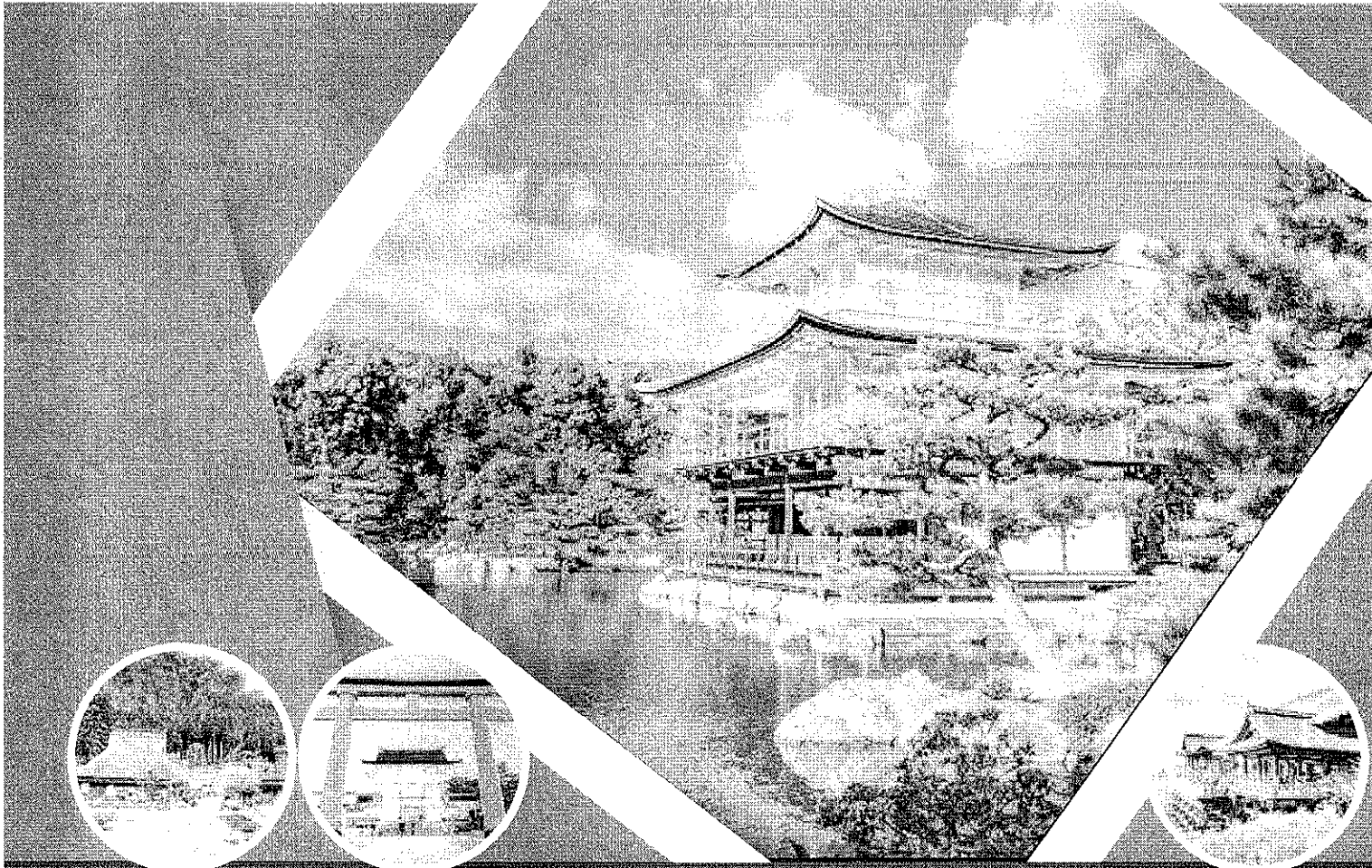


Proceeding number (0.4)

# Conference Program

**Kyoto, Japan**

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## **e-CASE & e-Tech Fall-2018**

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## **The effective of research-based teacher education program in classroom action research skills for pre-service teacher**

