



Developing Research Awareness by Using Research and Community- Based Learning for Information Science Program's Students

Bunpod Phijitkamnerd,¹ Titiya Netwong,^{*2} Nantawan Ruangaram,¹ Panisara Thamjutha¹ & Phakwalan Umboon¹

¹ Faculty of Humanities and Social Sciences, Suan Dusit University, Bangkok, 10300 Thailand.

² Faculty of Science and Technology, Suan Dusit University, Bangkok, 10300 Thailand.

Article info

Article history:

Received: 2 November 2020

Revised: 18 December 2020

Accepted: 30 December 2020

Keywords:

Research awareness, Community-based problems, Research and community-based learning, Information science

Abstract

The objectives of this research were 1) to develop research awareness of students in Library and Information Science program by using research and community- based learning. 2) To test research awareness before and after study with research and community- based learning of students in Library and Information Science. And 3) to study the satisfaction of learning process of research and community- based learning. The sample used for the experimental group consisted of 22 undergraduate students in the Basic Research in Library and Information Science course in the 2019 academic year, Library and Information Science Program. Sample acquisition by selecting a specific sample group. The research instruments were 1) learning management plans by using research and community-based learning, 2) observation form of learning activities, 3) research awareness questionnaire and 4) satisfaction questionnaire of research and community-based learning. The data obtained were analyzed using mean (μ), standard deviation (σ) and content analysis. The results of the study were as follows: The instructional by using research and community-based learning consisted of 5 steps were 1) Prepare for learning, 2) Learning strategies, 3) Research process, 4) Reflect knowledge and 5) Assess learning. The result of the analysis of the research awareness of the experimental group, before the experiment, it was found that the overall research awareness of the sample had sometimes research awareness when evaluating after the experiment was every time research awareness. When separated on each side, the aspect of research awareness at every time was the responding to research, the characterization of research and Understanding, perception of research, while the research value and research value management system were regular research awareness. The satisfaction of the learning process through the research and community-based learning was at medium level.

Introduction

Awareness is an emotional or affective domain, which is similar to knowledge. Awareness is the minimum

behavior of knowledge, awareness a result of cognitive processes is touching, recognizing, conceptualizing, learning and then realizing awareness to show

* Corresponding Author
e-mail: titiya_net@dusit.ac.th

behavior from awareness in stimulated subjects. (Watcharathamrongkul, 2009) That is, when a person is stimulated by stimuli or sensed by stimuli when perceived in the next step, they will understand that stimulation until the conceptualization, lead to learning, having that knowledge and ultimately leading to awareness in which knowledge and awareness lead to actions or behavior of the person towards the stimuli. According to Kammanee (2019) said that instructional model that focuses on mental development to help the learners to develop the feelings, attitudes, values, ethics and desirable ethics, following Bloom's Affective Domain to development of mind consists of awareness, response, appreciation, organization and characterization. Therefore, research and community-based learning is a way for learners to get to know the community through a research process that analyzes community needs that students can help solve problems for the community by applying knowledge in the classroom to utilizing in community. Both the learners and the community benefit from each activity as a mutual benefit. Learners see the importance, responsibility and consequences, learning outcomes of the student being aware of that thing in the end. (Watcharathamrongkul, 2009) Integrating learning management through research and community-based learning for successful teaching and learning management must be consistent with the context of the institution and the community to adapt to learners and communities. Utilizing research and community-based learning will enable the activities in matters that need to solve problems for the community and benefit the community. People in the community must collaborate with universities and students to develop the issues of interest to succeed.

