EFFECTIVENESS AND OPINION OF USING THEINSTRUCTIONAL PROCESS BASED ON INQUIRY APPROACH AND SITUATED LEARNING APPROACH TO PROMOTE SKILLS IN CONDUCTING RESEARCH OF PRE-SERVICE TEACHERS

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ABSTRACT

The purposes of this research were 1) to study the effectiveness of instructional process based on inquiry approach and situated learning approach to promote skills in conducting research of pre-service teachers; 2) to study the opinions of the participants toward the use of an instructional process based on inquiry approach and situated learning approach to promote skills in conducting research of pre-service teachers. The research methodology utilized in this study is a quasi-experimental design. The study consists of two distinct phases: the development of an instructional model and the experimental implementation of the model. The sample population consisted of 55 per-service teachers from two classrooms, divided into two groups. The experimental group comprised 30 per-service teachers, while the control group consisted of 25 per-service teachers. The sample groups were chosen by the use of simple random sampling. The research was conducted for 15 weeks. The research instruments included research assessment, interview, and learning log. Data were analyzed by the percentage of average scores, *S.D*, *t*-test, and content analysis. The results of this research are as follows: 1) after using the developed instructional model, the experimental group could promote skills in conducting research higher than the control group at a significant level of .05. 2) the opinions of the participants toward the use of instructional process on inquiry approach and situated learning approach to promote skills in conducting research of student teachers' shows a satisfying level. The result also shows that the participants were satisfied that the model has enabled them to conduct their own research and exposed them to a real-world situation.

Keywords: Inquiry Approach, Situated Learning Approach, Skills in Conducting Research, Student Teachers

INTRODUCTION

Research is the process of seeking knowledge. The truth of phenomena using scientific methods is a science recognized as a systematic, rational, and reliable cognitive arrangement. Scholars in various fields are trying to implement scientific methods in their studies. Educational research is therefore of paramount importance to the teaching profession. As an instructor, research can be done to solve problems and improve their teaching. The findings from research on teachers reflect that they lack research abilities. The research abilities they lack are inaccurate cognition research, lack of knowledge and skills in searching for documents and creating tools,

lack of knowledge in population or sample selection, sampling, statistics selection, and data analysis. In addition, they also lack the ability in summary writing, writing accurate research reports, or even finding out about research issues. Moreover, the whole process does not distribute significantly to the improvement of teaching practice (Jun Sirisoda, 2008; Phichit Shinmatra, 2008; Skawrat Chumchaya, 2013; Scheerens, Glas&Thomas,2003)

The issues arise from the learning process during undergraduate teacher education. In simpler terms, students lack the necessary research skills, such as formulating research objectives and understanding research methodology. As a mentor in student research, common problems encountered in writing research papers include a lack of clarity in establishing the background and context of the study. The importance of the problem and the title inconsistencies between research purposes and research assumptions or writing patterns are incorrect. There are also inaccuracies of population and sample determination, data collection and analysis, translation and reading of findings, writing of the expected benefits, unclear in shaping the concept of research, insufficiency in reviewing documents and research, inefficiency of research tools, impropriety in presenting information or findings, unclarity in discussing the results and writing of research recommendations, as well as inaccuracies based on the principles of writing reference documents, bibliography and report writing style (Kiatwat Watchayakan, 2010; Pornthip Geyuranon, 2012) It is essential to find effective ways to promote research capabilities for pre-service teachers.

The skills of doing research can be learned. Learners must have the knowledge and understanding of scientific methods since the research process requires scientific methods to seek new knowledge. As a result, the concept of exam succession can be used to improve the skills of the learner's research because it is a concept that relies on scientific methods, namely, to question the problems faced, assumptions, data collection, and analysis. According to Hogan and Berkowitz (2000), teachers can choose to equip students through the contextual learning process of the instructor. When schools and learning resources available are ~~as~~ appropriate, then teachers should encourage learners to explore phenomena and build the right scientific understanding by turning to the instruction, and topics that focus on the learners.

