วารสารวิจัยและพัฒนา มหาวิทยาลัยราชภัฏสวนสุนันทา
ได้รับการประเมินคุณภาพวารสารวิชาการอยู่ในฐานข้อมูล TCI กลุ่ม 1

A Development of Early Childhood's Five Minds for the Future
การพัฒนาจิตเบญจลักษณ์เพื่ออนาคตของเด็กปฐมวัย

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ABSTRACT

This research aimed to a development of early childhood's five minds for the future based on Gardner's (2009) approach. The approach consisted of five minds: disciplined mind, synthesizing mind, creating mind, respectful mind, and ethical mind. The samples were 129 kindergarten students (5-6 years old) of 7 schools under Nakhon Ratchasima Primary Education Service Area Office 1-7, the second semester of the academic year 2014, which was selected by purposive sampling and willing for being participants.

The instrument was the instructional model for developing early childhood's five minds for the future (or MINDS instructional model). The model consisted of 6 principles: learning from observation, paradigm adjustment, practice, interaction, evaluation, and reinforcement. Also, the model comprised 5 steps: motivating (**M**), inquiring (**I**), norming (**N**), doing together (**D**), and sharing (**S**). The data were analyzed by t-test.

The results showed that after implementing the instructional model to developing early childhood's five minds for the future, it was found that the students of every school had increased mean score of five minds for the future at the statistical significance of .01. According to the result, it can be concluded that this instructional model increased early childhood's five minds for the future.

Keywords: Early Childhood's Five Minds for the Future, Disciplined Mind, Synthesizing Mind, Creating Mind, Respectful Mind, Ethical Mind

บทคัดย่อ

การวิจัยนี้มีวัตถุประสงค์เพื่อพัฒนาจิตเบญจลักษณ์เพื่ออนาคตของเด็กปฐมวัย ใช้แนวคิดจิตเบญจลักษณ์เพื่ออนาคตของ Gardner (2009) ที่ประกอบด้วยจิต 5 ลักษณะ ได้แก่ จิตแห่งวิทยาการ จิตแห่งการสังเคราะห์ จิตแห่งการสร้างสรรค์ จิตแห่งการเคารพ และจิตแห่งจริยธรรม เป็นฐานในการวิจัย กลุ่มตัวอย่างที่ใช้คือนักเรียนอนุบาล (อายุ 5-6 ปี) จำนวน 129 คน ของโรงเรียนในสังกัดสำนักงานเขตพื้นที่การศึกษาประถม ศึกษานครราชสีมา เขต 1-7 ภาคเรียนที่ 2 ปีการศึกษา 2557 จำนวน 7 โรงเรียน

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จากการเลือกแบบเจาะจงและยินดีเข้าร่วมวิจัย เครื่องมือที่ใช้คือ รูปแบบการเรียน การสอนสำหรับพัฒนาจิตเบญจลักษณ์เพื่ออนาคตของเด็กปฐมวัย (หรือ MINDS instructional model) ที่ประกอบด้วยหลักการ 6 ข้อคือ การเรียนรู้จากการสังเกต การปรับมโนทัศน์ การลงมือปฏิบัติ การมีปฏิสัมพันธ์ การประเมินค่า และการเสริมแรง โดยมีขั้นตอนของรูปแบบการเรียนการสอน 5 ขั้นคือ กระตุ้นการเรียนรู้ (Motivating: M) พินิจพิเคราะห์ (Inquiring: I) กำหนดบรรทัดฐาน (Norming: N) ปฏิบัติร่วมกัน (Doing together: D) และแลกเปลี่ยนเรียนรู้ (Sharing: S) สำหรับการวิเคราะห์ข้อมูลใช้การทดสอบค่าที ผลวิจัยพบว่าหลังได้รับการจัดประสบการณ์ตามรูปแบบการเรียนการสอนสำหรับพัฒนาจิตเบญจลักษณ์เพื่ออนาคตของเด็กปฐมวัย ค่าเฉลี่ยจิตเบญจลักษณ์เพื่ออนาคตของเด็กปฐมวัยในทุกโรงเรียนสูงขึ้นอย่างมีนัยสำคัญทางสถิติที่ระดับ .01 แสดงว่าการจัดประสบการณ์ตามรูปแบบการเรียนการสอนที่สร้างขึ้นสามารถพัฒนาจิตเบญจลักษณ์เพื่ออนาคตของเด็กปฐมวัยให้สูงขึ้นได้

คำสำคัญ: จิตเบญจลักษณ์เพื่ออนาคตของเด็กปฐมวัย, จิตแห่งวิทยาการ, จิตแห่งการสังเคราะห์, จิตแห่งการสร้างสรรค์, จิตแห่งการเคารพ, จิตแห่งจริยธรรม

INTRODUCTION

"Five minds for the future" used in this research was the latest approach of Gardner (2009), a psychologist who invented multiple intelligences theory. He proposed that these important minds must be instilled among people in order to survive in the world happily both in their daily life and working life. They consist of 5 minds, including disciplined mind, synthesizing mind, creating mind, respectful mind, and ethical mind. Those who lack these minds will have problems in their living and working. In other words, persons without disciplined mind will never succeed in their jobs and limited to insignificant tasks.