The research-based learning is a technique for creative teaching. This is considered the heart of graduate studies because it encourages learners to create knowledge by themselves, support learning by learning methods that focus on using research processes as part of the learning process. (Paweenbampen, 2017) Providing students with research process skills, development of analytical thinking and knowledge content integration. Many instructors are interested in this method of teaching because they can be used for all courses in higher education. (Paweenbampen, 2017; Wichadee, 2011) The research-based learning approach is based on two main concepts that are composed of research content and the research process, as well as carrying out research procedures, including specifying problems, making assumptions, data collection for

hypothesis testing and data analysis and conclusion. Tammachart (2009) said that instructional learning style must consist of 6 main characteristics which were 1) Train the learners to formulate problems and find solutions in a systematic manner, 2) Integrate multiple learning techniques, 3) Promote learners to have skills for learning, 4) Train the learners step by step, 5) Bring the research results with learning the research process in a balanced way and 6) Motivate the students as well. These ongoing assessments, there are 4 ways to use research in teaching and learning, which are 1) teaching by using research as a teaching method, 2) teaching by allowing students to participate in research projects with teachers, 3) teaching by allowing students to study the research of instructors and leading researchers in the study science and 4) teaching by using research results in teaching and learning. (Phetkliang, 2019)

Research-based learning is a method of teaching and training students to conduct research projects to solve problems with research and to utilize research results as the highest goal of the research, especially the practical use of the research results to be utilized by the community. Therefore, community-based learning is a form of empirical education for students to learn by joining the community and reflect experiences within the community and society. Encourage learners through activities to integrate theories with activities throughout the community. (McIlrath & McDonnell, 2018) Community-based learning is to enhance the capacity and partnership between the school and the community, learning strategies focus on allowing students to participate in activities that promote academic learning and responsibility for citizenship, citizenship skills along with increasing the capacity of the community by providing services, resulting in benefits for both learners and communities in sharing knowledge and good practice between communities and schools (Furco & Holland, 2004; McIlrath & McDonnell, 2018) And create awareness of the role, duty and social responsibility of the learners. Therefore, it can be said that research and community-based learning can be integrated together for students to take action in conducting research to solve problems in the community. Collaborated to create a joint research project to use the results of research in the community and the students are aware of the volunteer spirit and the awareness of social service. The objectives of this research were 1) To develop research awareness of students in Library and Information Science program by using research and community-based learning. And

2) to test research awareness before and after study with research and community-based learning of students in Library and Information Science.

Objectives

1. To develop research awareness of students in Library and Information Science program by using research and community-based learning.
2. To test research awareness before and after study with research and community-based learning of students in Library and Information Science.
3. To study the satisfaction of learning process of research and community-based learning.

Literature review

1. The integration of research and community-based learning management

The instructional of research and community-based learning based on research-based learning concept and community-based learning management consists of 5 steps: (Chatsuriyawong, 2014; Kammanee, 2019; Paweenbampen, 2017; Sinlarat, 2012)

1) Step 1: Prepare to learn content from research. Research instructor or study content in science let learners learn the content and practice community-based problem analysis in building awareness of values provide experiences or situations that help learners get to know the research process. The importance and utilization of this research encourages learners to develop conscious behaviors. Willingness to be aware perception control.

2) Step 2: Learning strategy to use research-based learning techniques and using the problems from the community based. And use technology suitable for activities and communication, let learners respond to conducting research in the community. The instructor provides situations for students to have the opportunity to discuss, exchange, learn, give opinions. The quest for knowledge, the interviews speak with people who have research experience. Encourage learners to develop consent behavior. Willingness to respond and satisfaction in response.

3) Step 3: Conduct research by the instructor encourages learners to do research, practice, go into the research storage area in the community. Quantitative and qualitative data analysis. It promotes the appreciation of research. Being aware of the benefits it brings to oneself or others when conducting research. The teacher encourages the learners to adopt the behavior of the

value. Liking and bonding in that value.

4) Step 4: Reflection learning through thought by experiences that affect emotions and feelings. Research awareness it helps learning and self-discovery, it is empirical information that leads to critical thinking. The method of writing notes, reflections, making inquiries, interviews and evaluation of the learning management continued by analyzing the data obtained in the research. The learners appreciate the value of research and have a positive attitude towards research. It promotes the organization of research awareness system.

