

***The Effects of Active Learning Process in Product and Developing  
of Mathematics Internship Students of Educational Faculty  
Udon-Thani Rajabhat University***

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**Abstracts**

The purpose of this research were: 1. to development Active Learning Process 2. to study and compare students'achievement between pre-training and post-training, 3. to study classroom skills in research abilities, and 4. to study attitude towards doing classroom research. The research sample group consisted of 26 Mathematics student teachers, Faculty of Education Udon-Thani Rajabhat University. They were drawn by Cluster Random Sampling. The design of the research was one group pretest-posttest design . The instrument used in this research included : 1. Active Learning Process, 2. an achievement Test, and 3. an attitude questionnaire towards doing classroom research and 4. classroom research skill. The data were analyzed for percentage ,mean, standard deviation and testing hypothesis by using t-test for Dependent Samples. The results of this research were as follows : 1. The Active Learning Process consists of Operation with the Quality Cycle, Friendly Supervision, Participation Assessment , Research Base Learning, Coaching and Mentoring, there has evaluation from experts at very good level. 2.The students' pre-training achievement score was 16.27 or 46.49 % and the post-training achievement score was 28.08 or 80.23% and the post-training achievement score was higher than the pre-training achievement score. 3. The students have classroom research skill at a good level and have research-report 26 titles and 4. The students' attitudes towards classroom research was at good level.

Keywords: Active Learning Process, Internship Students

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## Introduction

There have been rapid changes in situations globally, and information through the Internet has been connected to one another, which affects human in society greatly. Therefore, humans need to change and adapt themselves in order to survive in living in this global effectively. According to the National Development Plan in Economics and Social Development No. 11 (2012-2016), it is considered that effective human beings should be able to be a leader in developing in any aspects that leads to high efficiency and effectiveness to the country. "Teacher" is noted to play an important role in developing the key issues since the Education Reform in 1999[1].

Faculty of Education, Udon-thani Rajabhat University has roles and responsibilities of producing and developing teachers to be good, intelligent, having voluntary mind in instructing the children to be the powerful source in developing the country To develop the Thai people to learn and develop themselves continuously, the research process is a must in seeking the answers. It is important to focus on developing students to use the research process as a tool to investigate knowledge and used as part of the lifelong learning process. Another important thing to do was to encourage teachers to integrate research into the learning process. It can be taught by encouraging and developing all students to use research as part of the learning process, self-development, develop students to have the skills to observe, invent, answer and make decisions in their own learning processes [2].

From the investigation of teaching activities and synthesis of research results in higher education in general, It appears that the teaching and learning activities of the students in the field of education was Passive learning: listening, lectures on theoretical concepts in the classroom. This is a way to educate students in the same way that students are not able to gain knowledge in practical situations effectively. Therefore, the researcher has studied the way to have design the activity of teacher professional experience as an active learning process the focus is on learners. The principle is that: the focus is on students to have the knowledge to be able to apply and use concepts, principles and theories. That will lead to practical, effective real situations. Under the supervision process and the friendly Counseling or Supervision at the time based on Deming Quality Cycle (Plan: Do: Check: Act ). Throughout the duration of conducting classroom research by the teachers and the supervisors gain the knowledge and ability in the course of learning activities. In accordance with the teaching reform setting of the National Education Act BE 2542, the hypothesis is that Faculty of Education, Udon-thani Rajabhat University should have active learning process that will be used in students' practice and development. Teachers who have the knowledge and ability will be able to apply the principles, concepts and theories effectively. The researcher has set guidelines for conducting research using active learning in teacher's practice and development by integrating the concept of using the research-based. The quality cycle integrated with friendly supervision, assessment and participatory mentoring in real time. The research questions were: does this process effect students who have the posttest score higher than the pretest one? What is the ability to conduct classroom research and what are the students' attitudes towards classroom research? The results might help teachers to become teachers of the future with knowledge and understanding , can apply the principles, concepts and theories in Effective teaching and learning activities as "Professional teacher".