In addition, teaching students to experience the use of problems in real contexts by searching for and using knowledge in specific situations, as well as reflecting learning, encourage students to show their knowledge, as well as seeing concrete problems and solving them. This is a concept that believes that learners can build knowledge by practicing activities in the most real or virtual situations and contexts, reflecting learning in activities, creating knowledge, making learning meaningful for learners, and being able to remember what they have learned for a long time (Brownet al., 1989; Lave, 1991; McLellan, 1993). In addition, situational learning can guide the development of teaching and learning, because there are variety of processes that can focus on activities that improve decision-making capabilities, from practice planning to evaluation. This can also train students to be responsible by practicing thinking skills, coping skills, and learning from problems so that they can solve problems effectively (Banjong et al.: 2021).

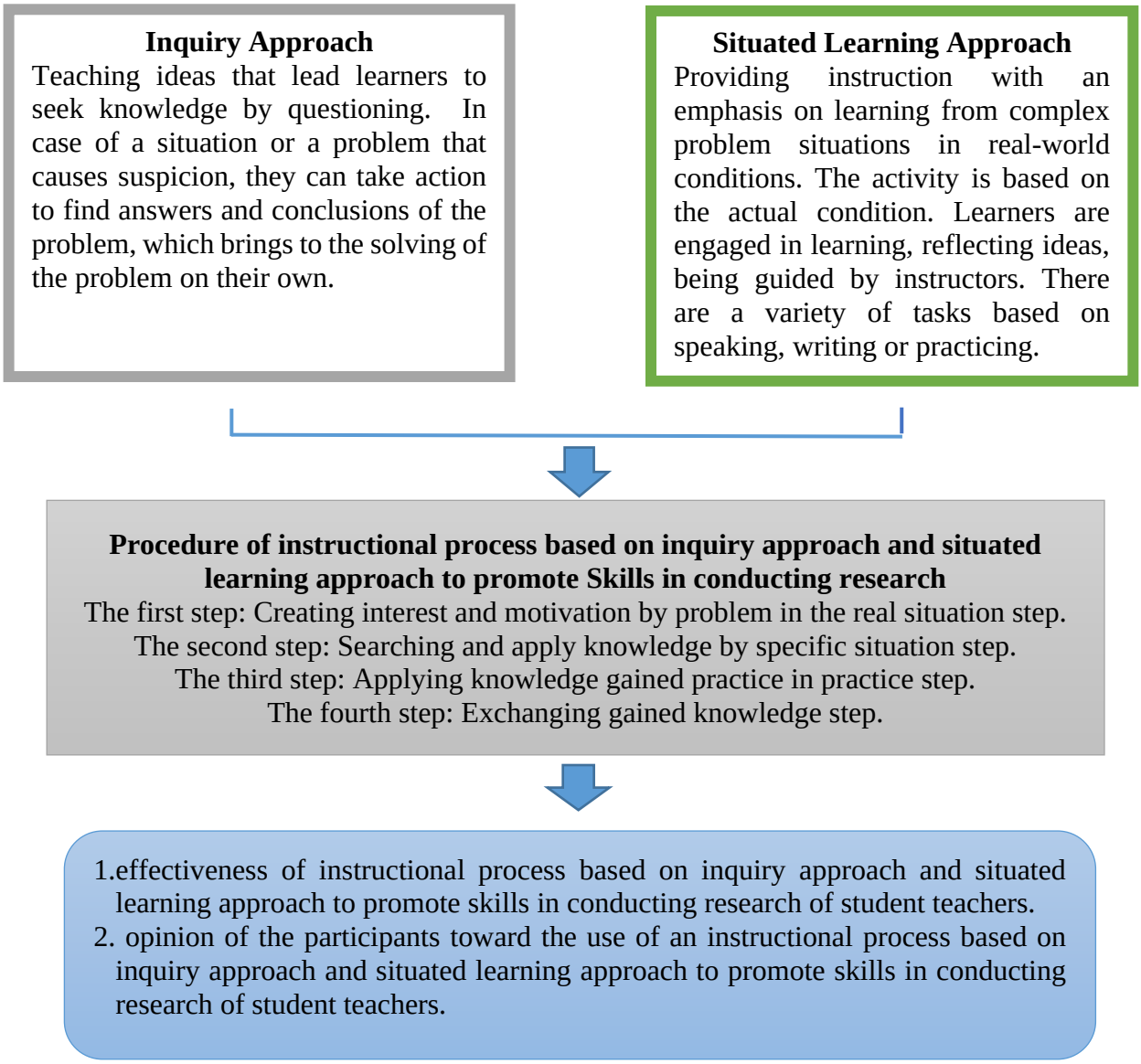
The concept of exam succession is used as a scientific method which is an important part of the research process. Situational learning also promotes the development of skills in research efficiency, as situational learning enables students to face problems in a realistic context, being able to show clear knowledge or solutions and solve problems that match problems in a particular situation. When combined in the teaching process, it effectively improves research skills. It is from these mentioned reasons that propel my interest in researching the effectiveness of instructional process based on inquiry approach and situated learning approach to promote skills in conducting research of student teachers. My interest is also based on the fact that this model recognizes the importance of developing research skills for teachers based on the concept of exam succession and situational learning. Moreover, this will help promote research skills for teachers to have knowledge and understanding of the scientific methods that are essential in conducting research in the teaching profession to further promote students to maximized learning.