5) Step 5: Evaluate learning outcome, evaluate the results of the activities of the research process. Considering individual differences with pre-study assessments, during and after class. Assessed by research performance observation of behavior, interviewing questions and a test to measure learning achievement. The instructor encourages learners to consistently reflect their research awareness by monitoring performance and providing feedback and reinforcement from time to time. Teachers must encourage decision-making behavior to become a habit.

The process of research and community-based learning emphasize on spiritual development. Let learners get to know the community through the research process. In addition to the important objectives for learners to have 5 learning outcomes: 1) moral and ethical. 2) Knowledge for learners to understand the research content, 3) cognitive skills, 4) interpersonal skills and responsibility and 5) numerical analysis, communication and information technology skills. Can also encourage learners to be aware of research.

2. Research awareness

Research awareness is a person's consciousness that is transmitted as both emotional and emotional behaviors. It is affective domain. Knowledge is the lowest behavior of knowledge. This is a result of the cognitive process. When students are stimulated by stimuli or are exposed to stimuli generated by research and community-based learning management, perception is achieved. In the later stages of awareness, the stimulus will be understood until the concept is conceived and leads to research learning. Knowledge of that and this leads to the generation of research awareness.

The instructional of research and community-based learning, consist of the following activities: 1) preparing to learn content from research; 2) Conduct research 3) Reflection and 4) Evaluation. Consistent with

the standardized learning objectives and research awareness, which consisted of 5 stages: 1) research awareness 2) response 3) value research, 4) organization of research value and 5) characterization of research.

Research methodology

1. Population and samples

Students in Library and Information Science Program enrolled in the course 22 persons of Basic research in library and information science, 1st semester, the academic year 2019. Sample acquisition by selecting a specific sample group, the samples derived from purposive sampling.

2. Research instruments

2.1 The research instruments were follows.

1) Learning management plans by using research and community-based learning.

2) Observation form of learning activities by using research and community-based learning that affects research awareness.

3) Research awareness questionnaire.

4) Satisfaction questionnaire of research and community-based learning.

2.2 The researcher had conducted as follows.

1) Study information to cover issues related to research and community-based learning development of research awareness.

2) Create a learning management plans, observation form, research awareness questionnaire and satisfaction questionnaire to cover issues in the section 1)

3) Send a questionnaire to 3 experts to check content validity, consider the consistency of questions and objectives or the IOC (Index of Item Objective Congruence). The average of each item is 0.66 - 1.00 and the correctness is adjusted according to the experts' suggestion.

4) Collect data with the sample group.

3. Data collection

3.1 The research team has directed research and community-based learning.

3.2 Collect data while carrying out activities using research and community-based learning by observation form.

3.2 During the course management, quality and quantitative data are collected from the research activities observation form by using research and community-based learning that affects research awareness.

3.4 When the teaching and learning activities are completed, then the students will do the research

awareness questionnaire and the satisfaction questionnaire on research and community-based learning.

4. Data analysis

4.1 Analyze the mean and standard deviation, t-test dependent before and after studying and percentage development of research awareness of experimental groups.

4.2 Content analysis of qualitative data from observations and the exchange of knowledge among experimental groups.

For the criteria of research awareness for judging the results of the analysis, the details are mid-point as follows. (Watcharathamrongkul, 2009)

Mean of 3.51-4.00 means that the level of every time research awareness level.

Mean of 2.51-3.50 means that the level of regular research awareness level.

Mean of 1.51-2.50 means that the level of sometimes research awareness level.

Mean of 0.51-1.50 means that the level of seldom research awareness level.

Mean of 0.00-0.50 means that the level of no research awareness level.

For the criteria of satisfaction of research and community-based learning for judging the results of the analysis, the details are mid-point as follows.

Mean of 4.51-5.00 means that the level of satisfaction is at the highest level.

Mean of 3.51-4.50 means that the level of satisfaction is at the high level.

Mean of 2.51-3.50 means that the level of satisfaction is at the medium level.