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### **ABSTRACT**

Research-based teacher education (RBTE) program was integrating research into instructional practice which was one goal of 21<sup>st</sup> century education in Thailand. The purpose of this study was to implement and evaluate improvement in classroom action research learning achievement and classroom action research skills. The subjects comprised 224 pre-service teachers (86.6% Female, 13.4% Male) who were in the last academic year in 10 majors (63% Social science study, 36% Thai language, 28% Elementary school, 24% Mathematics, 25% Kindergarten, 22% Sciences, 10% English, 8% Art, 5% Computer sciences and 3% Chinese language). In the last academic year of pre-service teacher course, they apply the knowledge and instruction skills that they learned into the real classroom at schools in one year. This study was a quasi-experimental (one group pre-test and post-test design). The research instruments were 1) a four-week RBTE program 2) RBTE achievement test of four multiple choices 3) classroom action research project evaluation form (classroom action research skills: define the problems, reviewing the literature, designing and conducting research). The results were analyzed by using statistic mean, standard deviation, t-test for dependent study. The research results revealed that:

(1) The pre-service teachers who studied with RBTE program had post-test score (mean = 7.76, S.D. = 2.07) of RBTE achievement higher than pre-test score (mean = 5.16, S.D. = 1.93) at the statistical level of 0.05 ( $t = 15.117$ , sig = .000).

(2) Classroom action research skills comprised (2.1) define the problems, (2.2) reviewing the literature, (2.3) designing and conducting research which were statistically higher than 75% criterion at the .05 level of significance.

**Keyword:** Research-based teacher education, Classroom action research  
and Pre-service teacher

## 1. Background

Research works for professional teacher aimed to develop the innovative teaching and learning to enhance the potential of the learners in order to be well versed in many fields. Researching in education had begun to be widespread after the reform of education in 1999. It had focused on the students as the center of learning. Later in 2018, the higher education had set standards for graduates to meet the 20 years of the national strategy (2017 - 2026), especially in the field of research and innovation. (Royal Thai Government Gazette, 2018: 19-31) This made the classroom action research as a part of the research and development method, which was essential for learning management for professional teacher interns because researching in the classroom was a process of inquiry, surveys and problems in the classroom, or needed to develop more students until the development of innovative teaching. Conducting appropriate teaching and learning was with contextual learners and creation of media that maximizes the effectiveness of teaching and learning, including the assessment, innovation and learning management. Therefore, the classroom research was a collaborative effort between the researcher and the participants.

These reasons made professional teacher interns practice researching in the classroom when they practiced the real teaching class as the course for the final year before graduating in the second semester during one semester. It linked between the research knowledge and theory into practice making the professional teacher interns learn to do researches by self-learning and studying continuously, sustainably and responsively to the needs of the global community.

## 2. Method

### 2.1 Design

This research design was quasi-experimental (pre-test and post-test) one group design. 224 pre-service teacher participants were 86.6% Female, 13.4% Male who were between the ages of 20 – 62. There were 10 pre-service teachers' major that comprised 63% Social science study, 36% Thai language, 28% Elementary school, 24% Mathematics, 25% Kindergarten, 22% Sciences, 10% English, 8% Art, 5% Computer sciences and 3% Chinese language who studied in year 5 and practiced teaching in real classroom at the school.

### 2.2 Research-based teacher education (RBTE) Model

Research-based teacher education (RBTE) model was based on the use of Action-based research as a systematic inquiry process, which solved problems effectively. (Hine, G .2013: 151). The classroom research had been applied to the education of teacher professional students to develop professional teacher interns and learning management innovations in the classroom. When pre-service instructors went to practice teaching in the classes and conduct researches in conjunction with the classroom research process. (Kitcher, J., 2008: 28, Knight, J., 2012: 67-83, Hine, G., 2013: 153-155, Taylor, M. et.al., 2014: 291-293) They were composed of;

Table 1: Action Research for Analysis

<b>RBTE model</b>	<b>Kitcher, J. 2008</b>	<b>Knight, J., 2012</b>	<b>Hine, G. 2013</b>	<b>Taylor, M. et.al., 2014</b>
Plan	- Identifying the problem	Loop 1: - Identify problems	- Design the study	Plan
Do	- Developing and implementing plan	Loop 2-3: - Develop Teaching - Formative & Summative Assessment based on learning objectives	- Collecting data	Do
Check	- Assessment	Loop 4 – 7 - Improve measurement (Construct validity and reliability) - Determine and select the Statistics	- Analyzing data - Communication outcome	Study
Act	- Considering implication	Loop 8 - Implementation - Evaluate the program	- Taking action	Act

1) Plan: This step was the first step in exploring the needs or issues that arise in the classroom or what the teacher wants in order to develop the learner. It was composed of;

1.1) Identify interesting issues.

