

Results of the learning management of Active Learning Approach in Science subject towards the creation of learning motivation for vocational students

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Abstract

The objective of this research was to study 1) the results from the Active Learning Approach in Science subject to create the motivation for vocational student education 2) the attitude of the vocational student towards Science (Physics) education. The target group of this study is students in vocational certificate level (vocational certificate) who are studying in the vocational subjects, including electricians, mechanics, mechatronics and welder of the Technical College under the Vocational Education Commission, 100 schools nationwide. Collect data from a total of 9,541 students by random sampling. The tools used for collecting data are 1) class observation record form 2) group discussion 3) Survey of students' attitudes at Vocational Education for Science (Physics) level. Analyze data using basic statistics, such as Percentage, analysis of group discussion using Content Analysis Method

The research found that Active learning Approach in Science affecting the motivation of learning at the vocational level students which consist of main points are: 1) work intention 2) reflecting on what students have learned in class 3) participation in content discussions, and 4) the importance of applying in daily life. The motivation that makes students want to study Science subject is the teachers organize the teaching approach to be consistent with the students' aptitudes and preferences, there are a variety of teaching methods, focus on practical learning, focus on experimenting or solving problems using group processes, and students have clear roles, using 7E and inquiry-based learning using project-based, and have lectures as teaching material, such as videos, PPT, pictures and so on. Teachers encourage students by using questions to stimulate students' interest, exchanging ideas from time to time, enhance motivation by scoring and adjust their personality to create a friendly relationship with students. And teachers have examples of applying concepts to real-world work or daily life at personal and family level, can be used in higher education and the future, and students have a good attitude towards Science, Science content that has been learned which useful in the future, have an understanding of the content of Science education and Science helps to live a better life.

Keywords: Teaching, Active Learning, Motivation and Impact

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Introduction

Background and Importance of The Problem

Vocational education in Thailand is considered as an important mechanism in the development of the country. Because it is considered to create the most manpower in the industrial sector. Therefore, the approach of vocational education considered important. Most students focus on learning in a profession that adds mechanic skills rather than theoretical subjects, especially in the theory of Science which is regarded as a difficult subject which can be difficult to connect with everyday life. Therefore, not interested in studying and learning to pass through. But in reality, Science is very important, because it will be an important basis for creating innovations or applying to various tools. Therefore, it is necessary to change learning approach to respond to changes in technology society, from teachers who have a role as transmitters, changing roles as guides to suggest how to search for knowledge to develop learners to be able to seek knowledge and applying various skills. Create self-understanding until it becomes meaningful learning. Higher education institutions are more alert and prepared for the readiness to produce undergraduates to focus thinking, being able to work, analyzing, and can be applied. Students can use such capabilities for self-learning throughout their lives.

Active Learning Approach is a learning innovation that focuses on learning management that emphasizes the importance of students. In principle, both Active Learning Approach and Child Center Approach are based on the theory of Constructivism that emphasizes the importance of learning that occurs within the learner by acknowledging new knowledge from various learning sources, such as from teach-

ers, friends, and the environment, by which students participate in that learning activity with the students themselves, then incorporating the existing knowledge and creating a concept in that knowledge. Students have the opportunity to apply their knowledge to try and practice skills and present to the group to confirm the correct knowledge. These activities can occur only when the instructor has knowledge, understanding, and appreciation and is used to organize learning activities in educational institutions. (Tuen Thongkaew. 2546: Introduction) From these reasons, the researcher has an idea to study the effects of the Active Learning Approach in Science subject which affects motivation for vocational students to promote and develop learning and teaching management approach at the vocational level to be more efficient.

Educational objectives

1. To study the effects of Active Learning Approach in Science subject towards the creation of motivation for vocational student education.
2. To study the attitude of students at the vocational level towards Science (Physics) education.

Research Methods

1. Target groups in the study: Students in vocational certificate level (vocational certificate) who are studying in the vocational subjects, including electricians, mechanics, mechatronics and welder of the Technical College under the Vocational Education Commission, 100 schools nationwide.

