

A COMPARISON OF THE PERFORMANCE OF LEARNING ANAGEMENT BETWEEN COOPERATIVE LEARNING TECHNIQUES (STAD) AND THE KNOWLEDGE SEEKING LEARNING MANAGEMENT (5E MODEL) AFFECTS THE LEARNING ACHIEVEMENT ON MATERIALS IN EVERYDAY LIFE OF PRATHOMSUKSA 4 STUDENTS

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ABSTRACT

The purpose of this research was to compare learning achievements in science subjects of Prathomsuksa 4 students between cooperative learning techniques (STAD) and the knowledge seeking learning management (5E model). The samples were 68 Prathomsuksa 4 students of the Demonstration School of Suan Sunandha Rajabhat University in the first semester of the academic year 2022 selected by cluster random sampling. The research tools were the cooperative learning techniques (STAD) plan, the knowledge seeking learning management (5E model) plan, the learning achievement test on materials in everyday life amount 35 items. The statistic was used to analyze data such as mean, standard deviation and t-test (dependent samples)

The results found that the learning achievements in science subjects of Prathomsuksa 4 students who studied according to plan of the cooperative learning techniques (STAD) and the knowledge seeking learning management (5E model) were significantly different at the .05 level.

Keywords: cooperative learning techniques (STAD), knowledge seeking learning management (5E model), learning achievement

INTRODUCTION

The global society in the 21st century was open to accepting and giving importance to information, knowledge and various news expecting learners to be knowledgeable, thinkers, problem solvers, and able to apply knowledge appropriately and in timely manner. Therefore, learning exchange was required in learning management in the 21st century because it aims to provide learners with other necessary skills for life. Teachers should design and plan science learning management which asserted the development of learners' competencies in various aspects including knowledge or scientific concepts, science process skills and essential skills in the 21st century which associated to the occurred changes. These situation enhanced students have to be learners, thinkers, and problem solvers by using scientific knowledge in a creative way, and can apply the knowledge to their own benefit and others with virtue. Development of students was ready to be an important force in the nation development and being a citizen of

the world living in the society of the 21st century with value. (Institute for the Promotion of Teaching Science, 2017)

The science teaching and learning management emphasized on the learners to discover the knowledge by themselves to obtain processes and knowledge from observation methods exploration, verification, experimentation, and the obtained results were systematized as a principles concept and knowledge (Ministry of Education, 2017). STAD (Student Teams - Achievement Division Technique) was a technique for teaching cooperative learning which promoted learners to best learning. The principle of this method was organizing activities that divide students into groups of 4-5 people with different abilities between good, medium and weak students. The different members combined in groups and have the same goal, help, promote, develop themselves and members of the group to reach the determined goals of teacher. STAD learning management was a way for students to truly be center of teaching and learning. Learners can practice and learn by themselves, and support other learners that also enable to develop social skills communication. (Newstrom, J. W. & Davis, K., 2002: 65). In addition, the knowledge seeking learning management (5E model) was another learning management model that was widely used to improve learning achievement. The learning management with the 5E knowledge seeking process emphasized seeking for knowledge that practiced learners to search for knowledge by using various process including finding reasons, finding knowledge or solving problems by own self. The knowledge seeking learning management (5E model) consists of 5 steps including engagement, exploration, exploration and, explanation, elaboration and evaluation (Bybee.1990; citing Lawson. 1995: 164 - 164). From this sequence steps, learners can create knowledge through their own thinking process. Problems or assumptions were determined following scientific methods, and then do experiment to check or search for answers based on that hypothesis.

From the above information, the researcher found that the cooperative learning techniques (STAD) and the knowledge seeking learning management (5E model) were student-centered process which these learning management were suitable to apply to improve student achievement. The researcher was interested in using the cooperative learning techniques (STAD) and the knowledge seeking learning management (5E model) to develop science learning achievements by comparing both of learning management on the learning achievement of everyday life materials of Prathomsuksa 4 students.

Research objectives

This research aimed to compare learning achievements in science subjects of Prathomsuksa 4 students between cooperative learning techniques (STAD) and the knowledge seeking learning management (5E model).

METHOD

Research methodology

1.1 This study consists of learning content Strand 2: Physical Science on Materials in Daily Life following the basic education core curriculum Science Learning Group, 2008 (Revised 2017).