1.2) Access to research-related information and review literature in order to provide the empirical evidence for the development of innovative learning management.

1.3) Make objectives to find answers from research questions in the classroom.

2) Do: This step was the process of determining the process and developing the tools for teaching and learning, including the tools used to assess the purpose of the research.

2.1) Determine the research process

2.2) Develop RBTE program

2.3) Assign the workload for writing the research proposal.

2.4) Creates a literary assessment form and identify problems to create the classroom research, including the ability to design and conduct research.

3) Check: This step was the quality checking of the research tools, the study of reliability, the content validity and the difficulty of the test.

4) Act: This step was bringing tools to the trial in order to study the results and effectiveness of the equipment in the classroom research skills of pre-service teachers

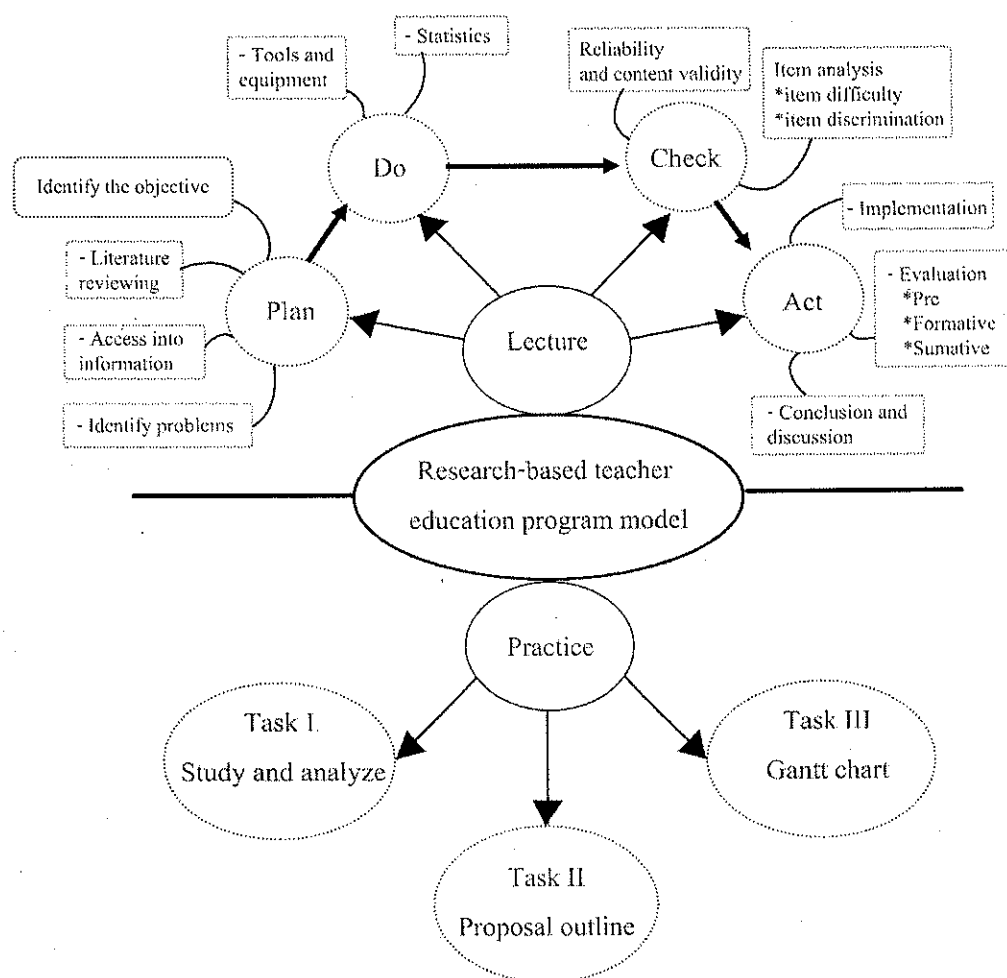


Figure 1: Research-based teacher education model

### 2.3 Research-based teacher education program

The RBTE Model has been developed to improve the classroom research skills of the professional teacher interns with the ability to read and analyze relevant literature and research. They also could identify problems in order to create classroom research, including the design and implementation sequence of the research. The RBTE program in Table 2 was composed of:

Part 1: The lecture part was describing the basic theory of classroom research, the design of classroom research methodology and the assessment of classroom research.