RESEARCH OBJECTIVES

1) to study the effectiveness of instructional process based on inquiry approach and situated learning approach to promote skills in conducting research of student teachers

2) To study the opinion of the participants toward the use of an instructional process based on inquiry approach and situated learning approach to promote skills in conducting research of student teachers.

Figure 1 Research Framework



RESEARCH METHODOLOGY

Research Process

The sample in this experiment was the third-year student teachers in the Faculty of Education enrolled in the educational research courses in 2016. They were 55 students from 2 classrooms including an experimental group of 30 people and 25 people in the control group. The

researchers took the academic achievement scores of both groups of samples to test the difference in average scores and test them with T-scores and found that both groups had different levels of knowledge. And then the lottery method of sampling was used to select 25 student teachers as a control group and 30 student teachers as an experimental group.

Researchers created and tested the quality of the tools used in the research by letting 5 people who are experts in educational research teaching and educational measurement and evaluation expertise check the content accuracy of the tools, then analyze IOC and improve the tool more effectively. The tools used to collect data are as follows:

1. The research quality assessment form is characterized by 26 rating scales used to evaluate the research of the sample after the end of the learning process in the 15th week.

2. The research interview form is characterized by 3 rating scales, 16 questions used for oral examination of the ability to conduct research after the end of the learning process in the 15th week.

3. The learning log is characterized by 5 open-ended questions used to collect experimental group-specific data which includes graduating in each content, documenting what the learner learned, and the problems they encountered each time.

This research is based on the development, effectiveness, and opinion of using the instructional process based on inquiry approach and situated learning approach to promote skills in conducting research of student teachers**.** The evaluation of the effectiveness of the teaching process is a quasi-experimental research with two group post-test design. There were two samples: an experimental group that learned by using an evolving teaching process, and a group controlled by regular teaching during a 15-week experimental period. Data were collected from the two groups during and after the trial.

Data Analysis

The researchers conducted data analysis as follows**:**

1. Data obtained from research quality assessment and interview from both groups of samples after the experiment, take the average and standard deviation then use *t*-test to compare statistically significant differences at .05

2. Qualitative data from the learner's learning logs use summary and analysis of the text recorded by the learner at the end of each learning activity regarding opinions on the teaching process, categorize all the information, and then presented it in essay format.

Summary

1. Effectiveness of Using the Instructional Process Based on Inquiry Approach and Situated Learning Approach to Promote Skills in Conducting Research of Student Teachers.

Experimental groups taught by the teaching process using exam and situational learning concepts had a higher average score than the control group that was taught normally (Table 1).

Table 1 *Comparison of averages and standard deviations of post-experiment research capability scores between experiment groups and control groups.*

Sample	**N**	$\overline{X}$	***S.D***	***t***	***p*-value**
Experiment Group	30	75.3	6.3	11.2	.00*
Control Group	25	61.1	3.4		

$p < .05$*

Table 1 Comparison of averages and standard deviations of post-experiment research capability scores between experiment group and control group after experiment between experimental group and control group found that experimental teachers who were taught by the

teaching process based on exam-based and situational learning were higher than those of control teachers who were taught normally (experiment group $\overline{X}$ = 75.3, control group $\overline{X}$ = 61.1). When comparing the research capabilities of both groups with statistical values, there is evidence of equal value. Therefore, it is concluded that after applying the teaching process according to the concept of exam succession and situational learning, the experimental group has different research capabilities than the control group that is taught normally (p = .00) with statistically significant at .05.

