zone of Proximal Development. Lev Vygotsky in his paper stated that assistive learning can help children solve a problem. Assistive learning refers to the guidance by the teachers or peers. From the observation, student will get a guide from the teacher, mostly during the early stage of activities



Fig.4

Figure 4 illustrate teacher guiding her student. The children are having hand painting activities and they need to use only the right hand. Some children still confused between left and right hand. Thus, teachers show how to put the water colors on their right hands. Apart from helping children completing their work, scaffolding is important to make the children focus again. Previously, teacher had mentioned that these children can only give full attention for a short period. Other method used is questioning. Questioning is used to know the level of understanding among children and their focus level. For example one of activity is human body activities. The activity is to know the level of understanding among student about their part of body. According to the teacher, early themes are related to the children itself such as their name, their face, family and lastly to the environment.

Learning Environment



Figure 5 Cognitive section

Figure 8 shows the cognitive section in the Tabika KEMAS. This section attract children so much. They tends to be curious about all the learning material on that section and that is the reason why it is called the wonder wall. When the children have a free time, they tends to stand in front of the cognitive section, and look at it. At the cognitive section, there are a lot of play materials. There are student that like to play animals, and wonder how the animals move, sound and how they walk.



Fig. 6 childrens' collaboration and childrens' artwork

Figure 6 is the section that displays all children's artwork. The selection of wallpaper are colorful and interesting. This section motivate children to do the best so that their artwork can be displayed.

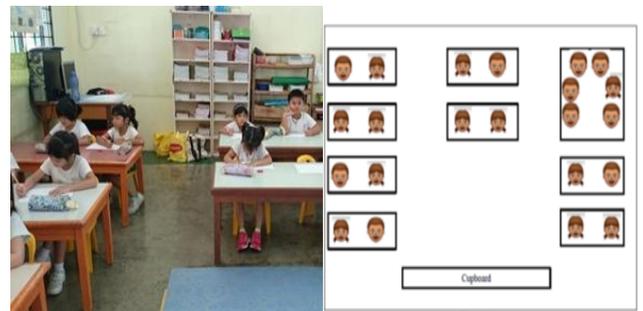


Fig 7 Tadika sri mawar Classroom environment and seat arrangement

Figure 7 show the classroom environment and lay out of student's arrangement in Tadika Sri Mawar. Compared to Tabika KEMAS, it has a fix arrangement for children. Children have to sit according to their place. The classroom also looks very dull and there is very little of wall's decoration.

Second Objective: To develop a module for creativity among preschool children based on the pedagogical documentation.

From the findings based on children’s interest, a creativity module was developed. The module focuses on developing higher order thinking through creativity. Teacher’s ability, learning environment and external sources have an impact on developing higher order thinking skills. This factors influence the intrinsic motivation among children while they are playing. Table below shows some of the activity and learning outcomes of the modules.

MODULE 1

SEE, TOUCH AND SMELL!

NAME OF ACTIVITY	ACTIVITY 1 : STORY TELLING
TEACHING MATERIALS	BIG STORY BOOK

Goal/Foundation/Standard: Engagement and Persistence	Exploring Give explanation on human’s body function.	Building Relating with real life stuff (Give student to smell perfume)	Applying Questioning on their daily life experience (What is the smell of durian?)
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Table 1: Example of Activities from Module

MODULE 2

MY FRIEND AND I

NAME OF ACTIVITY	ACTIVITY 4 : LOOK AT YOUR FRIEND
TEACHING MATERIALS	NONE

Goal/Foundation/Standard : Engagement and Persistence	Exploring Each students need to look at her friends and observe the features of the face.	Building Student have to give explanation on their friend’s face feature (thick eyebrow)	Applying Student need to compare with their family(My brother has a fair skin too!)
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Table 1: Example of Activity from Module

A. Third Objective: To analyze the implementation of creativity module in pre-school.

The modules were put on trial in another pre-school , Tadika Sri Mawar, Kuching to validate the creativity module created. For the first day, two activities were conducted that is ‘draw your friend’ and ‘Make a Snowman’. Drawing friend’s activity was chosen in order to compare with the previous result conducted in Tabika Kemas.

Their drawing is much smaller and tidier compared to the drawing in Tabika Kemas. Their pattern of drawing and color selection is also almost the same. Only a few children have a different drawing which they draw more than one friend. Although, their teacher scold them to draw only one of friend, but still some of them draw more than one. Figure 20 shows drawing by children in Tadika Sri Mawar. One of the drawings illustrate three person holding hand together. From this drawing, it displayed the friendship that the child wants to show.



Figure 8 Children drawing their friend

Meanwhile, another activity was building a snowman was chosen. This activity reveal children’s motor skills and their ability to solve the problem from the materials given. Children can select the materials to build their own snowman. Materials prepared were dough, beads, colorful wire, and tree’s branches.

On the second day, different approaches were used. An alpha music was used with a picture to trigger’s children thinking and helps to be more focus.



Figure 9

For the first activity, students were asked to draw based on the picture given (as shown in Figure 9) and also based on the sound that they heard. The sound is a nature sound with alpha

music. There are sound of waterfall, bird's chirping and sound of crickets. It is used to increase the level of concentration among students. Most of the children draw a similar concept, a lake and few trees. Some of them draw fish inside of the lake. Yet, there is student that cannot draw at all. Informant 19 see, draw and then she erase it. Then, she keeps on repeat the same thing. Figure 10 shows Informant 19's drawing. It shows that this child have no idea on the concept of drawing. She sketch the picture using her pencil. Results of drawing in Tabika Sri Mawar are shown in Figure 11. They use nature's color to color their own drawings.