## Purposes of this research

The purposes of this research were:

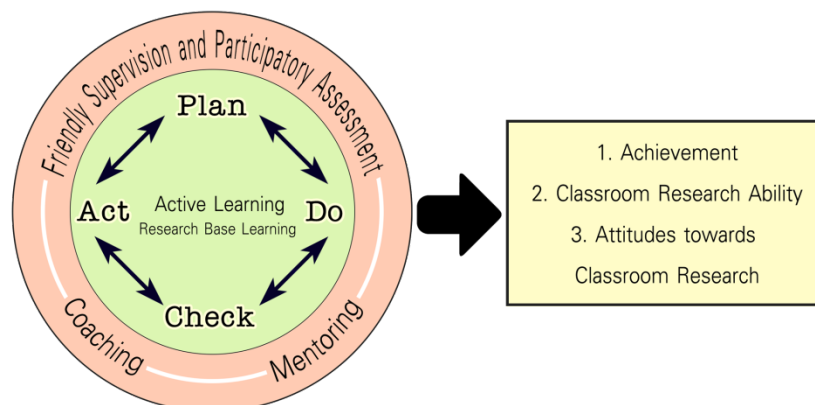
1. to development Active Learning Process in Mathematics Teachers Practice and Development of Faculty of Education at Udon-thani Rajabhat University
2. to study and compare classroom research achievement based on using Active Learning in Mathematics Teachers Practice and Development of Faculty of Education at Udon-thani Rajabhat University between the pretest score and the posttest score,
3. to study students' classroom research ability based on using Active Learning in Mathematics Teachers Practice and Development of Faculty of Education at Udon-thani Rajabhat University, and
4. to study the students' attitude towards classroom research based on using Active Learning in Mathematics Teachers Practice and Development of Faculty of Education at Udon-thani Rajabhat University.

## Hypothesis of this Research

The hypothesis of this research was: The teacher Internship students in Mathematics Teachers Practice and Development of Faculty of Education at Udon-thani Rajabhat University received classroom research meeting with the posttest score higher than the pretest score.

**Active Learning process in teacher practice and development framework of students in Mathematics Teachers Practice and Development of Faculty of Education at Udon-thani Rajabhat University.**

From the literature review, the researcher led research base for the students learning from research report [3] and studying and real performance[4][5][6] under friendly supervision [7] emphasize the process of Quality Cycle (planning, doing, checking, and acting) of students in all steps. Start analysis research problem to writing research report as shown in Figure 1.



**Figure 1** Active learning process

From Figure 1, it can be described that Active Learning is the process for developing classroom research. This process consists of:

1. Operation with the Quality Cycle; Plan, Do, Check and Act

2. Friendly Supervision is the introduction and helping students to conduct classroom research by supervisor teacher using friendly process (telling question-answer and introducing).
3. Participation Assessment; the supervisor teacher and students work together to assess proposal and classroom research to report the development. Research Base Learning is a design for students to study research for master's and doctoral degrees; this process operates under the introduction and cooperation for developing classroom research between the students and a supervisor teacher.
4. Coaching is the process for introduction and helping students about classroom research from a supervisor teacher.
5. Mentoring is the process for introduction and helping students about classroom research from a mentor teacher in school.

## **Research Methodology**

### **1. Nature of Research**

Research and Development

### **2. Population and Sample**

2.1 Population were internship student teachers of Faculty of Education, Udon-thani Rajabhat University in academic year 2013.

2.2 Sample were internship student teachers of Faculty of Education, Udon-thani Rajabhat University in academic year 2013 using Cluster Random Sampling.

### **3. Variables this research**

3.1 Independent Variable was Active Learning Process in Teacher Practice and Development

3.2 Dependent Variables were:

3.2.1 Classroom research Achievement

3.2.2 Classroom research Ability

3.2.3 Attitudes towards Classroom research

## **Research Instrument**

1. Active learning that was the student's responsibility to learn from the research and research process was employed under the friendly supervision process, focussing on the processes of the quality cycle (Planning, Doing, Reflection and Improvement) evaluated by the experts at very good level.