Table 2 *Average comparison results and standard deviation of post-trial research capability scores between the control group and trial groups composition analysis (100 points)*

Skills in conducting research	**Sample**	**N**	$\overline{X}$	**S.D**	**t**	**p-value**
1)The skills to define and define problems according to what they want to do in the research.	Experimental Group	30	86.3	10	7.9*	.00
	Control Group	25	69.5	5.3		
2) The skills in theory, documents and related research	Experimental Group	30	88.8	6.7	7.2*	.00
	Control Group	25	66.2	15.5		
3) The skills to the concept frame and research assumptions	Experimental Group	30	80.5	13.7	5.6*	.00
	Control Group	25	59.6	13.5		
4) Research design skills	Experimental Group	30	81.9	8.8	2.2*	.01
	Control Group	25	76.3	9.9		
5) The Skills to determine population and samples.	Experimental Group	30	89.4	2.1	3.1*	.02
	Control Group	25	83.8	1.2		
6) The skill of creating and finding the quality of research tools	Experimental Group	30	71.8	17.0	3.5*	.00
	Control Group	25	54.4	19.2		
7) Data collection skills	Experimental Group	30	77.5	10.6	3.6*	.00
	Control Group	25	61.8	20.7		
8) Data analysis skills	Experimental Group	30	91.5	11.6	6.3*	.03
	Control Group	25	71.9	10.9		
9) The skills in translating results and summarizing research	Experimental Group	30	85.4	12.7	5.6*	.00
	Control Group	25	67.4	10.3		

* $p < .05$

In conclusion, the results from table 2 compared *the average and standard deviation* of the research capability score for inquiry approach and situational learning after experiments between the experimental group and the control group and found that the experimental group that was taught by the teaching process based on the concept of exam succession and situational learning had higher scores than the control groups that were taught normally as follows:

1) **The skills to define and define problems according to what they want to do in the research** found that the average of the research skill scores after the experimental group was higher than the control group. (experimental group $\overline{X}$ =86.3, control group $\overline{X}$ =69.5) and also, the analysis of the t-test revealed that the experimental group was statistically significantly higher than the control group at .05.

2) The skills in theory, documents, and related research also found, that the average of the research skill scores after the experimental group was higher than the control group. (experimental group $\overline{X}$ =88.8, control group $\overline{X}$ =66.2) and also the analysis of the t-test found that the experimental group was statistically significantly higher than the control group at .05.

3) The skills to the concept frame and research assumptions found that the average of the research skill scores after the experimental group was higher than the control group. (experimental group $\overline{X}$ =80.5, control group $\overline{X}$ =59.4) and also the analysis of the t-test found that The experimental group was statistically significantly higher than the control group at .05.

4) Research design skills revealed the average of the research skill scores after the experimental group is higher than the control group. (experimental group $\overline{X}$ =81.9, control group $\overline{X}$ =76.3) and also the analysis of the t-test found that the experimental group was statistically significantly higher than the control group at .05.

5) The Skills to determine population and samples found, that the average of the research skill scores after the experimental group was higher than the control group. (experimental group $\overline{X}$ =89.4, control group $\overline{X}$ =83.8) and also the analysis of the t-test found the experimental group to be statistically significantly higher than the control group at .05.

6) The skill of creating and finding the quality of research tools found that the average of the research skill scores after the experimental group was higher than the control group. (experimental group $\overline{X}$ =54.4, control group $\overline{X}$ =71.8) and also the analysis of the t-test found that the experimental group was statistically significantly higher than the control group at .05.

7) Data collection skills found that the average of the research skill scores after the experimental group was higher than the control group. (experimental group $\overline{X}$ =77.5, control group $\overline{X}$ =61.8) and also the analysis of the t-test revealed that the experimental group was statistically significantly higher than the control group at .05.

8) Data analysis skills found that the average of the research skill scores after the experimental group was higher than the control group. (experimental group $\overline{X}$ =91.5, control group $\overline{X}$ =71.9) and the analysis of the t-test also found that the experimental group was statistically significantly higher than the control group at .05.

9) The skills in translating results and summarizing research found that the average of the research skill scores after the experimental group was higher than the control group. (experimental group $\overline{X}$ =85.4, control group $\overline{X}$ =67.4) and the analysis of the t-test also revealed that the experimental group was statistically significantly higher than the control group at .05.