The persons without synthesizing mind will be overwhelmed by information and they are unable to make discreet decisions about people and work. The persons without creating mind will be replaced with a computer and more creative persons. The persons without respectful mind will not be respected by the others. They might even be a threat to their workplace and the public. The persons without ethical mind will cause the loss of the world's honest workers and responsible citizens.

Obviously, five minds for the future is the whole human development approach. Disciplined mind, synthesizing mind, and creating mind are cognitive development. Respectful mind and ethical mind are affective development that allows one to live in the society happily. Thus, this approach helps fulfill humanity, making ones become capable, good, and able to live in the society happily. However, since five minds for the future is quite new for psychology and education, there are few researches about five minds for the future. The existing researches examine only some minds. Moreover, there is no comprehensive development of early childhood's five minds for the future although these must be

implanted in early childhood (only the study of Choksathid and Thaithani (2015) examined factors of early childhood's five minds for the future from schools under Nakhon Ratchasima Primary Education Service Area Office 1-7, the result can be concluded that the students got five minds for the future in moderate level).

Early childhood is vital as the foundation of all developments. This period is the most important and essential for brain development. It is sustainable human development that prevents social problems in long term.

It requires appropriate management of learning experience to develop early childhood's five minds for the future. Amornwiwat (2003) stated that early childhood needs love, care, encouragement, reinforcement, role model, mental and emotional polish, training, problem solving, and adapting to the society and the surroundings. They have overall development, including physical, intellectual, social, mental, emotional, and personal aspects.

They confront simple problems and have opportunities to experiment, conclude, and find answers on their own that lead to valuable direct experiences. In addition, the early childhood should learn moral principles, such as patience, discipline, and integrity by adding moral principles in every activity and use more reinforcements than strictness or punishment. Corresponding to the cognitive development of Piaget (1998), early childhood would develop their skills about movement, language, and social interaction. To provide the children with sharing and loving experiences, learning how to live with the others, and social relationship, they must have a positive experience and develop good feeling in making a relationship in children's world.

Moral development theory of Kohlberg (cited in Siriwannabut, 2013) stated that moral development of early childhood is at pre-conventional level. It requires cognitive ability to enable the children to rationalize ethically. Piaget (1980) emphasized that the children learn when they interact with friends and adults in the society. Furthermore, the development of cognitive ability is a result of interaction between children's current ideas and stimulants from the physical and social environment.

Therefore, the experience is an important indicator of early childhood's development. More stimulants lead to higher level of development. Learning management must provide the children with example situations and discussions to share their opinions (Arbuthnot & Faust, 1998). Corresponding to Bandura (1977, 1986), the children learn appropriate behaviors by observing and imitating. The model chosen by the children must be favorable. To encourage children's learning, it needs an influential model with appropriate behaviors. Positive reinforcements given to the model or the children after expressing desirable behaviors will shape their

behaviors properly according to reinforcement principle of Skinner (1990).

The discussion for exchanging opinions about the model and the consequences among children will improve their ethical rationalization. They have to use thinking process and find reasons with empathy and analysis on the model's behaviors of what is good and what is bad (Arbuthnot & Faust, 1998). Moreover, working together is cooperative learning that allows them to build a good relationship with friends, notice the difference among each group member, and accept those differences.

This improves the children's self-confidence and trust in their friends making them able to live with the others, which requires more social skills. They will solve problems together, work together, understand one another, accept the group's mutual agreement, take their own responsibilities, and receive the results from their teamwork. The children will see the association of things and value their actions and the surroundings as shared utilities (Johnson & Johnson, 1998; Slavin, 1994).

Furthermore, supporting the children to interact with the social will make them learn new things apart from their existing knowledge and understanding. Environmental management in virtual context will allow the learners to learn meaningfully and understand what they learn on their own according to constructivism (Thaithani, 2012; Khammani, 2013). Therefore, working group allows the children to interact and learn by themselves, expand their knowledge and experiences by their action and sharing with friends. They create self-learning assisted or advised by their friends and teachers (Scaffolding). It will help the children to develop their learning towards their full potential (Vygotsky, 1962). If what the children learn is meaningful, they will apply that knowledge in their daily lives appropriately.

Corresponding to affective domain of Bloom (cited in Khammani, 2003), to form a habit in any individual, such person must have a chance to perceive and attend to that thing. He or she must respond to such thing, feel satisfied, appreciate its value, and practice, leading to the development of habit.

Due to the background and importance as well as literature review mentioned above, researchers have designed instructional model for developing early childhood's five minds for the future (or **MINDS** instructional model). Then researchers examined the results of the development of early childhood's five minds for the future according to the instructional model. This research will be a guideline for related persons or those interested in the application of the instructional model for developing early childhood's five minds for the future or in similar contexts.

OBJECTIVE

To examine the results of the development of early childhood's five minds for the future in accordance with the newly designed instructional model for early childhood's five minds for the future.

