Developing Problem-Based Activities on Inductive Learning in Social Studies for Mutthayom Suksa 1 Students

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บทคัดย่อ

การวิจัยครั้งนี้มีความมุ่งหมาย 1. เพื่อศึกษาผลการจัดกิจกรรมการเรียนรู้โดยใช้ปัญหาเป็นฐานประกอบการเรียนรู้แบบอุปนัย ได้แก่ เปรียบเทียบผลสัมฤทธิ์ทางการเรียน เปรียบเทียบการคิดอย่างมีวิจารณญาณของนักเรียนชั้นมัธยมศึกษาปีที่ 1 ก่อนและหลังเรียนที่ได้รับการจัดกิจกรรมการเรียนรู้โดยใช้ปัญหาเป็นฐานประกอบการเรียนรู้แบบอุปนัย และ 2. เพื่อศึกษาเจตคติของนักเรียนชั้นมัธยมศึกษาปีที่ 1ต่อการเรียนด้วยกิจกรรมการเรียนรู้โดยใช้ปัญหาเป็นฐานประกอบการเรียนรู้แบบอุปนัยกลุ่มตัวอย่างได้แก่นักเรียนชั้นมัธยมศึกษาปีที่ 1 โรงเรียนบ้านแฝกโนนสำราญ อำเภอเชียงยืน จังหวัดมหาสารคาม สำนักงานเขตพื้นที่การศึกษาประถมศึกษามหาสารคามเขต 3 ภาคเรียนที่ 1 ปีการศึกษา 2558 จำนวน 15 คน ได้มาโดยการเลือกแบบเจาะจง เครื่องมือที่ใช้ในการจัดการเรียนรู้ประกอบด้วย แผนการจัดกิจกรรมการเรียนรู้โดยใช้ปัญหาเป็นฐานประกอบการเรียนรู้อุปนัย จำนวน 14 แผน โดยมีคุณภาพอยู่ในระดับดีมาก เครื่องมือที่ใช้ในการเก็บรวบรวมข้อมูล ได้แก่ แบบวัดผลสัมฤทธิ์ทางการเรียนชนิดเลือกตอบ 4 ตัวเลือก จำนวน 30 ข้อ มีค่าความเชื่อมั่นเท่ากับ 0.93 แบบทดสอบวัดความสามารถในการคิดอย่างมีวิจารณญาณชนิดเลือกตอบ 4 ตัวเลือก จำนวน 30 ข้อ มีค่าความเชื่อมั่นเท่ากับ 0.91 และแบบวัดเจตคติต่อการเรียนโดยใช้ปัญหาเป็นฐานประกอบการเรียนรู้อุปนัย แบบมาตราส่วนประมาณค่า 5 ระดับ จำนวน 20 ข้อ ค่าความเชื่อมั่นเท่ากับ 0.81 สถิติที่ใช้ ร้อยละ ค่าเฉลี่ย ส่วนเบี่ยงเบนมาตรฐาน และ t-test (Dependent Samples) ผลการวิจัยปรากฏดังนี้

1. นักเรียนชั้นมัธยมศึกษาปีที่1ที่เรียนด้วยกิจกรรมการเรียนรู้โดยใช้ปัญหาเป็นฐานประกอบการเรียนรู้แบบอุปนัยวิชาสังคมศึกษามีผลสัมฤทธิ์ทางการเรียนและการคิดอย่างมีวิจารณญาณหลังเรียนสูงกว่าก่อนเรียน อย่างมีนัยสำคัญทางสถิติที่ระดับ .05

2. นักเรียนชั้นมัธยมศึกษาปีที่ 1 ที่เรียนด้วยกิจกรรมการเรียนรู้โดยใช้ปัญหาเป็นฐานประกอบการเรียนรู้แบบอุปนัยมีเจคติต่อ กิจกรรมการเรียนรู้โดยใช้ปัญหาเป็นฐานประกอบการเรียนรู้แบบอุปนัย วิชาสังคมศึกษา ชั้นมัธยมศึกษาปีที่ 1 อยู่ในระดับมากที่สุด

คำสำคัญ : กิจกรรมการเรียนรู้, ปัญหาเป็นฐาน, อุปนัย, สังคมศึกษา

Abstract

This research study aimed 1) To study the result of arranging problem-based learning activities for inductive learning including comparing academic achievements of Grade 7 students who receive the problem-based learning activities for inductive learning both before and after the learning and 2) to study the attitude of Mutthayom Suksa 1 students towards problem-based learning activities for inductive learning. Samples included 13 Mutthayom Suksa 1 students of Ban Faek Non Samran School, Amphoe Chiang Yuen, Mahasarakham Province, Mahasarakham Educational Service Area Zone 3, First Semester, Academic Year 2015, selected by specific selection. Tools employed in learning provision included 14 plans for arranging problem-based learning activities, for inductive learning which turned out to be of very good quality. Tools used for data collection included an academic achievement assessment form of the 4-choice answer type