2. The variables studied were early variables: is the Active learning Approach of the Learning Module-Safety Module for Newton's First Law of Motion in Physics subject. The dependent variable is the motivation of vocational students, by analyzing from class observation, student group discussion, and the

survey of students' attitudes.

3. Research tools

3.1. Class observation record

3.2. Vocational certificate level student group discussion in Science education

3.3. Vocational certificate level student attitude scale in Science (Physics) education

4. Collection data process

4.1. Submit a request for courtesy to collect research data in the school together with 1) a clarification form and request for consent to participate in the research and 2) a response form for the research team to collect research data.

4.2 Plan to collect data and inform the sample group for data collection and benefits and explain the process to the sample group to acknowledge and start to collect data process.

5. Data analysis and statistics used in data analysis

5.1. Analysis of the General Rubric Score is a tool used during the observation of the teaching and learning tape used in this practice, which developed from the UTeach Observation Protocol (UTOP). Using a 5-level scoring system based on the Likert Scale, collect and analyze results using Percentage.

5.2. Analysis of group discussion information using Content Analysis Method by collecting answers in each question, and summarize the key points (Theme), analyze each theme using basic statistics of Percentage.

Summary of results and discussion of research findings

Part 1: Class observation results

1. Research results in a classroom learning atmosphere

1.1 Most students in the class work intently.

The research found that

Chart 1.

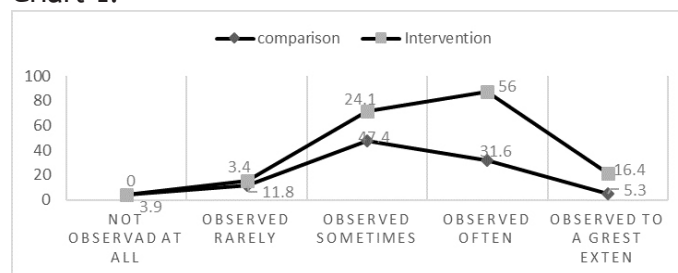


Chart 1, found that this indicator measures the proportion of the period that students in the class maintain participation in various activities in the class. From the results of this class observation record, conveying the students' intention to work in class by considering both the majority of students in the class and throughout studying. Found that there was a behavior of students who were not interested in studying, occasionally and only 2-3 students who did not participate in the lesson at all. In 56% of the experimental group, had about 75% of students at average interested in working throughout the entire period. There are some students with behavior that still is not interested in studying intentionally in the control group, 47.4%.

2. Research results in lesson structure

2.1 Students have the opportunity to reflect on their thoughts and what they have learned before leaving the class.

Chart 2.

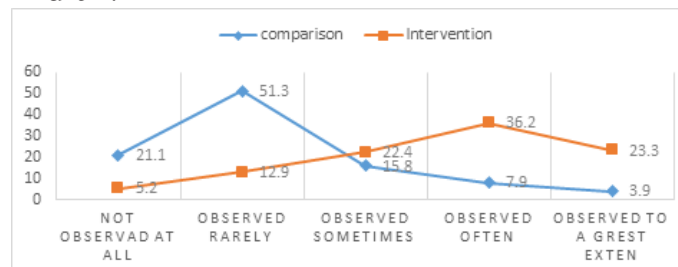


Chart 2, found that students had the opportunity to reflect on their thoughts and what they had learned before leaving the class. Most students (90%) reflect what they have learned which includes summarizing what has been learned, and connecting activities or work is done in the room to the main idea, or process skills that are important in the ex-

perimental group, 36.2% and have time for students to reflect ideas. But students reflect on what they have learned in brief. Therefore, it is not a superficial reflection, in addition to only repeating the topics in the control group, 51.3%, respectively.

2.2 The lesson structure encourages students to participate in the lesson or explore the main ideas in an important Science subject (instead of focusing on useful techniques only at the exam).

Chart 3.