1.2 The population used in this research was 110 Prathomsuksa 4 students of the Demonstration School of Suan Sunandha Rajabhat University in first semester of academic year 2022 among 3 classrooms. The sample group used in this research consist of 68 students selecting by cluster random sampling from 2 classrooms amount 34 students per each classrooms, and the experimental group using the cooperative learning techniques (STAD) was implicate for Prathomsuksa 4/1 students and the control group using the knowledge seeking learning management (5E model was implicate for Prathomsuksa 4/3 students.

Research tools

Tools used in research were:

- 1) Science learning management plan by collaborative learning management STAD technique on materials in daily Life.
- 2) Science learning management plan by seeking knowledge 5E on materials in daily life.
- 3) The pre-learning achievement test and the post-learning cooperative learning management technique STAD and the 5E knowledge-seeking questionnaire were the pre-learning achievement test of 35 items and the post-learning achievement test of 35 items in multiple choice forms.

Quality verification of tools

1) The researcher applied the cooperative learning management STAD plan and the 5E knowledge seeking learning management plan through considering the appropriateness of learning standards, indicators, learning content, learning outcomes, learning activities, media, measurement and evaluation of learning outcomes from 3 experts. The result found that the Index of consistency of expert opinions (IOC) was between 0.67 - 1.00 passing the valid criteria.

2) The researcher used the learning achievement test before and after the learning management performed to assessment of the consistency index between the test and the learning objectives from 3 experts. Then, the test was applied to 50 non-sample group students to analyze the quality of the test. The result found that there was a difficulty value from 0.50 - 0.63, there was a discriminant power of 0.20 - 0.80, the confidence of the test was 0.99.

Data collection

The researcher collected the data at the Demonstration School of Suan Sunandha Rajabhat University as follows:

1. The researcher measures learning achievement pre- learning in both sample groups of students which they done a pre-learning achievement test of 35 questions.
2. The researcher performed teaching according to the STAD-technology collaborative learning management plan with the experimental group and performed teaching according to the 5E inquiry-based learning management plan with the control group.
3. When the lesson was finished, the students in the experimental group and the control group took the learning achievement test after the STAD cooperative learning and the 5E inquiry-based learning.
4. The scores of evaluation were stated, and then the scores have been analyzed by a statistical method to compare the difference in pre-learning and post-learning scores.

Data analysis

The researcher used the scores of the experimental group and the control group obtained from pre-learning and post-learning scores to analyze the data as follows:

1. Analyze the mean and standard deviation and compare the pre-learning scores of Prathomsuksa 4 students who study in the cooperative learning management plan, STAD technique, and the 5E inquiry-based learning management by using an independent - samples t-test.

2. Analyze the mean and standard deviation of learning achievement of Prathomsuksa 4 students after they learned following cooperative learning management plan, STAD technique, and the 5E inquiry-based learning management by using an independent - samples t-test.

RESULTS

1) The researchers analyzed the mean and standard deviation and compared the pre-learning scores of Prathom Suksa 4 students who studied the STAD-based cooperative learning management plan and the 5E inquiry-based learning management plan using Independent - samples t-test at the significance level .05

Table 1 Analyzes the pre-learning scores of Prathomsuksa 4 students who studied in the cooperative learning management plan, STAD technique and the inquiry-based learning management 5E.

Learning management (pre-learning)	n	x	S.D.	t	df	sig
Cooperative learning techniques STAD	34	8.09	3.92	.05	58	.97
knowledge seeking learning 5E	34	8.10	3.98			

From Table 1, the result showed that the pre-learning scores of Prathomsuksa 4 students who studied in the cooperative learning management plan STAD technique and the learning management 5E were not different. Statistically was significant at the .05 level.

Table 2 Analyzes the post-learning achievement of Prathomsuksa 4 students who studied following the cooperative learning management plan, STAD techniques and the 5E inquiry-based learning management.

Learning management (post-learning)	n	x	S.D.	t	df	sig
Cooperative learning techniques STAD	34	21.58	4.01	4.29	58	.00
knowledge seeking learning 5E	34	26.09	5.31			

From Table 2, the result showed that the post-learning achievements of Prathomsuksa 4 students who studied under the cooperative learning management plan, STAD technique, and the 5E inquiry-based learning management were significantly different. Statistics was significant at level .05.

CONCLUSION AND FUTURE WORK

From the result of a comparison of the results of the cooperative learning techniques STAD technique and the knowledge seeking learning management (5E) on the learning achievement of daily life materials of students in Prathomsuksa 4, the researcher has brought to the discussion as follows.