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totaling of 30 items with the confidence value of 0.93; a critical thinking competency assessment form of the 4-choice answer type totaling of 30 items with the confidence value of 0.91; and a form for assessing attitude towards problem-based learning activities for inductive learning of the 5-level rating scale type totaling of 20 items with the confidence value of 0.81. Employed statistics were frequency, percentage, average, standard deviation and t-test (Dependent Samples). Research findings are as follows:

1. The result of arranging problem-based learning activities for inductive learning of Social Studies in Mutthayom Suksa 1 finds that the students who receive problem-based learning activities for inductive learning of Social Studies have higher academic achievements and critical thinking ability after learning than before learning with the statistical significance level of .05.

2. Mutthayom Suksa 1 students who receive problem-based learning activities for inductive learning of Social Studies have attitude towards problem-based learning activities for inductive learning of Social Studies in Grade 7 at the most level.

Keywords: Learning activities, Problem-based Learning, Inductive Learning, Social Studies

Introduction

Nowadays, the Thai society is much more advanced than in the past. There have been significant socio-economic, cultural and lifestyle changes of the Thai people due to development of technologies that affect the quality of people in the society. People need to adjust themselves following value and culture on a continuous basis and sometimes they find it difficult to keep up with the problems emerging in the society. Moreover, it is found that now media plays an important role and much easier for learners to get access than in the past. This results in a state that the Thai society is full of various problems including crimes, drug addiction and trade, quarrel and fight among students and materialism of teenagers. The main reason for these problems is that students lack of critical thinking and contemplating which consequently affects the ability to control emotions. Then students are easy to persuade and fail to pay attention to studying hence affecting learning and resulting in low academic achievements of students.

Having studied the state of problem of the school that the researcher is performing the duty of teaching, data is obtained from the academic division of Ban Faek Non Samran School on academic achievements of subjects concerning social studies, religions and culture for the Academic Year 2013. It is found that students have academic achievements at the level of 2.54, standard deviation of 0.89 and the coefficient of variation of 33 per cent which show that students have academic achievements in subjects concerning social studies, religions and culture at the low level and a large knowledge gap among students that requires improvements and development of teaching activities, learning media and solutions so that students have higher academic achievements and a similar level of knowledge (Ban Faek Non Samram School, 2014:10). In addition, the 3rd-round quality assessment outside basic schools (B.E. 2554 – 2558) for Ban Faek Non Samran School, Amphoe Chiang Yuen, Mahasarakham Province, Mahasarakham Educational Service Area Zone 3, Office of the Basic Education Commission, Ministry of Education, it is indicated that in the 4th standard, students have the ability of analytical thinking, critical thinking, creative thinking and contemplating as well as having visions in a lower level than other standards.

In helping a person to encounter problems, to change necessarily requires education that promotes and develops learners to have the rational thinking ability through carefully contemplating that will lead to quality conclusion and decision. Critical thinking will ensure that the Thai people in the present society face changing social conditions in an

accurate and appropriate manner on the basis of rationality and understanding of changing society in various dimensions. Learners shall be able to search for knowledge and apply such knowledge with rational thinking and principles that leads to quality decision making and happy cohabitation in the society. The National Education Act B.E. 2542 and the Amendment B.E. 2545 determine a guideline to education provision with the emphasis on the education provision process that needs to encourage learners to naturally and fully develop themselves. In the education provision process, academic institutions and related agencies must arrange skill trainings on thinking processes, management of facing situations and applying acquired knowledge to prevent and solve the problem, provide activities so that learners learn from real and hands-on experiences, able to do and think, love to read and lead to continuation (Office of the Basic Education Commission, 1999: 13-14), the same as the core curriculum for basic education B.E. 2551. Subjects concerning social studies, religions and culture have determined key competencies for learners in terms of the thinking ability including analytical thinking, creative thinking, critical thinking and systematic thinking so that these competencies lead to creation of knowledge or information for appropriate decision making on issues relating to oneself and the society (Ban Faek Non Samram School, 2014:21).