Mean of 1.51-2.50 means that the level of satisfaction is at the low level.

Mean of 1.00-1.50 means that the level of satisfaction is at the lowest level.

Results

1. Instructional research and community-based learning

The research team conducted instructional by using research and community-based learning. The sample group was students in Library and Information Science program, Suan Dusit University. The Basic Research in Library and Information Science course consists of 5 steps for 15 weeks, as follows: 1) Prepare for learning, 2) Learning strategies, 3) Research process, 4) Reflect knowledge and 5) Assess learning, which details the study schedule as in the figure 1

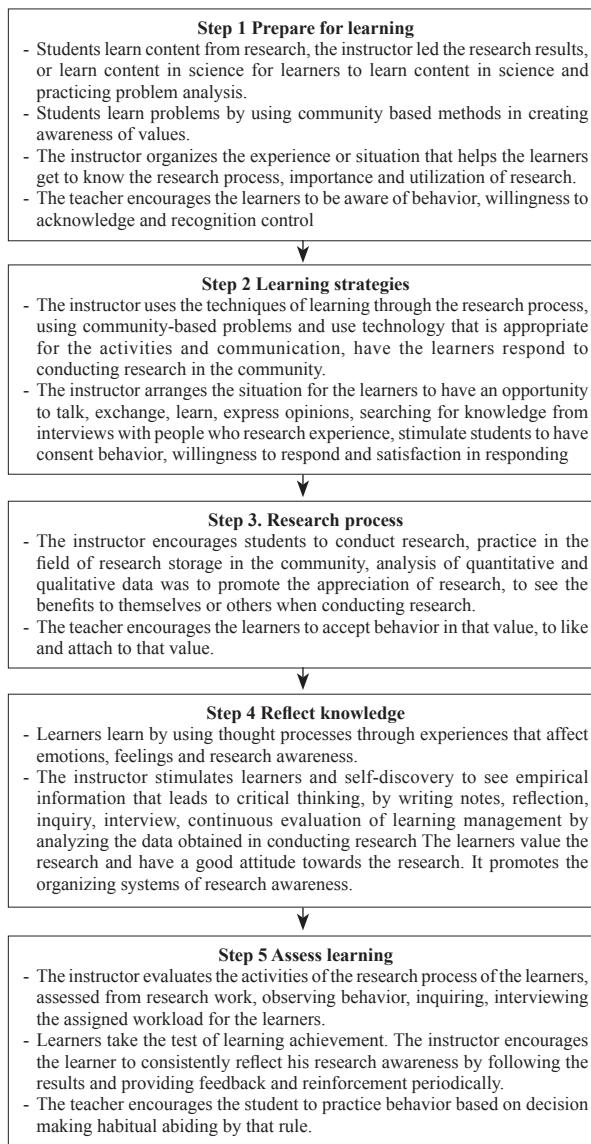


Figure 1 Instructional research and community-based learning

Observing research activities using research and community-based learning that affects research awareness. Use observation form as a checklist and add text about behaviors according to the activity framework according to the learning management plan by using research and community-based learning. There are 8 characteristics/behavior indicators as follows: research perception, research response, responsible behavior, the behavior of self-confidence and respect for others, curiosity, unity, cooperation and research and community-based learning of achievement process. Conduct the instructional by

using research and community-based learning. By conducting teaching and learning activities for 15 weeks and assessing research awareness before and after undertaking research and community-based learning, with details as in Table 1.