HYPOTHESIS

After receiving experience learning management in accordance with the instructional model for early childhood's five minds for the future, mean score of early childhood's five minds for the future will increase.

METHODOLOGY

1. The population used in this research includes 21,000 kindergarten students from schools under Nakhon Ratchasima Primary Education Service Area Office 1-7, the academic year 2014 (Office of the Basic Education Commission, 2014, pp. 51-52).

2. The samples used in this research include 129 kindergarten students of 7 schools under Nakhon Ratchasima Primary Education Service Area Office 1-7 (one school from each area), the second semester of the academic year 2014, specifically sampled from population willing to participate the research, consisting of 1) 30 students from Banlakroi School, under Nakhon Ratchasima Primary Education Service Area Office 1, 2) 12 students from Bannontaprom School, under Nakhon Ratchasima Primary Education Service Area Office 2, 3) 6 students from Bannongsano, under Nakhon Ratchasima Primary Education Service Area Office 3, 4) 19 students from Bannayai School, under Nakhon Ratchasima Primary Education Service Area Office 4, 5) 27 students from Mabkradwittaya School, under Nakhon Ratchasima Primary Education Service Area Office 5, 6) 25 students from Chumchonkhongwittaya School, under Nakhon Ratchasima Primary Education Service Area Office 6, and 7) 10 students from Bannongsang School, under Nakhon Ratchasima Primary Education Service Area Office 7.

3. Research instrument is the instructional model for developing early childhood's five minds for the future. The design procedure is as follows:

3.1 Review literature as guideline for the instructional model for developing early childhood's five minds for the future as follows:

3.1.1 Study the approach of five minds for the future of Gardner (2009) along with the study of Choksathid and Thaithani (2015), who examined factors of early childhood's five minds for the future as the goal of the instructional model.

3.1.2 Examine the curriculum of primary education 2003 to determine the content of instructional model according to early children's interests and needs. Its essence includes stories about the children, people, places, nature, and things surrounding them.

3.1.3 Study theories and approaches for developing early childhood's five minds for the future, including Piaget's cognitive development theory, Kohlberg's moral development theory, Bandura's social cognitive theory, Skinner's operant conditioning theory, Bloom's affective domain, constructivism, and cooperative learning.

3.2 From literature review mentioned above, researchers determined 6 principles of the instructional model for developing early childhood's five minds for the future, namely learning from observation, paradigm adjustment, practice, interaction, evaluation, and reinforcement.

3.2.1 Learning from observation is a principle that emphasizes on behavioral changes due to observation and imitation. An individual is stimulated, attracted, and perceive by observing the model, reinforcement granted for the model's behavior, he or she is motivated to memorize and imitate.

3.2.2 Paradigm adjustment is learning principle that focuses on critical thinking toward the model's behaviors in order to classify the model's good and bad behaviors, the model's situation, and consequences of the model's behaviors by discussing, exchanging opinions, and explaining reasons. They will associate the model with the situation and other persons to adjust their paradigm and form appropriate practice.

3.2.3 Practice is learning principle emphasizing that the children must use their senses and practice by themselves. To perceive, survey, classify, compare, and experiment is to learn from direct experience.

3.2.4 Interaction is learning principle that emphasizes children's social interaction in working on activities together. The children have the opportunity to interact with the others allowing them to discuss, share their opinions, set the goal and plan together. This association enables them to expand their experience.

3.2.5 Evaluation is learning principle that emphasizes on reflecting the children's cooperation, comparing and associating with paradigm obtained from the model analysis. It leads to the evaluation of desirable behaviors, which should be adhered for living together.

3.2.6 Reinforcement is learning principle that emphasizes on positive reinforcement for the children who express desirable behavior. This is to motivate them to express such behaviors and adhere as their practice.

3.3 From the principles above, researchers determined 5 steps of the instructional model for developing early childhood's five minds for the future (or **MINDS** instructional model) as follows:

3.3.1 **Step 1** - Motivating (**M**): In this step, the teacher encourages children's learning by presenting stimulant or model related to five minds for the future through

different activities, such as role-play, stories telling, simulation, and case study.

3.3.2 **Step 2** - Inquiring (**I**): In this step, the children discuss and share their opinions about the experience the received from motivating step to compare its advantages and disadvantages.

3.3.3 **Step 3** - Norming (**N**): In this step, the children learn together, leading to paradigm adjustment, and concluded as notion and practice.

3.3.4 **Step 4** - Doing together (**D**): In this step, the children use the experience they received from norming step for doing together. They have interaction within their group, which reflect five minds for the future. They are separated in groups of three to five members to plan and work together to complete the assignment.

3.3.5 **Step 5** - Sharing (**S**): In this step, each group of children summarizes and reflects their lessons learned from doing together. This leads to the evaluation on direct experience received from doing together and adjusting paradigm in their practice. The children are allowed to review their understanding by presenting their works and sharing opinions about direct experience received from doing together and summarized as ideas. Those with behaviors indicating five minds for the future will be collectively reinforced.