Critical thinking is an essential and necessary process for all levels of learners because the critical thinking process aims to obtain a thought that is resulted from thorough consideration of evidence data and reasons. This derived thought will be used widely in all situations as any actions taken should come from careful thinking. Therefore, critical thinking is a basis for thinking when a person thinks of any topic and has critically thought, such a derived thought can be used in other processes such as decision making towards resolving any problem, putting the thought into practice or to further study (Thissana Khaemmanee et al., 2001: 149-150). It is the main purpose of education provision as well as a desired attribute in the rapidly changing society that becomes sophisticated and full of problems and one needs to decide carefully. Thus, education should be provided in such a way that encourages more critical thinking ability to learners. This process is necessary and important as well as consistent with the demand of the present society. (Thissana Khaemmanee, 1990: 132) Promotion of the critical thinking ability to young people is therefore important by providing schooling that teaches how to rationally think, make quality decision, dare to express thoughts and reasonably accept other thoughts.

Problem-based education provision is a process of learning provision that starts from an occurring problem. The problem is a starting point of the learning process and a stimulus to development of rationally problem-solving skills and search for information in order to understand the mechanism behind the problem as well as solutions. This type of learning aims to develop learners in procedural skills and self-learning ability which learners will be trained to create knowledge through a problem-solving thinking process. (Ministry of Education, 2008: 1) Problem-based learning is a learning method that is different from traditional methods that focus on the knowledge content and teachers. The main difference of the problem-based learning is that it focuses on students by aiming to solve a real problem or using a model situation to encourage learning so that students think while working on the centered problem. After students have used their basic knowledge to understand and explain their concept towards such a problem, the remaining pieces in the problem will be a part students do not understand and require further learning so that they have knowledge to explain and solve the problem. Students will develop a learning plan that will lead them to search for information from various sources for understanding related pieces with the pieces that have not been figured out. In searching, students will be assigned individually or as a group to search. (Puangrat Boonyanurak, 2001:42)

Problem-based learning will emphasize on learners to create new knowledge from using actual problems occurring in reality as a learning context so that learners develop the ability to think analytically in solving the problem as well as gaining knowledge according the science of subjects being studied as well. Problem-based learning is thus a result of a working process that requires mainly understanding and problem solving.

Inductive learning is a learning method that instructors arrange learning activities from details towards the main part or rules, regulations, facts or conclusions by taking samples such as information, events or phenomenon that have hidden principles for learners to study, observe, experiment, compare or analyze until they reach a conclusion in the form of a principle or rule by themselves. (Suwit Moonkham and Orathai Moonkham, 2007: 15-17). Inductive teaching is a method that focuses on learners to develop the analytical thinking skill, be able to grasp a principle or a key point by themselves creating a conceptual principle or bodies of knowledge with understanding. With this form of learning, it is a learning method that focuses on learners that helps learners eager to learn things and creates learning endurance and coming up with a theory and rationale which is a basis of critical thinking.

For this reason, the researcher is interested in bringing outstanding features of this problem-based learning method and the inductive learning process together combining into problem-based learning activities along with inductive learning. This will provide learners with a learning tool to start to learn from problems through information searches, contemplation and analyses before making a conclusion that leads to careful decision making and develop learners to have the critical thinking ability and obtain higher academic achievements.

Research objectives

2.1 To study the result of arranging problem-based learning activities for inductive learning including comparing academic achievements of Grade 7 students who receive the problem-based learning activities for inductive learning both before and after the learning.

2.2 To study the attitude of Grade 7 students towards problem-based learning activities for inductive learning.

Scope of Research

In this research the researcher has divided the research scope into phases as follows:

Phase 1: Study of the state of problem and basic information relating to learning provision to encourage the critical thinking ability and academic achievements.

1. Population: population participated in the Research Phase 1 is taken by specific selection as follows:

1.1 Students taken for a questionnaire on opinions on learning activities of Social Studies in civic duty, culture and living in the society in classes that are interesting or not interesting to students and the interest in learning activities, of 3 classrooms from 3 schools totaling of 64 students.

1.2 Students taken for interview about the aptitude of students in studying and the retention and adjustment of Social Studies subject regarding civic duty, culture and living in the society, of 3 classrooms from 3 schools totaling of 64 students.

1.3 Social Studies teaching staff are to observe the learning activities in classrooms that focus on quality achievements as targeted as well as the conditions that students may not yet achieve and succeed in learning following the curriculum and experiences in teaching and learning activity provision, of 3 teachers from 3 schools in the Nong Pone Ngern Education Quality Development Group.

Phase 2: Study of the result of arranging problem-based learning activities for inductive learning.

1. Population and samples

1.1 Population taken in this research includes Mutthayom Suksa 1 students of schools in the Nong Pone Ngern Education Quality Development Group, Amphoe Chiang Yuen, Manasarakham Province, Mahasarakham Educational Service Area Zone 3, First Semester, Academic Year 2015, of 3 classrooms totaling of 64 students.