Table 1 Research awareness before and after learning

Evaluation List	Pre-test			Post-test		
	μ	σ	Research awareness	μ	σ	Research awareness
1. Understanding, research perception	2.15	0.41	Sometimes	3.51	0.44	Every time
2. Responding to	2.05	0.61	Sometimes	3.69	0.69	Every time
3. Research value	2.01	0.71	Sometimes	3.50	0.69	Regularly
4. Research value management system	2.14	0.66	Sometimes	3.50	0.61	Regularly
5. Characterization of research	2.26	0.60	Sometimes	3.60	0.68	Every time
Overall	2.12	0.52	Sometimes	3.55	0.51	Every time

The result of the analysis of the research awareness of the experimental group, before the experiment, it was found that the overall research awareness of the sample had sometimes research awareness ($\mu = 2.12$, $\sigma = 0.52$) when evaluating after experiment was every time research awareness. ($\mu = 3.55$, $\sigma = 0.51$) When separated on each side, the aspect of research awareness at every times was the responding to research ($\mu = 3.69$, $\sigma = 0.69$), the characterization of research ($\mu = 3.60$, $\sigma = 0.68$) and Understanding, perception of research ($\mu = 3.51$, $\sigma = 0.44$), while the research value ($\mu = 3.50$, $\sigma = 0.61$) and research value management system ($\mu = 3.50$, $\sigma = 0.69$) were regular research awareness.

When comparing the research awareness of the samples individually, with details as in the picture

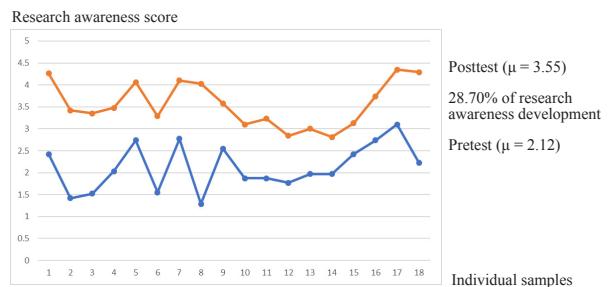


Figure 2 Comparison of research awareness of individual samples

From figure 2, by comparing research awareness of the individual samples group, it was found that all learners developed higher research awareness. Overall, the development of research awareness were 28.70 percent higher.

2. The results of observation of research and community-based learning activities

Observing research and community-based learning activities that affect research awareness. By Using the observation form as a checklist form and add text about behavior according to the framework of the learning management plan based on research and community. There are 8 characteristics / behavior indicators as follows: perception research, research response, responsibility, self-confidence and respect for others, curiosity, unity, cooperation and achievement in conducting research and community-based actions.

3. Satisfaction with the learning management process

Satisfaction with the learning management process presented in Table 2.

Table 2 The results of satisfaction analysis of learning management process

Evaluation lists	Satisfaction		
	μ	σ	Level of satisfaction
The teaching skill of instructor			
1. The instructor clearly informs the purpose of the teaching.	33.46 3.47	00.95 0.90	medium medium
2. The instructors can instruct students to use technology and other learning resources for additional self-learning.	3.37	0.96	medium
3. The instructor is responsible for teaching (on-time and consistent teaching).	4.11	0.66	high
4. The instructor appropriately allocates time in each content.	3.74	0.73	high
5. The instructor organizes activities that encourage students to work as a team, creative thinking for solution of community. And teaching technic for motivate learner.	3.05	1.03	medium
6. The instructor has a clear audio lecture, correct and use appropriate language that easy to understand, reflect opinions, provide useful ideas for performance.	3.32	1.00	medium
7. The instructor asked questions, follow up on the implementation of projects / activities in the community to encourage learners to think and wants to be involved in doing activities regularly	3.42	1.07	medium
8. The instructor has the appropriate personality and dress code.	3.95	0.85	high
9. The instructor provides opportunities for students to express their opinions in teaching and learning.	3.26	1.10	medium
10. The instructor are praised when students perform their tasks well and on time and there are appropriate penalties when learners exhibit inappropriate behavior.	3.16	1.01	medium
11. The instructor have summarized and analyzed results for students to be more motivated to learn.	3.21	1.18	medium
Course content and learning activities	3.24 3.21	11.04 0.85	medium medium
12. The learning goals are appropriate and in according with the teaching and learning activities that can develop learners in conducting research.			