Part 2: The practice part was the self-study students through the assigned works that were composed of:

Task 1: Study and analyze task was Interpreting and analyzing research papers corresponding to their major fields (Table 2).

Task 2: Research proposal outline was paper for students to submit a research proposal in the classroom based on the problems of the classroom that were taught in the first semester. (Figure 2)

Task 3: Gantt chart was paper for students to plan and implement the timeframe for carrying out their research. (Figure 3)

Table 2: Research-based teacher education program

Session	Time	Topic	Evaluation
	30 minutes	Pre-assessment	Pre-test
1	3 hours	Lecture <u>Plan</u> - Identify problems in classroom at school - Literature reviewing - Access into information <u>Do</u> - Research planning - Tools and equipment - Statistics (Mean, S.D., and T-test) <u>Check</u> - Reliability and content validity - Item analysis <u>Act</u> - Implementation - Evaluation	
	2 weeks	Practice (Self-study) Task I: Study and analyze task Task II: Proposal outline writing Task III: Gantt chart	Reviewing the literature ability Define the problem ability

Session	Time	Topic	Evaluation
			Designing and conducting research ability
2	3 hours	Lecture PDCA in Task I Task I and II checking Gantt chart and project management	Formative assessment in Task I, II, III - Reviewing the literature ability - Define the problem ability - Designing and conducting research ability
	30 minutes	Summative assessment	Post-test

Table 2: Task I: Study and analyze task; Sample of research paper and questions for analyzing research paper

Pre-teachers' Majors	Topic	Question in Task I
Kindergarten	The development of PRISA learning model for promoting honesty of young children (Totanayanon, S. Charupheng, M and Wongrattana, M., 2015: 119-132)	1. What is problem research of this research? 2. What is hypothesis of this research? 3. Which key word of this research?
Social sciences	The development of analytical thinking and achievement economics studies for students Mathayomsuksa 5 by 4 MAT model (Mapanoaw, P and Silanoi, L, 2010: 27-32)	4. What is objective of this research? 5. What is variable of this research? 6. What is research method of this research?
Thai language	A study of Thau literature achievement of Mathayomsuksa 3 students based on reader-response theory (Kachachai, J., 2015: 62-75)	7. What is subjective of this research? 8. Which statistical analysis in this research? 9. What is the result of this research?
English language	Development of a learning package to promote English communication ability using reading and writing practice for Prathomsuksa six students	10. What is conclusion of this research? 11. Did you agree with their conclusion and discussion?



Pre-teachers' Majors	Topic	Question in Task I
	(Pongpisanu, S. et. al., 2015: 10-19)	12. How did you get in this task?
Chinese language	The development of instructional packages on beginning Chinese learning for Prathomsuksa IV students in Thailand (Qiu, M and Sirisawad, C., 2014: 72-84)	
Art	The development of skill practices in visual art elements and compositions for secondary school students in Saint Gabriel's school, Bangkok (Pienmanee Wong, T and Po Ngern, W, 2014: 1497 – 1508)	
Sciences	The effect of teaching and learning activities using problem-centered learning model in chemical equilibrium of Mathayom Suksa five students (Deerugsa, S. and Suwannoi, 2010: 134 – 140)	

Figure 2: Task II: Proposal outline

**Research Proposal outline**

**Topic :** .....

**Objective:** .....

**Problems/issues in classroom at school**

.....

**Research questions**

.....

**Hypothesis :** .....

**Variable :** .....

**Participants :** .....

**theoretical framework**

.....

**Method (Research design)**

.....

**Tools and equipment**

.....

**Statistical analysis**

.....

Figure 3: Task III: Gantt chart

No.	Activities	Month 1				Month 2				Month 3				Month 4			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1																	
2																	
3																	
4																	
5																	
6																	
7																	

## 2.4 Tool for evaluation research

### 2.4.1 RBTE test

The 15-item multiple choice (4 choices) content test address in three topics;

- Remember and understanding      5 items
- Applying      5 items
- Analyzing      5 items

Spearman's correlation coefficients were used to determine relative validity of the scores on the RBTE test (correlation coefficients of .716) and difficulty index (P) were used to determine items in RBTE test (P score: between of .15 - .80)

2.4.2 The performance-research assessment address teachers' capacity to define the problems or interesting issues, ability to analyze and interpret data of research sample (reviewing the literature ability) and ability to design and conduct the classroom action research in pre-service's classroom that analyzed by task I, II, III.