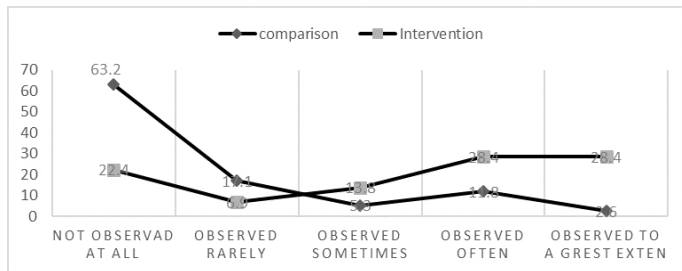


Chart 3, found that the lesson structure is allowing students to participate in lessons. It was found that the structure of the lesson provides opportunities for students of all classes or nearly all to participate and studied and explored various key ideas in Scientific almost at the period of that lesson (90%) which occurred continuously and clearly highlighted in the teacher’s plan, and maintain the level of student participation throughout the subject in the experimental group, 28.4%, and the structure of the lesson does not give students the opportunity to participate or explore the various key ideas of Scientific in the control group 63.2%, respectively

3. The research result of teaching management.

3.1 Teachers use questioning strategy (using Wait time / using a variety level of questions)

Chart 4.

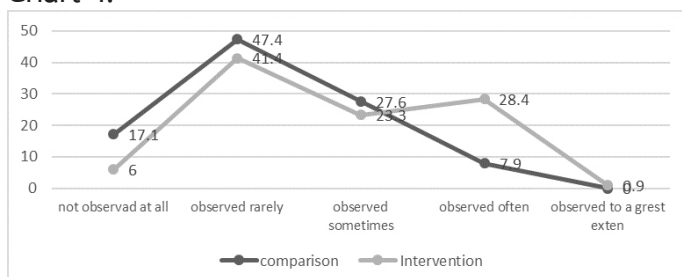


Chart 4, found that teachers used mostly the closed-ended questioning and memorized-to-answering strategies. (Answer only briefly with one word or short phrases). But asking more challenging questions with some students to draw attention or making participation or testing the development of skills, or the teacher asks the questions and requests students to answer the whole class to create interest or to ensure that students are interested in studying. But there are no questions that challenge students to think critically about the content or scientific concepts, by sorting the highest score in the experimental group 47.4% and the control group 41.4%, respectively

3.2 The teacher draws all students to participate in the lesson.

Chart 5.

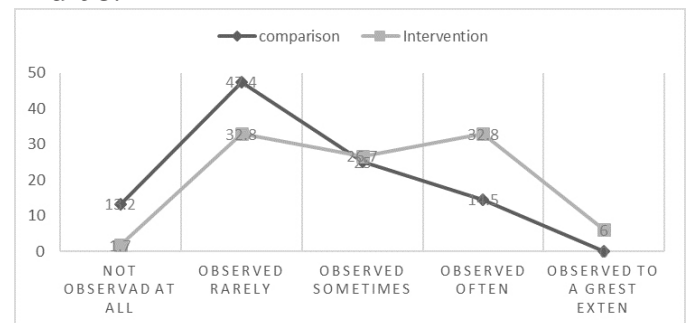


Chart 5, found that this indicator measures whether more or less, how teachers can make every student intend to study and participate in the ideas in the lesson. Eye-witness found that the teacher encourages students who do not volunteer to answer or do not volunteer to participate. We will not consider this high score if found that the teacher calls many students to give a short and simple answer. Teachers should allow students to participate, including those who volunteer and do not volunteer to answer, by sorting the highest score in the experimental group 47.4% and the control group 32.8%, respectively.

3.3 Students are questioning Participate in discussions about content and various work processes as well as exchanging work done with classmates.

Chart 6.

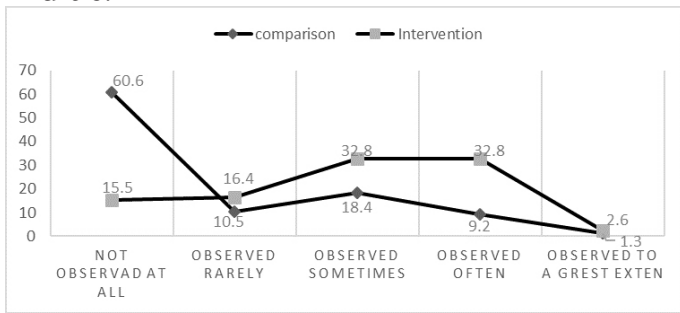


Chart 6, found that this indicators measure the level of participation and the level of collaboration in activities between students, working in pairs, working in small group, or the whole class throughout the lesson, which includes discussions between students about the lesson, which is more than considering the classroom atmosphere during the period the students working in general. But must consider both the frequency and quality of interaction between students and students about the content of the lesson on such day by sorting the highest score in the experimental group, 32.8% and in the control group 60.6%, respectively

Part 2: Results of student group discussion at the level Vocational Certificate in Science Education

1. Which teaching methods help students learn best?

Chart 7.