1.2 Samples taken in the problem-based learning activities for inductive learning include 13 Mutthayom Suksa 1 students of Ban Faek Non Samran School, Amphoe Chiang Yuen, Mahasarakham Province, Mahasarakham Educational Service Area Zone 3, First Semester, Academic Year 2015, selected by specific selection.

Methodology

In this study, the researcher have gathered concepts relevant to learning provision in order to encourage learners to have the critical thinking skill by starting from studying the state of problem and basic information relating to learning provision. Then relevant literature review is conducted in order to find the appropriateness of the research concept and conduct a research in the form of research and development. Thus, the research defines the research concept framework as follows:

Population and samples

Population are Mutthayom Suksa 1 students of schools in the Nong Pone Ngern Education Quality Development Group, Amphoe Chiang Yuen, Mahasarakham Province, Mahasarakham Educational Service Area Zone 3, First Semester, Academic Year 2015, of 3 classrooms totaling of 64 students.

Samples are 13 Grade 7 students of Ban Faek Non Samran School, Amphoe Chiang Yuen, Mahasarakham Province, Mahasarakham Educational Service Area Zone 3, Semester 1, Academic Year 2015, selected by specific selection.

Research tools

The researcher has created tools and looks for the quality of such tools in steps as follows:

Phase 1: Study of the state of problem and basic information relating to learning provision to encourage the critical thinking ability and academic achievements.

1. A questionnaire on student opinions on learning activities of Social Studies in civic duty, culture and living in the society in classes that are interesting or not interesting to students and the interest in learning activities, of the open ended question type totaling 10 items.

2. An interview form about the attitude of students in studying and the retention and adjustment of Social Studies subject regarding civic duty, culture and living in the society. It is a structured interview form of 10 items.

3. An observation form about the learning activities in classrooms that focus on quality achievements as targeted as well as the conditions that students may not yet achieve and succeed in learning following the curriculum and experiences in teaching and structured learning activity provision, totaling of 10 questions.

Phase 2: Study of the result of arranging problem-based learning activities for inductive learning.

1. Form of problem-based learning activities for inductive learning.

2. 14 learning activity plans by using problem-based learning activities for inductive learning of civic duty, culture and living in the society for Mutthayom Suksa 1.

3. An academic achievement assessment form for Social Studies of civic duty, culture and living in the society for Mutthayom Suksa 1. The form contains 30 multiple-choice items with 4 choices in each question.

4. A critical thinking skill assessment form for Mutthayom Suksa 1 students. The form contains 30 multiple-choice items with 4 choices in each question.

5. An assessment form for attitude towards learning activities for Mutthayom Suksa 1 students.

The form is of the 5-level rating scale type totaling of 20 items.

Data collection

In order to obtain data in all dimensions, the research has conducted the following steps:

1. The research has studied the state of problem and basic information relating to learning provision to encourage the critical thinking ability and academic achievements.

2. Create problem-based learning activities for inductive learning.

3. Study the result of using the problem-based learning activity plan for inductive learning.

4. Take the result of the study in planning activities to analyze and evaluate the data.

Data analysis and statistics

The researcher has analyzed the data including frequency, percentage, mean, standard deviation and tested the hypotheses using the dependent t-test with the statistical significance level of .05.

Research conclusion

This research involves development of problem-based learning activities for inductive learning and can be concluded as follows:

1. The result of arranging problem-based learning activities for inductive learning of Social Studies in Mutthayom Suksa 1 finds that the students who receive problem-based learning activities for inductive learning of Social Studies have higher academic achievements and critical thinking ability after learning than before learning with the statistical significance level of .05.

2. Mutthayom Suksa 1 students who receive problem-based learning activities for inductive learning of Social Studies have attitude towards problem-based learning activities for inductive learning of Social Studies in Grade 7 at the most level.