The result was showed that Prathomsuksa 4 students who studied under the cooperative learning management plan, STAD technique had significantly higher learning achievement in Science on daily materials than students who received knowledge seeking learning (5E). The statistical level was .05 which was in accordance with the hypothesis. This result obtained because STAD cooperative learning management was a learning management that divides students following different abilities to work together resulting participation of learning and helping to share knowledge, exchanging ideas that makes learners receive more attention and interest than competition. Students have opportunity to think and work together to solve problems, consult, and express opinions with reasons to be able to achieve success. The higher learning outcome may cause by the learning atmosphere was good, and there was reviewing knowledge and understanding of the content together within the team along with announcing the results of praise for teams with high development scores in various ways, which is a technique to encourage learners to want to develop their studies resulting in better academic achievement which is consistent with Johnson's Theory of Learning (Johnson David W., 1992:1-54) that emphasizes the relationship between environment and cognitive development and emphasizes thinking process and motivating students. The result was also consistent with Brunner's concept (Brunner, 1963) that humans choose to perceive their own interests and learning comes from a process of discovery learning. Charoenraksa (2019) studied the comparison of the learning achievement of Prathomsuksa 2 students by cooperative learning management, STAD techniques and knowledge seeking learning (5E). The students who received the cooperative learning management STAD technique were higher than the learning achievements in the science subjects that received the knowledge-seeking learning management with statistical significance at the .05 level. Comparison of learning outcomes in science about biomolecules Mathayomsuksa 4 during the STAD cooperative learning management and the knowledge seeking learning (5E) was performed in other study. The students who studied in the STAD cooperative group had higher post-learning achievement than the students who studied in the knowledge seeking learning (5E). The statistical was significant at the .01 level. The research results of Tawin Budsri (2009) who studied comparison of learning achievement on the subject multiplication and division math skills and attitude towards mathematics of Prathomsuksa 2 students who received cooperative instruction using STAD technique versus normal teaching. They found that learning achievement on division after STAD technique learning management was higher than pre- learning at 70 percent threshold and it was statistically significant at the .05 level.

Suggestion

1. Understand the role and responsibilities of the teacher to be a mentor to the students and maintain teaching and learning activities to be steady and encourage student participation in activities.

2. The cooperative learning STAD technic was a best way to teach science because it encourages students to be creative thinkers. There are working principles and can perform as a step process.

ACKNOWLEDGEMENTS

This research owes its success to the contributions of many people. Most appreciations go to those experts for their advice and also to Suan Sunandha Rajabhat University for their valuing this research and funding support. Special thanks also go to the director and the teachers at Demonstration School of Suan Sunandha Rajabhat University for their kind support.

REFERENCES

- Tawin Budsri. (2009). A Comparison of Learning Achievement in Multiplication and Division in Mathematics Skills. and attitude towards mathematics of Prathom Suksa 2 students receiving cooperative teaching using STAD technique versus normal teaching. Master of Education Thesis (Master of Education). Graduate School: Mahasarakham University.
- Institute for the Promotion of Teaching Science and Technology (EST), Ministry of Education. (2015). Summary of PISA 2015 Assessment Results in Science, Reading and Mathematics. Bangkok: Teachersapa Printing House.
- Office of the Basic Education Commission, Ministry of Education. (2017). Indicators and core learning content. middle group of science learning (Revised edition 2017) according to the basic education core curriculum, 2008. Bangkok: Agricultural Cooperative Community Printing House of Thailand Ltd.
- Warangkana Charoenraksa. (2019). A Comparison of Learning Achievement of Primary School Students 2By cooperative learning management, STAD techniques and knowledge seeking. Master of Education degree, Suan Sunandha Rajabhat University.
- Wichan Lertlop and Komol phaisan. (2010). Science Teaching Model suitable for Mathayomsuksa 3 Students in Ang Thong Province. Bangkok: Suan Sunandha Rajabhat University.
- Sumalee Prakotang. 2012. Comparison of learning outcomes in science. about biomolecules Secondary school year 4Between the STAD cooperative group learning management and knowledge seeking. Curriculum and Learning Management Innovation, Nakhon Phanom University.
- Bruner, J. (1963). The process of education. New York : Alfred A Knopf, Inc. and Random House. 1-54.
- Johnson David W. and Johnson RogerT. (1992). Learning Together and Alone : Cooperative and Individualistic Learning (5th ed). Englewood Cliffs, New Jersey: Prentice Hall.
- Lawson, A. E. (1995). Science Teaching and the Development of Thinking. Belmont: Wadsworth.
- Newstrom, J. W., & Davis, K. (2002). Human Behavior at Work: Organizational Behavior (8th ed). New York: McGraw-Hill.