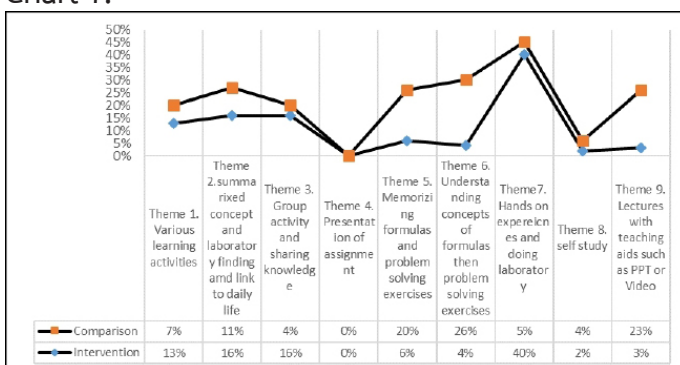


Chart 7, found that the teaching methods that help students learn the best, first three orders are the experimental group. Experiments and practical 40%, summary of concepts and results of the ex-

periments and group activities and exchange of opinions with classmate 16% and teaching with a variety of activities 13%. In the control group, it was found that teaching methods that help students learn best in the first three orders as follows. Explanation of the source of the formula to understand and practicing Science problems 26%, the use of media and teaching materials such as video and PowerPoint 23%, and reciting calculation formulas, and practicing Science problems 20%, respectively.

2. What does the teacher make the scientific concept of the student better?

Chart 8.

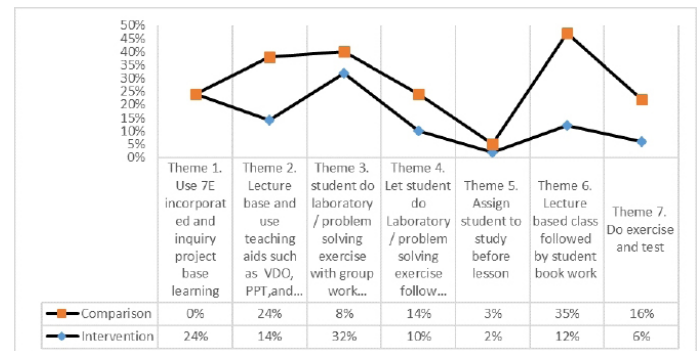


Chart 8, found that the teacher made the Science concepts of the students better. The first three were as follows: experimental group conducted experiments or solved problems using group processes, and students had clear roles 32%, using 7 E and inquiry-based learning using the project as a base 24%, and lectures with teaching materials, such as videos, PPT, pictures, and so on 14%. In the control group, found that the teachers made the Science concepts of students better. The first three sequences were as follows: lectures follow to textbooks 35%, lectures with teaching materials, such as videos, PPT, pictures, and so on 24%, and doing tests and or doing exercises 16%, respectively.

3. Do students participate in classroom activities or not? How have teachers motivated students?

Chart 9.

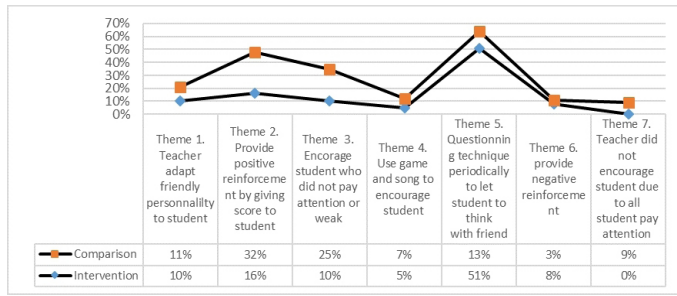


Chart 9,found that students participated in classroom activities, with teachers encouraging students by using first three orders of different methods as follows: The experimental group using questions to stimulate students’ attention to help each other think in the whole class periodically 51%, enhance motivation by scoring 16%, and improve students’ personality to create a friendly relationship, enhance motivation by scoring 10%, respectively. In the control group, students participate in classroom activities, with the teacher encouraging students by using the first three orders of different methods as follows: enhance motivation by scoring 32%, encourage individual student especially those who lack of interest or still do not understand 25%, and using questions to stimulate students’ attention to help each other think in the whole class periodically 13%, respectively.