Evaluation lists	Satisfaction		
	μ	σ	Level of satisfaction
13. Course content and learning activities are consistent with teaching objectives, guidelines and apply to the community / society and environment.	3.42	1.12	medium
14. Course content contains virtues ethics and social responsibility.	3.05	1.13	medium
15. The workloads of instructional activities by using research and community based are contributing to discussion, comment and participation in group and community activities.	3.11	1.05	medium
16. The workloads provided are reasonable. Students can proceed on time and use it to solve problems or apply knowledge to the community.	3.00	1.15	medium
17. The instructional activities create a friendly and learning atmosphere, encourage students to participate in expressing opinions and constructive discussions.	3.21	1.18	medium
18. The instructional to promote knowledge, apply knowledge gained from discussions, including creating self-thinking methods to the community.	3.16	1.01	medium
19. The instructional activities promote assistance to participate in activities. Mutual care Including sending important and useful information to the community.	3.16	1.12	medium
20. The activity encourages students to do their own research, take part in planning with useful guidelines and research resources.	3.47	0.90	medium
21. Activities stimulate thinking, problem solving, analysis and synthesis in conducting research in the community.	3.58	0.90	medium
Assignments and measurements	3.69 3.95	00.93 0.78	high high
22. There are inspections and clarification of defects in work performed.			
23. Evaluation of the quality of the results and the duration of the work is appropriate, students can meet the specified criteria.	3.42	0.90	medium
24. Evaluation methods contributed to students' reflecting their opinions, take part in activities, communicate more with group members.	3.79	1.03	high
25. The measurement covers the material studied, reliable and fair to students.	3.58	0.90	high
26. Evaluation methods contributed to students' reflecting their opinions, take part in activities with group members.	3.74	1.05	high
Verifying the learning outcome on the course			
27. Students have more morals and ethics, such as punctuality respect for others, discipline, awareness of intellectual property and responsibility towards oneself and society, etc.	3.58	0.90	high
28. The students gained more knowledge from this course and strengthen the learning experience from practical skills.	3.42	1.12	medium
29. Students can apply their knowledge and able to create works in other situations.	3.53	1.02	high
30. Students can work with others, engaging in group activities makes students trust each other, must help each other, caring for each other and contribute to the success of the workload.	3.84	0.83	high
31. Students improve their analytical, communication and IT skills.	3.53	0.96	high
Total	3.42	0.98	medium

From Table 2, it was found that the satisfaction of the learning process through the research and community-based learning was at medium level ($\mu = 3.42$, $\sigma = 0.98$).

Conclusion and discussion

1. Research and community-based learning consists of 5 steps for 15 weeks, as follows: 1) Prepare for learning, 2) Learning strategies, 3) Research process, 4) Reflect knowledge and 5) Assess learning. Preparation for learning content from research, it is an activity using the research process to develop learners to have knowledge in their science. Operational skills Research process skills and create a good attitude towards research. (Sinlarat, 2012) Consistent with the concept of

Suwanno et al. (2016) which states that the relationship of research-based learning must have the research results that the students studied, research process, research tools and the context in which the learners will be developed in a research-seeking environment. (Kammanee, 2019) In which the instructional process, the community is used as the base in which the students have surveys and data collection in the community, including raising awareness and pointing out the importance and benefits of learning with the community (Chatsuriyawong, 2014) which will stimulate the students to be aware of behavior, willingness to acknowledge and recognition control of themselves.

Learning strategies use research and community-based learning for situations in which students are given the opportunity to talk, exchange ideas and express opinions. The learners searching for knowledge, interviews with people who research experience. Stimulate students to have consent behavior, willingness to respond and satisfaction in responding.