Discussions of research results

From the development of problem-based learning activities for inductive learning of Social Studies in Mutthayom Suksa 1, the researcher would like to discuss the research findings in each aspect as follows:

1. Students who receive problem-based learning activities for inductive learning of Social Studies in Mutthayom Suksa 1 have scores on academic achievements of 81.53 per cent on average, and on the critical thinking ability of 81.15 percent on average, of which are relatively high averages. This may come from the learning activities that are designed in such a way that they are diversified in terms of learning both individually and as learning groups, learners get hands-on practices in the activities, searching for answers themselves, exchanging knowledge with friends and asking for suggestions from teachers when a problem arises or they do not understand the content. Problem-based learning activities for inductive learning are activities that contain synthesizing characteristics from both of learning forms by having diversified and integrated learning activities, desire and curiosity of learners together with challenging lessons and understanding reinforcing activities that make learners engrossed themselves more in learning. In addition, understanding of individuals and situation contexts also affect contemplation, responsiveness and behavioral adjustments of learners to be aware of the consequent impacts. When students express themselves in various ways with their aptitude and full potentials along with experiences from learning activities with which learners have encountered problems and found solutions by using past experiences and basic knowledge to analyze and understand the problems and look for solutions in a systemic way. This is through events or problematic situations familiar with the learners while having friends and teaches to suggest in case of doubts and non-understanding until the answers to the problems are successfully found. This result is in line with that of Niras

Chantornchit (2007 : 258) whose view supports that problem-based learning provision is an activity relating to problems or using questions to stimulate students to use their best efforts to study and search for answers. This is done by knowledge search or raising a problem requiring an answer and choosing appropriate ways to solve such a problem and having value by students getting to practice themselves, thus this strengthens learners to succeed by realization and understanding in lesson contents and then the critical thinking ability followed. This is also consistent with Prairat Chanpratad (2014: 42) who has conducted research on the critical thinking ability by integrating the theory of multiple intelligences and problem-based learning that affect critical thinking and academic achievements of Grade 11 students of Physics on static electricity. The research result obtained by students who receive leaning activities integrating the multiple intelligences and problem-based learning finds the average score of the critical thinking development of 79.33 per cent and has the development on academic achievements on average 78.25 per cent higher than the determined criteria.

2. The result of the study on the attitude towards problem-based learning activities for inductive learning of Social Studies in Mutthayom Suksa 1 developed by the researcher, finds that learners have the attitude towards problem-based learning activities for inductive learning at the opinion level of "Totally Agree". This may be due to the fact that provision of learning activities in this form emphasizes more student participation, students choose what to learn themselves, contents are not too difficult than learners' capability and within the scope of daily application. Students can search for answers themselves and have chances to exchanges and participate in group activities and help each other. Moreover, students are enthusiastic and enjoy the learning which results in students being motivated more in learning which is consistent with the findings of Thissana Khaemmanee (2012: 238-239) Teaching that foster any values to learners can be done in attitude objective steps following Bloom et al., as follows. Step 1: Value perception. Instructors provide experiences or situations that help learners to perceive such value in an attentive manner. Step 2: Value responsiveness. Instructors provide situations that learners have a chance to respond to such value in any possible way. Step 3.Value appreciation. Instructors provide experiences or situations where learners can appreciate such value. Step 4. Value systematization. Once learners appreciate the value, develop good attitude towards such value and tend to accept the value into their lives, instructors then should stimulate learners to consider the value with other values of themselves and create relationships between them. Step 5: Building characteristics. Instructors encourage leaners to practice their value on a regular basis by following performances and providing feedbacks while needing periodic reinforcements until learners practice on a regular basis. Implementation of all 5 steps cannot be done in a short-time. Time is required especially Step 4 and 5 require time to implement where the length of time depends on each individual learner. This result is consistent with the findings of Alisara Srisoi (2011) who has conducted research on comparison of the critical thinking ability, academic achievements and attitudes towards science learning of students obtained from the 7-steps cycle learning, problem-based learning and traditional learning. It is found that the average of science achievements, the critical thinking ability and the attitude towards learning after learning is higher than before learning with the statistical significance of .054. Students who have gone through problem-based learning has better science achievements and the critical thinking ability than students who undertake traditional learning. ($p < .017$)

Recommendations

1. Recommendations for application of the research results,

1.1 In applying the problem-based learning activities for inductive learning, a teacher can use

the concept formation chart as a tool to analyze a problem in the learning activities. Then, learners can understand the problem the teacher identifies more easily and use the inductive learning process to create connections and appreciate the importance of information in the learning activities in deriving correct answers.

1.2 In arranging the problem-based learning activities for inductive learning, a teacher should mainly consider learners' ability and emphasize the personal differences of students so that students can show their ability at full potentials. Students in the same group should be mixed in terms of ability and aptitude so that a student in each group uses own ability and the group members can suggest one another within the same group.

2. Recommendations for future research,

2.1 In conducting research, an observation has been found that in doing group activities students have good interaction within group. For future research, further development of group relations derived from problem-based learning for inductive learning is recommended.

2.2 There should be development of teaching forms in future research and that components of learning forms should be explored whether there are similar forms in order to integrate them together and develop new and better learning activities.

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