4. Does the teacher give examples of applying concepts to the real world of working or in daily life?

Chart 10.

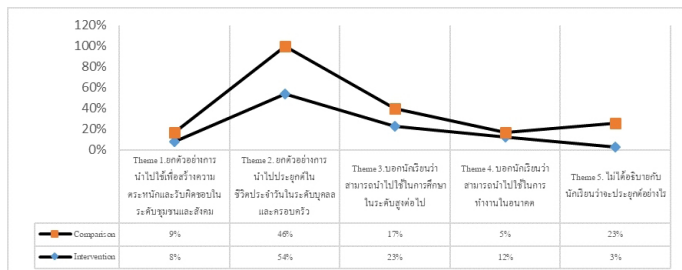


Chart 10, found that teachers gave examples of applying the concepts to the real world of working or the daily life of the first three orders as follows:

the experimental group, provided examples of application in daily life for an individual and family level 54%, informed students that can be used in further education 23%, and informed students that can be used in future career 12%, respectively. In the control group, , found that teachers gave examples of applying the concepts to the real world of working or the daily life sorted in descending order from, the first three orders as follows: provided examples of application in daily life for an individual and family level 46%, did not explain to students how to apply 23%, and informed students that can be used in further education 17%, respectively.

Part 3: Attitudes of students in vocational certificate level in Science (Physics)

3.1 The results of the study of vocational education for Science (Physics) students’ attitudes, the experimental group.

Table 1.

	1a	1b	1d	1e	1h	1i
4	17%	26%	15%	10%	14%	6%
3	78%	70%	68%	76%	75%	47%
2	4%	3%	16%	13%	10%	39%
1	1%	0%	1%	1%	1%	8%

From Table 1, found that students enjoyed with Science subject 78%, Science content that has been learned will be useful in the future 70%, often working as a group in Science studies 68%, understand the content of Science studies 76%, knowledge in Science help make life a better 75%, and Science is a favorite subject 47%.

3.2 The results of the study of vocational education for Science (Physics) students’ attitudes, the control group.

Table 2.

	1a	1b	1d	1e	1h	1i
4	20%	28%	20%	10%	15%	8%
3	75%	69%	69%	73%	74%	45%
2	3%	3%	9%	16%	9%	40%
1	1%	1%	1%	2%	1%	8%

From Table 2, found that the students enjoyed with Science subject 75%, Science content that has been learned will be useful in the future 69%, often working as a group in Science studies 69%, understand the content of Science studies 73%, knowledge in Science help make life a better 74%, and Science is a favorite subject 45%.

Discussion of research findings

From the study of the effects of the teaching by using Active Learning Approach in Science subject that affects motivation for vocational students. The researchers discussed the research findings as follows.

Part 1: Findings of the class observation consists of 4 main points:

1. Research finding in a classroom learning atmosphere. Most students in the class work intently. The results showed that 56% in the experimental group had about 75% of students interested in working on average throughout the course period. There are students with behaviors that still did not pay attention to study.

2. Research findings in structure found that students had the opportunity to reflect on their thoughts and what they had learned before leaving the class. Most students (90%) reflect what they had learned which includes summarizing what had been learned and connecting with activities or work done in the classroom to the main idea or process of skills that were important and had time for students to reflect ideas. But students reflected on what they

had learned in brief. Therefore, it was not a superficial reflection in addition to repeating specific topics in accordance with Mr. Boontin Indarit's research B.E. 2555 (2012), discussed the learning behavior of students by proactive learning methods. Resulting in the exchange of knowledge and presentation of their work in class. Resulting in students evaluating themselves through expressing feelings and reflecting thoughts, having a good development, and having their work improved.