2. An Achievement test with multiple choices of 5 options, 35 Items which the validity was 1.00, difficulties between 0.35-0.64 and Discrimination was higher than 0.31 and the reliability was 0.85.

3. An Evaluation form for assessing classroom research abilities of Mathematics student teachers Faculty of Education, Udon-thani Rajabhat University was a rubric scoring classified by quality of work of 5 levels (most, much moderate, little, and least) which the validity was 1.00 and the reliability in scoring was 0.81.

4. An attitude questionnaire toward classroom research which was a 5-level rating scale in most, much, moderate, little, and least with the validity was 1.00 all Item and the reliability in response was 0.82

## Results of Analysis Data

1. The study results and comparison pretest and posttest classroom research achievement of mathematics internship students by Active Learning Process in Product and Developing Educational Faculty Udon-thani Rajabhat University. The results of analysis data was table 1

**Table 1** mean percent standard deviation and t-test for dependent sample between pre-training and post-training classroom research achievement of mathematics internship students by Active Learning Process in Product and Developing

Testing	mean	percent	S.D.	t-test
pre-training	16.27	46.69	1.25	39.52**
post-training	28.08	80.23	1.57	

\*\* significant level .01

From table 1 the results of analysis data was the students have pre-training classroom research achievement equal 16.27 or 46.69 percent and post-training equal 28.08 or 80.23 percent and posttest higher than pretest at significant level .01

2. The study results attitude toward classroom research of mathematics internship students by Active Learning Process in Product and Developing Educational Faculty Udon-thani Rajabhat University. The results of analysis data was table 2

**Table 2** mean percent standard deviation of attitude toward classroom research of mathematics internship students by Active Learning Process in Product and Developing

Result	mean	S.D.	Attitude level
attitude toward classroom research	4.09	0.18	Good

From table 2 the results of analysis data was the students have attitude toward classroom research of mathematics internship students by active learning process in product and developing equal 4.09 or good level

3. The study results classroom research ability of mathematics internship students by Active Learning Process in Product and Developing Educational Faculty Udon-thani Rajabhat University. The results of analysis data was table 3

**Table 3** the assessment classroom research ability of mathematics internship students by Active Learning Process in Product and Developing

classroom research ability	assessment results		
	mean	S.D.	quality level
<b>Total</b>	3.81	0.12	Good

From table 3 the results of analysis data was the students have classroom research ability of mathematics internship students by active learning process in product and developing equal 3.81 or good level

## **Research results**

1.Active Learning is the process for developing classroom research, there has evaluation from experts at very good level. This process consists of:

1.1 Operation with the Quality Cycle; Plan, Do, Check and Act

1.2 Friendly Supervision is the introduction and helping students to conduct classroom research by supervisor teacher using friendly process (telling question-answer and introducing).

1.3 Participation Assessment; the supervisor teacher and students work together to assess proposal and classroom research to report the development.

1.4 Research Base Learning is a design for students to study research for master's and doctoral degrees; this process operates under the introduction and cooperation for developing classroom research between the students and a supervisor teacher.

1.5 Coaching is the process for introduction and helping students about classroom research from a supervisor teacher.

1.6 Mentoring is the process for introduction and helping students about classroom research from a mentor teacher in school.

2. The students had classroom research achievement in the pre-test score was 16.27 or 46.49 % and the posttest score was 28.08 or 80.23 % and the posttest score was higher than the pretest score.

3. The students who have been using active learning in the practice and development of teachers had attitudes towards classroom research was at a good level and have research-report 26 title.

4. The students who have been using active learning in the practice and development of teachers had classroom research ability was at a good level.

## **Discussion**

1.Active Learning is the process for developing classroom research, there has evaluation from experts at very good level. This is because : 1) analyze the research results, conditions and the problems of conducting research in the classroom of teachers, then determine the basic concepts of the Active Learning Process 2) Bring the components of Active Learning Process to the experts to evaluate the suitability, found that there have suitability at very good level and 3) from teaching experience and researching in the classroom Allow students to do research and continuously conducted their own research for more than 20 Year of the researcher.it has been used to provide friendly consultations during research.