2. opinion of the participants toward the use of an instructional process based on inquiry approach and situated learning approach to promote skills in conducting research of student teachers

The opinion of the participants toward the use of an instructional process based on inquiry approach and situated learning approach to promote skills in conducting research of student teachers were very positive. The content analysis found that almost all the student teachers-love studying based on this instructional process because they can do research by themselves when

following all the steps. They see the real situation when they do the research and it makes them feel assured that their research skills have greatly improved.

DISCUSSION AND FINDINGS

1. Effectiveness of Using the Instructional Process Based on Inquiry Approach and Situated Learning Approach to Promote Skills in Conducting Research of Student Teachers.

1.1 Effectiveness of Using the Instructional Process of Student Teachers. The experiment groups taught by the teaching process based on the concept of exam succession and situational learning average scores were significantly higher than the control groups that were normally taught at .05, indicating that the teaching process was able to promote the skills of doing the research of student teachers as follows:

The first step: Creating interest and motivation by a problem in the real situation step. It is a step where instructors stimulate learners' learning by bringing real contextual problems to students in the class by giving examples of research related to issues that they are currently paying attention to. The proposed research is quoted only as part of the content that is studied at a time. The instructor then asked questions from the research samples presented to encourage the learner to wonder and raise questions, and to be interested in learning and finding answers for themselves. As stated by Saranporn Yingsuk (2014), questions can be asked clearly and to the point. During the use of the developed teaching-learning process at first, the learners were very quiet. As a result, educators employ questioning techniques to engage and captivate learners, encouraging them to ask questions not only to the instructors but also to their peers in order to obtain accurate answers. In structuring the activity, the researchers provided learners with opportunities to contemplate, ponder and independently pose their own question.

The second step: Searching and applying knowledge by specific situation step. It is a step where instructors guide learners about creating processes in search of new knowledge and understanding. Learners are engaged in learning, offering ideas, discussion, and creating processes for finding knowledge and understanding manually. This starts with a training exercise where the instructor creates a situation or problem so that the learner can use the knowledge to solve the problem in the context in which the learner is learning. A learner actively pursue knowledge, instructors utilize questioning techniques to motivate and guide interested students towards discovering the correct answers. Furthermore, instructors emphasize the importance of following scientific processes to facilitate the acquisition of new knowledge and understanding, in line with Pornthep Chandraukrit (2013). This allows students to investigate their knowledge of exams themselves and gives them the opportunity to acquire scientific process skills to practice rational thought processes. Learners are motivated to practice thought processes and analyze them with a question or problem to investigate the answer. During the use of the teaching process developed at this stage, it was first found that the learner searched and answered properly by observing the questions, and then the instructors used the teaching process by having the learners make a worksheet from the exercise. It was found that students were able to find the right information and get more accurate answers.

The third step: Applying knowledge gained in the practice step. It is a stage where instructors can practically practice from real-world situations, with activities organized based on problems arising from real conditions that the learner is interested in finding answers. To achieve this, students must organize their own pursuit of knowledge from real-world situations, create meaningful knowledge from experience, based on scientific processes to seek answers in line with Berk and Gultekin research (2011), which says that if students are to learn things that are of no interest, they will reduce their motivation and feel bored. Therefore, allowing learners to choose to learn things that they are interested in helps to encourage more effective learning. During the

use of the developed teaching-learning process, it was found that most learners had the opportunity to seek knowledge by collecting information from a real context. This allows each learner to work in real-world situations which were challenging, exciting, and fun.

The fourth step: Exchanging gained knowledge step. It is a stage where students can share or discuss and reflect on ideas from what they have learned. First, the sharing or discussion and reflection of ideas learned is done among the learners and later between the learners and the instructor. Based on data studies and research capability training, which is a first-hand experience, the instructor is a stimulant, a guide, and a palliative person when the learner is still developing their potential to reach the capacity they should be, as well as providing the learner with improvement according to the correct feedback. This is in line with Jaruwan Silparat (2548) who stated that practicing and exchanging learning with each other could be well learned if the material used is familiar to the learners. When applied effectively, and the material is of interest to the learners, it can lead to a variety of experiences being exchanged for the benefit of the learners. During the use of the developed teaching-learning process, it was found that students were more enthusiastic about preparing and they were eagerly ready to present their work based on their actual experiences to their classmates. Q&A was offered between groups and there was a better exchange of ideas among the learners and the instructor. The learners were also able to use feedback from instructors to improve their work.