3. Research findings in teaching management

3.1) Teachers use questioning strategies to promote participation, testing skills development, as well as encouraging participation in thinking about content or important concepts in Science, Mathematics. It was found that teachers mostly used closed-end and memorized-to-answer (answer only briefly with one word or short phrases) but asked more challenging questions with some students to draw attention or collaboration, or tested the skilled development, or teachers to ask students the whole class to answer to draw attention or to ensure that the students were interested learning but without questions that challenge students to think critically about the content of scientific concepts by sorting the highest score. In accordance with Natchanan Kaewchaicharoen (B.E. 2550) discussing the role of teachers in organizing learning activities through practice by focusing on student as the center of teaching and learning, creating participation atmosphere, organizing dynamic teaching and learning activities, collaborative learning arrangement, organizing challenging teaching and learning activities and giving students the opportunity to have a variety of teaching methods. 3.2) Teachers had pushed all students to participate in the lesson. It was found this indicator measures how more or less the teachers can make every student intend to study and participate in the ideas of the lesson. Eye-witness found is the teachers encouraged

students who did not volunteer to answer or did not volunteer to participate. This will not consider having a high score if it was found that the teachers just called many students to answer just a short and simple answer. Teachers should allow students to participate, including those who volunteer and do not volunteer to answer by sorting the highest score.

3.3) Students questioning, participating in discussions about content and various work processes, as well as exchanging work done with classmates. It was found that this indicator measures the level of participation and the level of collaboration in activities between students, working in pairs, make a small group, or the whole class throughout the lesson, which included discussions about the lesson content between students.

Part 2: Results of group discussion of students at the level vocational education for learning of Science by focusing on five issues as follows: 1. Teaching methods that help students learn best in accordance with the research of Chiraphon Yokin (B.E. 2560) said that the learning activities that will help the student have well Active Learning Approach, including experimentation and practice. 2. What teachers have made students' scientific concepts better is to have an experimental study or solve problems by using group processes and students have clear roles, using 7 E and inquiry-based learning using the project as a base and lectures with teaching materials. Students participated in classroom activities, with teachers encouraging students by stimulating students' attention to help each other think in the whole class periodically, enhance motivation by scoring, and improve students' personality to create a friendly relationship. 4. The teacher gives examples of applying concepts to the real world of working or in daily life individually and family, can be used in the future career by learning management, there should be main components, such as subject matter, instructor, me-

dia and equipment, teaching method, ambient atmosphere and learners (Somthawil Wichitwanna and group, B.E.2556: 11), based on such research findings which inconsistent with Natchanan Kaewchaicharoen (B.E.2550), Science course. Effecting the motivation for vocational students, which consists of four main points: 1) Most students of the class work intently. 2) Students have the opportunity to reflect on what they have learned before leaving the class. 3) Students questioning, participating in discussions about content and various work processes, as well as exchanging work done with classmate, and 4) Teachers show students clearly that what is important is to be used in everyday life and the motivation that makes students want to study Science courses is that the teachers form the method of teaching in accordance with the aptitudes and preferences of the students mainly. A variety of teaching methods that focus on real action focus on experimenting or solving problems using group processes and students have clear roles. Using 7 E and inquiry-based learning using the project as a base and lectures with teaching materials. There is a stimulus for students by various methods by using questions to stimulate students' attention to help each other think periodically. Enhance motivation by scoring and improve students' personality to create a friendly relationship. The teacher gives examples of applying concepts to the real world of working or in daily life individually and family, can be used in the future career

Part 3: Attitudes of vocational certificate students in Science (Physics). Found that students enjoy with Science. Science content that has been useful in the future. The students have often worked as a group in Science. Students have an understanding of the content of Science education and can bring knowledge and ability in Science to help live a better life and found that Science is the subject the students' favor.

Suggestion

The effect of teaching management of Active Learning Approach in Science subjects that affects motivation for vocational students can apply relevant factors in teaching and learning management. Because sometimes teachers may forget to pay attention to some details in teaching and learning, such as reinforcement, scoring, stimulation because these affect the learning of all learners.

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