Research processes encourage learners to conduct research, practice, research data collection in the community, analysis of quantitative and qualitative data. Consistent with the concept of teaching styles by using research as the base on Khamdit (2014) and Paweenbampen (2017) that the students have jointly conducted the research project, learn how to fix problems, learn the principles and theories to practice. In which students will conduct research from the beginning to find research topics in the community, method of operation and complete the research. Research project process is to promote the appreciation of research, the benefits to themselves or others when the research is completed. (Sinlarat, 2012; Kammanee, 2019)

Reflect knowledge, learners learn by using thought processes and experiences that affect emotions and feelings. Research awareness consistent with the concept of Chatsuriyawong (2014) said that learning by letting students think through experience will stimulate learners' learning and self-discovery to empirical information that leads to efficient thinking judgment. By means of record reflections, inquiries, interviews, which are tools for measuring research awareness. Consistent with the concepts of Watcharathamrongkul (2009) and Kammanee (2019) in order to use the assessment tool for continuous learning by analyzing the data obtained in conducting research will result in the learners seeing the value of the research and creating a positive attitude towards the research. Which will promote the organizing systems of research awareness.

Assess learning consisting of the evaluate activities in the research process of the learners. By considering the differences between learners by evaluating before undertaking the research and community-based learning process. Assessed from research work, observing behavior, inquiring, interviewing and the assigned workload. This is consistent with the study of Ruengdam (2017) which has studied the effects of integrating the concept of contemplative education, coaching and mentoring and research-based learning to change teaching behavior and development of teaching competency of teacher students in Thai language major. The instructor is responsible for supervision of student activities. The results of evaluation of activity supervision for the first time were of medium quality and the second time was of very good quality.

Observing research activities using research and community-based learning that affects research awareness. Found that the learners have characteristics and behavior indicating 8 aspects which were perception of research, research response, responsible behavior, self-confidence behavior and respect for others, curiosity, unity, cooperation and research and community-based learning achievement process. The learners have research awareness development consistent with the results of Terry (2000) study of social service learning of teenagers with special talents in the community. The case study found that participating in a learning project through social service gives students to grow opportunity in intellectually, individually. Society encourages learners to be aware and responsible for good citizenship.

2. Research awareness, before and after undertaking research and community-based learning was

found that the overall research awareness of the sample group before the experiment had sometime research awareness. When evaluating after experiment was every time research awareness. When separated on each side, the aspect that has the level of every time research awareness was the response to the research, characterization of research and understanding of perception of the research respectively. While the research value management system and research appreciation were regular research awareness. Therefore, it can be said that the learners have improved the research awareness, affect the academic achievement scores. Consistent with the study of Petrak (2016) that has studied the undergraduate students' development by research based real experience course LG2209202 Economy of Local Community. It was found that the students attended the classes regularly, with determination, interest, enthusiasm in learning. Research based learning able to apply knowledge in field data collection and academic achievement scores through everyone.

When comparing the research awareness, before and after undertaking research and community-based learning of the experimental group individually, found that research awareness after study higher than before. Shows that the research awareness of learners after studying by research and community-based learning was higher than before learning by research and community-based learning. Therefore, it can be said that research and community-based learning can promote research awareness for learners. Consistent with the results of Intun (2013) who have studied of the academic achievements by research-based learning method for the students enrolling in CI 2301: Principle of learning management. That found the post-test scores were significantly higher than before learning at the .05 level. Most of the students had a high level of positive opinions about learning by using research-based learning. In addition, the use of community contexts in instructional by using community-based methods will develop the responsibility for learning of the learners, development learners, will become more confident and learn more. The role of the instructor plays an important role in successful by using research and community-based learning. And create learning situations that promote unity in the community Personal responsibility and dedication to society. (Wolfson & John, 1997)

3. The satisfaction of learning management was at a medium level. When separated by side, sorted, the performance level is descending as follows: assignments

and measurements, teacher features and course content and learning activities. It may require a variety of incentives to give the learners more satisfaction, especially in learning activities.

Suggestion

1. Suggestions for applying the result

1.1 The preparation of the learners is of vital importance to the use of research and community-based learning management. Which requires students to have research knowledge, the ability to use technology to conduct research in the community. Build a good relationship between the learners and the community. Give students the opportunity to choose to work in the interested community and the community needs to educate the learners to take part in conducting joint activities. Therefore, learning management using research and community-based learning will be successful.