Secondly, the roles of instructors are to encourage learners to learn enthusiastically, improve the teaching process, and guide the learners. It is the duty of the instructors to help the learners by introducing a variety of learning resources to learners, engaging with learners, giving feedback to learners, listening to learners' opinions, building an understanding, and providing solutions to the problems of the learners. In this trial of the teaching process, the researchers, as the main instructors, were very close to the learner to guide and engage in learning directly with both groups and individual learning. Students could communicate outside of school hours through alternative means provided by the instructors. This was done to give opportunities to those learners who had difficulties in studying and working, and those who were not bold enough to ask questions or discuss directly with the instructors during the class hours. As a result, the experimental students had higher research capabilities than the control group. As texted by one of the learners, with one message in which the learner texted: *"I like this kind of study, teacher, I have done it myself from the first step, I have actually been in the area, I have seen the problem, it encourages me to find out the answers, it is fun"* This finding is similar to that of "Learning by Building Knowledge through Social Interaction" by Berger and Luckman (1996) and Resnick et al. (1991, as cited in Selley, 1999) They stated that, when learners are given the opportunity to have communication among themselves and the instructors, it will increase the learning ability of the learners. Therefore, instructors must give learners the opportunity to explain things, which allows them to develop their thinking skills.

Thirdly, the developed teaching process strengthens research-related skills.

As a result of the ongoing practice of learners throughout the evolving teaching process, there is evidence of learners' enhanced skills related to research capabilities such as observation, data analysis, and data synthesis. This process has helped in encouraging learners to conduct and complete research systematically by following the right step. This makes the research more complete; this finding is in line with the statement of Teddlie & Renolds, (2000) that over the last two decades, studies conducted in different countries revealed that the classroom effect in explaining variation on students achievement is in both cognitive and affective outcomes. Effectiveness studies also reveal that quality of teaching is the most important factor at the classroom level. (Brophy & Good, 1986; Fraser, Walberg,Welch, & Hattie, 1987) .

2. The opinion of the participants toward the use of an instructional process based on inquiry approach and situated learning approach to promote skills in conducting research of student teachers.

The opinion of the participants toward the use of an instructional process based on inquiry approach and situated learning approach to promote skills in conducting research of student teachers was analyzed by content analysis. The finding revealed that almost all the student teachers love studying based on this instructional process because they successfully do research by themselves by following all the layout steps of conducting research as follows: defining and redefining problems according to what they want to do in the research, studying and reading theory, documents, and related research, doing the concept frame and research assumptions and design research, determining population and samples, creating and finding the quality of research tools, correcting and analyzing data, translating results and summarizing research. Moreover, they see the real situation when they do the research. It makes them to be sure of their research skills. In the last hour of that semester, they said that they were very happy and had fun doing research by themselves and also that this instructional process makes them be more confident to do research than before. Moreover, they said that it was not boring and sleepy because they were actively learning. This statement from the learners conforms to that of Ajriya Watcharawiwat (2001) who stated that the teaching process that will help improve the ability to do research should focus on allowing students to carry out practical practices in real-world situations. She further added that it is beneficial for the learners to have experience in self-research and practice self-knowledge, rather than just lecture or teaching. As mentioned above, it is clear that by having learners have the opportunity to conduct their own research and conduct practical practices in real-world or realistic situations, they will be able to experience real problems and give real solutions to the problems by linking what they have learned to help improve their research capabilities.

SUGGESTIONS

Recommendations to apply the findings

To organize teaching activities, instructors must give students the opportunity to seek their own knowledge based on what they suspect and want to find out. The focus should be on students seeking knowledge through real-world situations to achieve an effective learning process. Instructors should be aware of the role of teachers in organizing teaching activities as facilitators. Therefore, instructors should study and understand their roles before applying the teaching process and organize instructional activities according to this process to achieve effective teaching outcomes.

Recommendations for further research

The results of the use of the teaching process should be studied based on the concept of examination and situational learning with other faculty students studying research, especially subjects that focus on practical teachings, such as the nursing profession, engineering profession, and mechanics. In addition, this study can be adapted or applied to develop the potential of students in other areas that differ from this research.

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