2.The students' classroom research achievement in the pretest (pre-test) was 16.27 or 46.49 % and in the posttest was 28.08 or 80.23 % respectively. The posttest score was higher than the pretest which is consistent with the hypothesis. This might be in that in this process, the training was conducted before the student teachers get into practice at schools. This is a review of previous knowledge on the issues that students have experienced from the study of educational research and related subjects then described in terms of integration that will be applied in real situations. A sample of personal research that is a scholar work of the teachers or thesis presented as a case

study. With a prototype of the research framework developed and the case study explain the details to the students step by step with understanding with the activities of the research process.( Writing a Learning Plan / Simulation / Data Analysis / Presentation, Analysis and Summary). The students were divided into small groups based on the level of the students to teach in the practice of professional teachers in schools will be able to discuss either during implementation of research in network. The students were assigned to conduct research project under friendly supervision of Mathematics advisors. The students' presentation to friends question by the question, then the team of advisors provided suggestions to fill in the missing point or don't understand students. The results of this research are consistent with the findings of Vallakitkasemsakul [8] Swanapaiboon and Others. [9], Greentree [10], Tammachad. [11], Phaungkham [12],and Sitekuntod.[13].

3.The students' attitudes towards classroom research of professional experienced student teacher was at a good level. This is because the researcher has explained the importance and necessity of classroom research in the clearly defined content in National Education Act, B.E.1999 in that classroom research plays an important role and responsibility of the teachers, which can be used to develop the learning and teaching to the students effectively. The results of the research can be used as a result of the academic development of the students themselves. In addition, the classroom research is used as evidence for the results of the teacher experiences and receive a professional teacher certificate. In the training, there is a clear understanding, focusing on the study of individual research samples of teachers and the thesis of graduate students.Including the simulation scenario by working together in small groups according to their interests or classification by grade level of students to practice professional experience and to present the work of the group with friends Asked to show the knowledge that occurred under the care of the team of consultants, that each student should adapt to the actual situation in each school. The research project that each student will have to adapt to the actual situation in each school where they practice the professional teacher. The results of this research are consistent with the findings of Vallakitkasemsakul [8] Swanapaiboon and Others. [9], Greentree [10], Tammachad.[11],Phaungkham [12],and Sitekuntod.[13].

4.The students have the ability in conducting classroom research at a good level, though students have trained before practicing teachers' professional experience, resulting in understanding that they can practice, set the scenario for students to practice together, (Write research proposal / write a learning plan / design learning media / construct achievement test ) and to be friendly supervised by Mathematic Advisor and internship the problem has been resolved. Then to continue to perform the next step effectively until the completion of the professional experience. The results of this research are consistent with the findings of Vallakitkasemsakul [8] Swanapaiboon and Others. [9], Greentree [10], Tammachad. [11], Phaungkham [12],and Sitekuntod.[13].

## **Suggestions**

### **1. Suggestions on the implementation of the research results.**

1.1 The researcher must have enough free time to provide good supervision to the schools. For students who are experiencing problems during the classroom research,

they have the opportunity to receive counseling and Direct instruction successful in classroom research.

1.2. The students prepare the research proposal and understand what they are going to implement clearly and shared in the nature of the network. In order to be able to apply a predefined layout, you can edit it. Improve the use of schools in the real situation effectively.

## **2. Suggestions for the further research**

Suggestions for further research are as follows:

2.1 Should develop the model / method of distribution of consultancy / supervision in the nature of the research network. By using local teachers or personnel, they are friendly coordinated with the researcher who is the supervisor of the university, the teacher or staff will be able to develop professional skills in the field of classroom research.

2.2 Should study and develop learning resources in classroom research or thesis or personal research the students find it easier. Because there are limitations to the local search network system, the educational institution where students practice their professional experience is located.

2.3 Should study the ability of students to think carefully after successful research such as Problem solving, Analytical thinking, Synthetic thinking or critical thinking.

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