1.2 The role of the teacher plays an important role in research-based learning and community-based learning. Be a consultant for conducting research in the community. It is a stimulus to encourage learners to have behavior and research perceived attributes. behavior indicators as follows: perception research, research response, responsibility, self-confidence and respect for others, curiosity, unity, cooperation and achievement in conducting research and community-based actions.

2. Future research

2.1 This study was to develop an awareness of research. Which is the basic development of awareness Hence, there should be a higher level of development, which is to serve society, giving the learners a higher level of mental behavior.

2.2 The necessary skills for learning management by using research and the community should be educated. That affects learning skills in the 21st century, such as teamwork skills, self-directed learning, using technology as a learning base and critical thinking, etc.

Reference

Chatsuriyawong, S. (2014). *The paradigm of community based learning for enhancing critical thinking and creative problem solving abilities for elementary school students*. (Master of Education Program in Curriculum and Instruction, Silpakorn University). Silpakorn University database.

Furco, A., & Holland, B. (2004). *Institutionalizing service-learning in higher education: Issues and strategies for chief academic officers, public work, and the academy*. Bolten, MA: Anker.

Intun, S. (2013). *The study of academic achievements by research-based learning method for the students enrolling in CI2301: Principle of learning management*. Chiang Mai: Faculty of Education, Chiang Mai Rajabhat University.

Kammanee, T. (2019). *The science of teaching knowledge for effective learning process management*. (23rd eds.). Bangkok: Chulalongkorn University Press.

Khamdit, S. (2014). Research-based learning (RBL) in higher education. *Suthiparitthat*, 28(85), 9-21.

McIlrath, L., & McDonnell, C. (2018). *Community-based learning*. Retrieved 2018, July 7, from <http://www.campusengage.ie/userfiles/files/Community>

Paweenbampen, P. (2017). Research-based learning. *CMU Journal of Education*, 1(2), 62-71.

Petrak, S. (2016). The undergraduate students' development by research-based real experience course LG2209202 economy of local community. *Rajapark Journal*, 10(19), 25-34.

Phetkliang, F. (2019). *The effects of the use of research-based learning model in a course of education for sustainable development*. Retrieved 2019, April 6, from <http://www.bsru.ac.th/identity/archives/345>

Reungdam, S. (2017). The effects of Integrating the concept of contemplative education, coaching and mentoring and research-based learning to change teaching behavior and development of teaching competency of teacher students in Thai language major. *Narkbhutparit Journal Nakhon Si Thammarat Rajabhat University*, 10(Special Issue), 15-25.

Sinlarat, P. (2012). *Principles and techniques of teaching in higher education*. Bangkok: Dhurakij Pundit University.

Suwanno, P., Neelayothin, A., Arunmala, P., Lonlua, N., Suksen, A., & Subhakicco, S. (2016). The study of creative leadership of elementary school principals in khon kaen primary educational service area office. *International Journal of Current research*, 8(4), 29934-2993.

Tammachart, J. (2009). *A research and development of research-based learning management model in the educational research course*. Pattani: Pattani campus Research Fund.

Terry, A. W. (2000). A case study of community action service learning on young, gifted adolescents and their community. (Doctoral dissertation, University of Georgia). Unomaha.edu database.

Watcharathamrongkul, K. (2009). A construction of a test on global warming effect awareness for the fourth-Level students in Bankok education office area 1. (Master of Education Measurement Srinakharinwirot University). Srinakharinwirot University database.

Wichadee, S. (2011). Education in a new paradigm: Research-based learning. *Executive journal*, 31(3), 26 -30.

Wolfson, L., & John, W. (1997). *What service learning can learn from situated learning: Proposal for a research framework*. Retrieved 2019, 7 June, from http://www.knowarch.com/index/front_office/evaluation/situat.html