3.4 Measurement and evaluation

For measurement and evaluation of the instructional model, researchers used the scale of early childhood's five minds for the future (for teacher). It consists of 45 lists of behavior ranging in 5 scales, namely never, few, sometimes, often, and always. It discrimination power is between 22 to.85. Validity was analyzed by using internal correlation (inter-rater reliability) resulting in .98.

The instructional model for developing early childhood's five minds for the future mentioned above was concluded in figure 1.

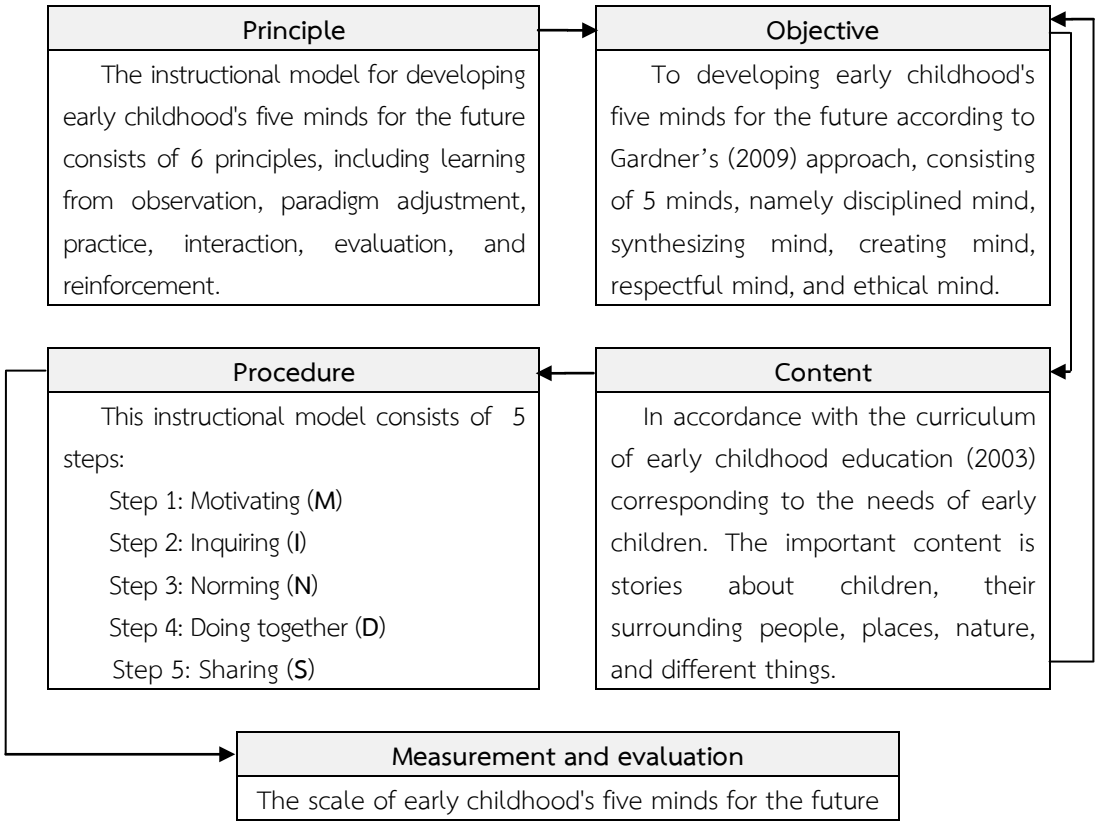

Figure 1 The instructional model for developing early childhood's five minds for the future (or **MINDS** instructional model)

3.5 Create experience learning plan in accordance with instructional model for the development of early childhood's five minds for the future by separating into 12 learning units, namely: 1) Loykratong festival 2) Communication 3) Korat, our home 4) Winter 5) Famous persons 6) Father's day 7) Well-being 8) Happy New year 9) Children's day 10) Transportation 11) Our community and 12) Living things and non-living things. Each learning unit takes 45 minutes per day, 5 days in a week, totally 12 weeks, for experience learning.

3.6 Submit instructional model for developing early childhood's five minds for the future to 1 educational psychology expert, 2 curriculum and instruction experts, and 2 early childhood education experts to verify and check for validity of the content, theories, and approaches used in the instructional model. It is 5-rating scale. The mean score of experts' opinions towards the instructional model for

the development of early childhood's five minds for the future and experience learning plan is at 4.60-5.00, and standard deviation is at .00-.55. Thus, it is considered that this instructional model and experience learning plan is the most appropriate.

3.7 Apply instructional model for developing early childhood's five minds for the future with the pilot study 1 among early children with similar characteristics with sample group. They are willing to participate in the study for 6 weeks covering six learning units. This is to check for appropriateness of the content, order of learning management, and the period required for learning management. Recommendations were given from two observing teachers. It can be concluded that the instructional model has appropriate order. It takes rather a long time for each step of learning.