## 3. Results

### 3.1. Achievement scores for RBTE programs before and after class

The achievement scores of the RBTE program comparing before and after the study were that the students' average score after class was 51.74, which were higher than before learning at the level of .05. ( $t = 15.11$   $P = 0.000$ )

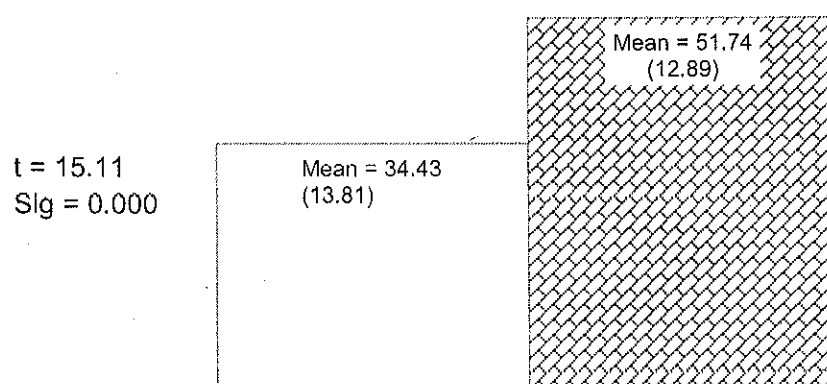
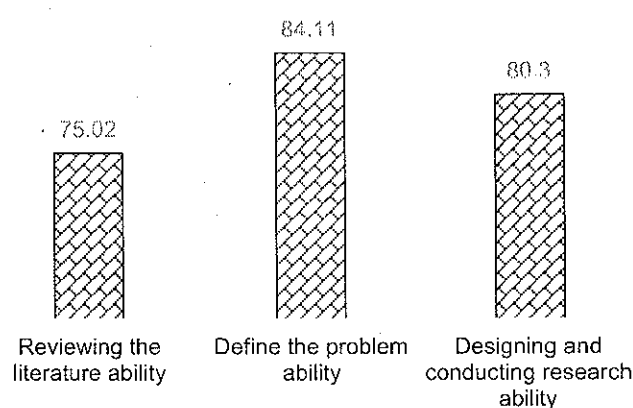


Figure 4: Chart comparing average score of RBTE achievement.

### 3.2 Classroom action research skills

The students's ability to review literature was average score of 75.02 . The students's ability of define problems for create classroom research average score of 84.11 ,and the students's ability of designing and conducting research was average score of 80.30 . The finding of this research found the average score of the three groups has a higher average score than the .05 level.



## 4. Discussion

The results showed that when the teacher professional students learn the RBTE program, they could read, interpret and analyze the literature. They also could be compiled to present the research framework in the classroom by identifying problems to create classroom research, set objectives and put the research project into practice that would monitor and evaluate the performance after the completion of the RBTE program. The use of the empirical evidence was used in research to improve and solve problems in the systematic teaching and learning. In Australia, teaching and learning management for professional students had been applied in the teaching and learning of subjects such as English, Social Studies and Science. The first cycle would learn by searching, and the second one was the result of the analysis of the information obtained from the search to use in practice before improving the teaching during 4 months so

that the professional teachers could use it in practice. The result In Australia was the continuous improvement (Hine, G., 2013: 155), as well as Knight (2012, 79), who led the PDCA process to each of the loop's implementation. The results from the research could be used to improve the problem at any time. There was no need to wait for the research to be completed. This demonstrated the advantages of ongoing action research and could be addressed in a timely manner. However, the limitations in this research were that teachers needed to study basic subjects in education, teaching, research, evaluation and statistics. This action-based research was the integration of science into one another. For a limited time only 1 semester (4 months), students would develop innovative teaching and learning. The duration of this program was 4 weeks so that students have the layout of classroom research. When it came to practice, students needed to have a specialized teacher who gave the advice and reflection on the work they had done to make learning.

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