Fig 10 Sketch



Fig 11 drawing nature

VIII. DISCUSSION

From the results, several themes had been revealed that can affects higher order thinking among preschool children through creativity perspectives. Teacher in Tabika Kemas applied scaffolding method, questioning and problem solving to all the children in the class throughout the class activities and the daily conversation. The interaction is more likely as mother and children interaction.

Question were asked during the activities to know the level of understanding and the concept inside children's mind. For example, during recess time, they are looking at today's chart which consists of the date, day, and weather. Children were asked about weather.



Figure 12 Children are looking at today's chart

Teacher: Take a look outside the window. How is our weather today?
Student :Sunny.Teacher: How do all of you know?
Student: it feels warm, and there is a sun!Teacher: what colour make a sun?
Student : The color of sun is yellowish-orange"

From the descriptive field notes, children are able to relate their understanding of weather. They know the concept of sunny day. Here, learning materials, and questioning from teacher helps the children to think. By having a non-formal conversation, this children can learn a lot about life. Interaction between children to discuss about the topic also encourages higher order thinking.

Scaffolding

Scaffolding follows theory by Lev Vygotsky which is the Zone of Proximal Development (ZPD). ZPD is a state that adult or older children guide children to complete their work [14].



Fig. 14 Make 'ABC'

Figure 14 shows play doh activity that is to shape an alphabet.

In Tadika Sri Mawar, for the first trial on play doh activities, student does not know how to shape doh into object. They cannot even shape a ball. After second trial, they know what they should do. As in [14] giving effort on memory yields to creativity. This is shown by following formula; $E + M = C\infty$. By working creatively, children can produce a lot of ideas

Learning environment

Classroom

Tabika KEMAS have a better positive learning environment. The preschool is very colorful. They have a very colorful chair and desk that is suited with their height. In contrast to Tadika Sri Mawar, color of the desk is dull. Their classroom looks very dull too because there is less learning materials on the wall. Figure 15 shows the classroom differences between Tabika Kemas and Tadika Sri Mawar.



Figure 15 Left- Tabika Kemas, Right - Tadika Sri Mawar

In Tabika KEMAS, there is cognitive section, collection of children's artwork and a lot learning materials at the wall. All the materials inside the classroom help children's thinking and learning. At the cognitive section, children always ask about the animals. Learning materials at the wall act as a cue for the children if they forget it.

Friends

Positive learning environment may affect by friends too. Some of children in Tabika Kemas are related to each other. For example, Informant 1 and Informant 8 are cousins. Thus, they are very close to each other because most of them in the same area and they know each other's family. As the class combines 5 years old and 6 years old children, a child that knows more about something will help others. This follows theory of zone of proximal development which friends will guide their friend in order to complete the task. Thus, a good circle of friend may provide a good motivation and positive learning environment.

Teacher may also create a positive learning environment. Method of communication and teacher's appearance may affect learning process. A positive learning environment may triggers children thinking. Teacher in Tabika KEMAS have a very motherly characteristics. However, in Tadika Sri Mawar, the teacher looked very strict. In Tabika KEMAS, children are not afraid to ask question or to share anything in their daily life. For example, informant 9 show his happiness when he saw his teacher comes to the school. For example, during the outdoor activities, they saw an aeroplane. They wave to the aeroplane and talked about recent issue, MH370.



Figure 16 Children pointing to the aeroplane

“Student : Teacher, MH370! (pointing to the aeroplane)
“Teacher: Where did it go?
Student: crash into the sea.

Teacher: why would you say that?
Student: it is in the news! Teacher, can we recite Al-Fatihah to them? Poor to their family. They must be sad. They don't have father and mother anymore”

(Descriptive field notes, 4th February 2015)

It was heartbreaking to hear it from the children. They already know meaning of loss and they are aware about the current issue. By having children been exposed to the outdoor activities, teacher can know their feelings and their expression. This children shows their sympathy towards the tragedy happened to MH370's victims.

External Resources

External resources are the learning material used in the preschool. In Tabika KEMAS, they use a lot of learning material with variety of color and shape to make students enjoy the learning. Tadika Sri Mawar is different because their method does not stress on play itself but focus on the book.



External sources use during play

By having colorful and attractive learning materials, children will have interest and passion to involve with learning. They will involuntarily involve with learning. They also feel motivated coming to school. For example, some children love to use the animal shape in Figure 17. They use it for counting or they arrange it according to group of shape or group of color. Thus, this makes the learning more visible instead of counting from the book.

IX. CONCLUSION

The teachers need to be creative in planning the learning experiences, designing the learning environment and in their interactions with the children for the children to learn to think and thinking to learn. However, this work does not happen by teachers merely implementing a defined set of practices, but thoughtful to model the world and so to deal with the children who are naturally creative, inquisitive and exploratory in nature. In this research, the development of HOTS module derived from pedagogical documentation where students' thinking and creativity becomes visible. It opens up the possibility for shared reflection on the learning process. Documentation enables educators to name what children are learning and to make links to the planned curriculum. At the same time, students can reflect on their learning. Such ongoing dialogue mediates perspectives – educators', students' and parents' – to facilitate understanding. By constructing shared understanding, dialogue drives future curriculum in ways that are genuinely responsive to learning needs. These conversations allow educators to further their "understanding of the concepts children are building, the theories they are constructing and the questions they are posing". Consequently, learning becomes a deeply personalized and engaging experiences

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