Experience supplementing activity and creative art activity should be integrated to facilitate learning continuity. The children attended free-play activity to test the group's works. The children were interested. Their attention was noticed when presenting the model by stories telling with illustration, playing puppet, playing an imaginary role in the simulation. The children were very interested. Some story-telling activities were too long. They must be briefed to be more concise. Researchers used the results from the pilot study 1 to improve as appropriate.

3.8 Apply the improved instructional model for developing early childhood's five minds for the future and experience learning plan for the pilot study 2 among early childhood similar to sample group. They are willing to participate in the study for six weeks covering six learning units. This is to check for appropriateness of the content, order of learning management, and the period required for learning management. Recommendations were given from two observing teachers. It can be concluded that the instructional model has appropriate order. They noted that it should not be separated into two to three steps for each day since it will disrupt the children's learning process.

All 5 steps must be taught within one day. The overall content of the stories was appropriate for the time and the children's attention. The content of stories shown in the video was too difficult for the children to catch the point. The teachers were not able to add the content they want to emphasize according to the objective for the children to learn. Therefore, they recommended presenting the model through stories with illustration, puppet, role play, and simulation. This will be most effective for early children.

If it is possible to integrate all curricular activities into experience learning according to instructional model throughout the day, the result will be more apparent. Therefore, researchers used the results from the pilot study 2 to complete it.

3.9 Create the instructional model for developing early childhood's five minds for the future manual. This will be further used in the experiment.

4. Data collection: Researchers examined the results of the development of early childhood's five minds for the future in accordance with designed instructional model by using one group pretest-posttest design. The processes are as follows:

4.1 Arrange meeting for preparation. Researchers explained objective and taught all 7 research assistants to prepare them with understanding the instructional model for developing early childhood's five minds for the future and enable them to use experience learning plan with their children.

4.2 Research assistants evaluate their early childhood's five minds for the future before arranging experience learning management.

4.3 Research assistants arrange experience learning management in the second semester of the academic year 2014, covering 12 learning units. Each learning unit takes 5 days, 45 minutes for each day, totally 12 weeks.

4.4 Research assistants evaluate their early childhood's five minds for the future after arranging experience learning.

4.5 Analyze and interpret the data obtained from the scale of early childhood's five minds for the future.

5. Data analysis: Initially, researchers used one-sample Kolmogorov-Smirnov test to check whether the sample group has normal distribution in accordance with the primary requirement of t-test or not (Weiss, 1995). When normal distribution was confirmed, researchers used a t-test for dependent sample to compare mean score before and after arranging experience learning in accordance with the instructional model among sample groups of each school.

CONCLUSION

In result of the development of early childhood's five minds for the future, it was found that after the experiment the early childhood of every school had increased mean score of five minds for the future at the statistical significance of .01 as shown in **Table 1-7**.

Table 1 Compare mean score before and after the experiment of early childhood's five minds for the future at Banlakroi School (n = 30)

Five minds for the future	Evaluation	M	SD	D	SD_D	t	p-value
1. Disciplined mind	after	4.13	.49	.62	.16	21.69	.000
	before	3.51	.49				
2. Synthesizing mind	after	4.12	.38	.67	.21	17.37	.000
	before	3.46	.44				
3. Synthesizing mind	after	4.15	.33	.52	.16	18.17	.000
	before	3.63	.30				
4. Respectful mind	after	4.51	.44	.55	.19	16.01	.000
	before	3.96	.38				
5. Ethical mind	after	4.28	.42	.48	.16	16.88	.000
	before	3.80	.40				
Total	after	4.25	.29	.56	.08	36.63	.000
	before	3.69	.27				

Table 2 Compare mean score before and after the experiment of early childhood's five minds for the future at Bannontaprom School (n = 12)

Five minds for the future	Evaluation	M	SD	D	SD_D	t	p-value
1. Disciplined mind	after	3.89	.30	.44	.14	10.97	.000
	before	3.45	.23				
2. Synthesizing mind	after	4.02	.23	.54	.15	12.32	.000
	before	3.49	.26				
3. Synthesizing mind	after	3.60	.19	.32	.06	17.02	.000
	before	3.29	.18				
4. Respectful mind	after	4.38	.27	.35	.11	11.15	.000
	before	4.03	.22				
5. Ethical mind	after	4.09	.12	.31	.08	13.47	.000
	before	3.78	.15				
Total	after	4.01	.17	.38	.06	20.80	.000
	before	3.63	.16				

Table 3 Compare mean score before and after the experiment of early childhood's five minds for the future at Bannongsano School (n = 6)

Five minds for the future	Evaluation	M	SD	D	SD_D	t	p-value
1. Disciplined mind	after	4.57	.46	.44	.14	7.75	.001
	before	4.13	.44				
2. Synthesizing mind	after	4.57	.22	.38	.12	7.99	.000
	before	4.19	.17				
3. Synthesizing mind	after	4.30	.38	.37	.06	15.94	.000
	before	3.93	.39				
4. Respectful mind	after	4.77	.27	.53	.15	8.68	.000
	before	4.23	.20				
5. Ethical mind	after	4.75	.19	.50	.09	13.70	.000
	before	4.25	.14				
Total	after	4.60	.26	.45	.07	15.54	.000
	before	4.15	.20				

Table 4 Compare mean score before and after the experiment of early childhood's five minds for the future at Bannayai School (n = 19)

Five minds for the future	Evaluation	M	SD	D	SD_D	t	p-value
1. Disciplined mind	after	4.43	.29	.38	.12	13.96	.000
	before	4.05	.35				
2. Synthesizing mind	after	3.97	.36	.47	.16	12.41	.000
	before	3.50	.38				
3. Synthesizing mind	after	3.64	.25	.29	.11	12.03	.000
	before	3.35	.19				
4. Respectful mind	after	4.74	.21	.35	.12	13.11	.000
	before	4.39	.24				
5. Ethical mind	after	4.83	.15	.38	.10	16.92	.000
	before	4.45	.18				
Total	after	4.36	.20	.37	.06	25.26	.000
	before	3.99	.22				

Table 5 Compare mean score before and after the experiment of early childhood's five minds for the future at Mabkradwittaya School (n = 27)

Five minds for the future	Evaluation	M	SD	D	SD_D	t	p-value
1. Disciplined mind	after	3.33	.95	.30	.10	15.79	.000
	before	3.03	.95				
2. Synthesizing mind	after	3.12	.78	.36	.12	15.20	.000
	before	2.77	.76				
3. Synthesizing mind	after	2.59	.83	.28	.10	14.01	.000
	before	2.31	.84				
4. Respectful mind	after	3.35	.60	.26	.12	11.07	.000
	before	3.09	.63				
5. Ethical mind	after	3.51	.58	.26	.11	12.05	.000
	before	3.25	.60				
Total	after	3.19	.64	.29	.06	24.47	.000
	before	2.91	.64				

Table 6 Compare mean score before and after the experiment of early childhood's five minds for the future at Chumchonkhongwittaya School (n = 25)

Five minds for the future	Evaluation	M	SD	D	SD_D	t	p-value
1. Disciplined mind	after	3.89	.44	.27	.17	7.84	.000
	before	3.62	.46				
2. Synthesizing mind	after	3.95	.32	.36	.16	11.62	.000
	before	3.59	.40				
3. Synthesizing mind	after	3.87	.37	.29	.12	12.28	.000
	before	3.58	.35				
4. Respectful mind	after	3.88	.55	.18	.24	3.74	.001
	before	3.71	.60				
5. Ethical mind	after	3.99	.49	.32	.11	14.80	.000
	before	3.67	.50				
Total	after	3.92	.37	.28	.07	19.35	.000
	before	3.64	.38				

Table 7 Compare mean score before and after the experiment of early childhood's five minds for the future at Bannongsang School (n = 10)

Five minds for the future	Evaluation	M	SD	D	SD_D	t	p-value
1. Disciplined mind	after	3.43	.40	.43	.12	11.25	.000
	before	3.00	.43				
2. Synthesizing mind	after	3.41	.43	.44	.11	13.31	.000
	before	2.97	.37				
3. Synthesizing mind	after	3.08	.46	.29	.08	11.76	.000
	before	2.79	.45				
4. Respectful mind	after	3.61	.27	.74	.50	4.73	.001
	before	2.87	.56				
5. Ethical mind	after	3.53	.17	.33	.09	12.68	.000
	before	3.20	.15				
Total	after	3.42	.24	.45	.10	14.50	.000
	before	2.97	.29				

DISCUSSION

The results suggest that experience learning management in accordance with this instructional model is able to improve early childhood's five minds for the future. This is due to:

1. In the design of this instructional model, researchers studied Gardner's (2009) five minds for the future approach as well as the research of Choksathid and Thaithani (2015), who examined factors of early childhood's five minds for the future, to determine the objectives of instructional model. Researchers studied the curriculum of primary education 2003 to determine the content of the instructional model.

Researchers also studied relevant theories and approaches, including Piaget's cognitive development theory, Kohlberg's moral development theory, Bandura's social cognitive theory, Skinner's operant conditioning theory, Bloom's affective domain, constructivism, and cooperative learning to determine the principle of instructional model, consist of learning from observation, paradigm adjustment, practice, interaction, evaluation, and reinforcement.

Corresponding to Joyce and Weil (2000), an association of things, which is the origin of instructional model, including objectives, supportive theories, and fundamental principles, are very important. Therefore, the complete and relevant compositions of the instructional model for developing early childhood's five minds for the future will make this instructional model effective. It will be available for experience learning management to develop early childhood's five minds for the future.

2. The steps of experience learning management in accordance with the instructional model for developing early childhood's five minds for the future improve the children's observation skill and associative thinking process. They consist of 5 steps as follows:

Step 1 - Motivating (**M**): In this step, the teacher encourages early childhood's learning by presenting stimulant or model related to five minds for the future through different activities, such as role-play, stories telling, simulation, and case study. The children are stimulated, attracted, and learn by observing the model, reinforcement the model received from its behavior. This motivates them to memorize and imitate those behaviors. Corresponding to Bandura (1977, 1986), he explained that observatory learning consists of attention, retention, reproduction, and motivation. Learning from observation is mostly found in early childhood.

Step 2 - Inquiring (**I**): In this step, the children discuss and share their opinions about the experience the received from motivating step to compare its advantages and disadvantages.

Step 3 - Norming (**N**): In this step, the children learn together, leading to paradigm adjustment, and concluded as notion and practice. In steps 2 and 3, the children will think, analyze, and criticize the model's behavior to classify the model's good and bad behaviors, the model's situation, and consequences the model received from its behaviors. They will discuss and share their opinions, explain the reasons, and associate the model with the situation and other persons. This is to adjust they paradigm and form appropriate practice.

Corresponding to Piaget (1980), cognition is a fundamental function that allows living things to adjust themselves to their environment. The cognitive structure is the pattern of systematic thinking and action. Assimilation process and accommodation cause equilibration in cognitive structure, which is the association between the existing knowledge and new knowledge that result in the changes of thought and understanding.

In addition, Kohlberg (cited in Siriwannabut, 2013) explained that individual's moral development proceeds step by step in accordance with development order. Encouraging the children to participate in discussing and sharing opinions, see the others' perspectives, improve moral rationalization, and take responsibility of their own action will make them realize and comply with social rules.

Step 4 - Doing together (**D**): In this step, the children use the experience they received from norming step for doing together. They have interaction within their group, which reflect five minds for the future (determined minds). They are separated in groups of 3-5 members to plan and work together to complete the assignment. The children will use their senses and perform on their own. To sense, survey, classify, compare, and experiment is to learn from direct experience. Corresponding to Piaget (1980), learning happens when the children have the opportunity to interact with the environment, sense, survey, and experiment on they own.

This allows the children to adapt themselves (Adaptation) by absorbing and adjusting cognitive structure based on their situation, which balances their cognitive structure. Constructivism explains that the children learn well through action. They will create knowledge by themselves, which is meaningful learning (Thaithani, 2012). Furthermore, the children will have social interaction through doing activities together. Having the opportunity to interact with the others allows them to discuss, share their opinions, set their goal, and plan together. This enables them to associate things and expand their experience.

Corresponding to cooperative learning, it emphasizes on mutual learning, living together, giving precedence to one another, taking shared responsibility, compromising, and respecting rights of one another (Johnson & Johnson, 1998; Slavin, 1994). Constructivism

explains that the children learn well through action and social interaction. The children create knowledge on their own. It is meaningful learning based on Piaget's cognitive development theory, which believes that production of knowledge within the children requires interaction between cognitive process and personal experience (Pinyoanuntapong, 2007).

Vygotsky's (1962) sociocultural theory explains that each child is different depending on their experience and thought. All children have their current development level and potential development level (Zone of proximal development). Allowing the children to interact with friends or other persons will help them to reach their potential development level (Scaffolding). Therefore, learning through actual action by allowing the learners to interact with the environment and the social in actual context, and sharing knowledge and experience among friends and the others provides the children with broad and diverse experiences.

Step 5 - Sharing (**S**): In this step, each group of early childhood summarizes and reflects their lessons learned from doing together. This leads to the evaluation on direct experience received from doing together and adjusting paradigm in their practice. The children are allowed to review their understanding by presenting their works and sharing opinions about direct experience received from doing together and summarized as ideas. Those with behaviors indicating five minds for the future will be collectively reinforced. The children reflect their ideas from doing together, compare, and associate with paradigm received from the model analysis as well as evaluation on desirable behaviors that should be adhered for living together.

Corresponding to Bloom (cited in Khammani, 2003), he explained that if an individual has a chance to perceive and respond to the stimulant and feel satisfied, see the value of the action, and use it in his or her daily life, it will develop a habit. Moreover, the children will be positively reinforced for their desirable behaviors in order to encourage such behaviors and adhere with them as a course of practice. Corresponding to Bandura (1977, 1986), he explained that motivation is important.

It makes the learners express the same behaviors observed from the model since they expect for benefits from imitation. Skinner (1990) stated that positive reinforcement after expressing desirable behaviors will encourage the children to adjust their behaviors appropriately. Therefore, receiving reinforcement or rewards from imitating the model's behaviors enable them to avoid problems or control the situation. This motivates the learners to imitate beneficial behaviors rather than harmful behaviors.

These results correspond with the study of Nualpang (2011), who developed an instructional model for developing disciplined

mind, synthesizing mind, and creating mind for undergraduates at Faculty of Education, Burapha University. There were 6 steps of instructional model, namely planning, assessing, crystallizing, synthesizing, exchanging, and reflecting. This improves the students' disciplined mind, synthesizing mind, and creating mind.

Palintorn (2011) developed PICC instructional model to improve early childhood's knowledge creating skill. This instructional model relied on the principle that allowed the learners to plan, inquiry, classification, and conclusion. This enabled the children to create knowledge and learn by themselves, which was one attribute of disciplined mind. Ketunuti (2014) Developed B-R-A-I-N instructional model to improve early childhood's cognitive ability.

The instructional model consisted of 5 steps, including boosting, remarking and relating, acquiring, inferring, and notifying. This enabled the children to synthesize by themselves, leading to the presentation of information and improved discretion, which was one attribute of synthesizing mind. Suwannasri (2013) developed 4M instructional model to improve logical thinking for early childhood.

The steps of this instructional model consisted of motivation, manipulation, multiplication of learning activities, and multimedia. This improved the children's logical thinking skill, which was one attribute of synthesizing mind Duenchay (2011) examined the impact of the instructional model on the synthesizing ability of secondary school students. The steps of this instructional model consisted of attraction, inducing curiosity and creating paradigm by explaining and summarizing. The application and association of knowledge improved the student's synthesizing ability. Yoosook (2012) developed rationalization and creativity abilities in the mathematics of high school students by using mathematics extra-curricular activity and experience learning cycle. The activity encouraged the learners to explain, brainstorm, search and investigate in the activity.

After the use of this activity, the students improved their mathematical ability and 60% of them passed the criteria. Their obvious characteristics included the ability to imagine and apply things, solving problems with profound thought in innovative ways based on their existing knowledge and experience. Munsettavith (2014) improved desirable characteristics of peaceful cohabitation appropriate for early childhood in 3 border provinces in southern region by using SANTISUK experience learning management. It consisted of 8 steps, including share ideas together, assure agreement together, new experiences network organize together, take action together, identify problems for solving together, share cultural understanding together, unite together in diversity, and knowledge management broadcast together.

These helped improving desirable characteristics for peaceful cohabitation. This corresponds with respectful mind, for example, working with the others happily, sharing with the others, sympathizing the others, helping the others willingly, being satisfied with one's own belongings, spending prudently, not bothering one's parents to buy useless things, being responsible for assignment, being able to wait in queue, no violence, accepting one's own mistake, apologizing the others sincerely, forgiving the others, accepting one's own uniqueness, accepting different ideas, and accepting religious and cultural course of practice.

Boonanantabut (2007) developed MCCP ethical learning model for early childhood. The instructional model included 5 steps, namely experience, corporation, analysis, conclusion, and implementation. This improved many areas of the children's characteristics, such as ethical conduct, mercy, and self-discipline. Maikeaw (2011) developed IDRA instructional model to improve early childhood's ethics. The steps of the instructional model included imitation, discussion, reflection, and application. This improved the children's ethics well.

Boonyanusit (2011) developed an instructional model to improve respectful mind and ethical mind of Bachelor's degree students, College of Industrial Technology, King Mongkut's University of Technology North Bangkok. The instructional model consisted of 5 steps, namely challenging problem, reflective thinking, value clarification, volunteer mind, and inspired dialogue. This improved the students' respectful mind and ethical mind.

SUGGESTION

1.Suggestion for the application of results:

1.1 All related persons should clearly examine all compositions of the instructional model in order to see the overall image of the instructional model. It might be adjusted to suit different contexts of the children as appropriate. Related persons should understand about the approach of five minds for the future, realize about needed time, and preparation. This will facilitate experience learning management according to plan, suitable for the time period, and offer maximum effectiveness for the early childhood's learning potential.

1.2 The participants should consider the appropriate role. The teachers should have the knowledge, ability, and appropriate experience learning management. They should plan systematically and give the children time and support. They should praise and encourage the children to assure them for expressing opinions and discuss. The teachers must switch their role to become facilitators, who encourage them to achieve learning goal. This is an important mechanism that will improve the early childhood's five minds for the future.

The early childhood must also change their role. They must be confident, dare to

discuss, express opinions, able to learn with the others, able to be good leaders and followers. These roles and characteristics will support learning effectively.

1.3 The teacher should consider the time period for experience learning management, particularly on the early period of the operation since this instructional model emphasizes on the early childhood's full participation. Furthermore, it expects the early childhood to appreciate and apply this learning process with other situations by repeated practice, making their learning permanent.

Therefore, it takes a long time for experience learning management. The teachers should not expect too much achievement but give precedence to the learning process. Make the children realize appropriate learning process, think, and participate in sharing, expressing opinions, and learning effectively. This will be an important instrument for the development of the children's five minds for the future. It will be their self-learning instrument that can be used throughout their lives.

2. Suggestion for further study:

2.1 Factors affecting developing early childhood's five minds for the future should be examined, such as instructional model, background, attitude, or curiosity to attain the information for effectively planning for developing early childhood's five minds for the future.

2.2 This instructional model should be applied with students at other education levels to develop their five minds for the future by adjusting them according to such contexts under research process of all relevant persons. This is to investigate whether this instructional model is applicable or not. If not, it should be adjusted as appropriate.

2.3 Repeated study should be conducted among new groups of early childhood and time period of the study should be prolonged in order to confirm results attained from the implementation of the instructional model. This will be beneficial for teachers and relevant persons in expanding the instructional model for broad use in the development of early childhood's five minds for the future.

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