

THE EFFECTS OF USING OF QUESTIONING TECHNIQUES IN CONJUNCTION WITH FEEDBACK IN ONLINE LEARNING MANAGEMENT ON MATRIX ACHIEVEMENT OF FIRST-YEAR STUDENTS IN MATHEMATICS

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ABSTRACT

The purpose of this research was to study the learning achievement on matrix of first year students in Mathematics after using questioning techniques and feedback in online learning management with the 60 percent criterion. The sample group was 1st-year students, Mathematics Major, Group 01, Faculty of Education, Suan Sunandha Rajabhat University, enrolled in the second semester of academic year 2021, total 41 students, derived from Simple Random Sampling. The research tool was the learning achievement measure, and statistics used were Percentage, Mean, Standard Deviation, and t-test.

The results of the research were that the learning achievement on matrix of first year students in Mathematics after using questioning techniques and feedback in online learning management higher than the threshold of 60 percent with a statistical significance at the .05 level.

Keywords: questioning techniques, feedback, achievement

INTRODUCTION

Mathematics plays a very important role in the learning of learners in the 20th century, which is consistent with Amporn Makaanong (2015) who said that in modern times, human social activities are becoming more complex, requiring learners to use knowledge, thinking, and mathematical reasoning to solve problems, and dealing with different situations from the past; Mathematics is what helps human beings to be creative, to think rationally, to be systematic, to be able to analyze problems or situations carefully and thoroughly, to make predictions, to plan, to make decisions, and to solve problems properly and can be used effectively in real life. It is also a tool for the study of science, technology, and other sciences, which is the foundation for the development of national human resources, quality, and economic development of the country to be on par with economic, social, and scientific knowledge, and technology that is rapidly advancing in the era of globalization (Office of the Basic Education Commission, Ministry of Education, 2018)

According to the current emergency situation, it is found that the new strain of coronary disease 2019 or COVID-19 can spread through aerosol droplets, which is the main measure to prevent the spread of infection and reduce the number of infected people. COVID-19, as recommended by the World Health Organization, has resulted in all countries around the world having policies, strategic plans or measures, or issuing guidelines for prohibition, appropriate practices (Teerachon Satsin and Srisuda Wongwisukul, 2020); therefore making an announcement about Measures and Surveillance of the Coronavirus Infectious Disease Outbreak 2019 (Vol. 15), in Measure 1, Measures for Higher Education Institutions in Teaching and Learning and Safety of Students; By announcing teaching or learning activities for long-distance communication or by electronic means (Office of the Ministry of Higher Education, 2021). According to the announcement, teachers and students must change the teaching style from classroom to online system.

Online learning and teaching is a method of transmitting content, pictures, videos, using various media, together with discussions through electronic devices, and modern technology, to provide students with access to learning resources that are relevant versatile, modern; able to learn on their own according to their needs; Online learning and teaching is a necessity nowadays, due to learning in the 21st century, Students need communication skills, computer and information technology, media literacy to promote lifelong learning (Care, 2018), so that students can learn continuously, opening up new horizons for higher education institutions, in bringing innovation in educational technology to develop the learning process of students; which leads to teaching and learning through online systems, with the goal of learning management in 3 important online knowledge is to expand the scope of access to knowledge, to improve instruction, and to understand the student learning process (Garber, 2015; Simon, 2020); At the same time, preparation before conducting online teaching, it is important for both students and teachers, because online learning is learning subject to limitations such as the availability of equipment, or programs used in teaching, signal Internet, as well as overall skills in using equipment, and programs; on the part of teachers, teachers must prepare materials suitable for online teaching, and suitable for the chosen program to help learners understand the content of the lesson easily, and can be tracked or studied later (Alghazo, 2004; Buzzetto-More 2007; Sadiku, Adebo, & Musa, 2018).

From the above message, the researcher is interested in applying questioning and feedback techniques in online learning activities, which is a teaching management that is consistent with current problems in Organization of matrix teaching activities for first year students, Mathematics Department, Suan Sunandha Rajabhat University, in order for students to have better academic achievements, to be able to apply their knowledge as a basis for higher education and can be applied in daily life, and bring the results to develop teaching and learning for maximum efficiency, and as information for teaching and learning in the next mathematics course.

OBJECTIVES

A study of the learning achievement on matrix of first year students in mathematics; after using questioning techniques and feedback in online learning management with a 60 percent criterion.

RESEARCH HYPOTHESIS

Learning achievement on matrix of first year students in Mathematics; after using the questioning technique together with providing feedback above the threshold of 60 percent.

METHODS

Population and sample

The population is first year students, Mathematics, Faculty of Education, Suan Sunandha Rajabhat University, 81 students.

The sample group was first year students in Mathematics, Faculty of Education, Suan Sunandha Rajabhat University who are studying in the second semester, academic year 2021, group 01, 41 students, derived from Simple Random Sampling.

Research tools

The learning achievement test has the following steps to create:

- 1) Study documents about measurement and evaluation, test creation
- 2) Analyze the learning objectives on Matrix.
- 3) Create a test to measure learning achievement and present the test to experts to verify the validity of the content; taking into account the IOC (Index of Objective Congruence), between 0.50-1.00.
- 4) The modified achievement test was tested on 30 first-year students, who were not a sample group, to determine the quality of the test; with difficulty (p) ranging from 0.49-0.64. , and the discrete power (r) was between 0.55-0.71.
- 5) Take the academic achievement test. Probability, 20 items, apply to the next sample.

Data Collection

- 1) Organize learning activities by using questioning and feedback techniques on matrix.
- 2) Test after class with the linear algebra on matrices achievement test.
- 3) Scores are checked and analyzed by statistical methods to test the hypothesis.

RESULTS

Results of the analysis of learning achievement on the matrix; after receiving learning activities using questioning and feedback techniques with percentage criterion 60, by t-test (One sample t-test)

Table 1: Shows the number and percentage of students with a higher probability of achievement than the threshold.

Situation	number of students	The number of students who scored above the criteria	Percentage of students who scored above the criteria
After class	41	38	92.68

From Table 1, it was found that the learning achievement on the matrix after receiving learning activities using questioning and feedback techniques was higher than the specified criteria for 38 students, representing 92.68% of all students.

Table 2: Shows the results of the learning achievement matrix analysis; after receiving the learning activities using questioning and techniques feedback.

Situation	number of students	full score	60 percent score	\bar{x}	S.D.	t	Sig
After class	41	30	18	25.58	4.51	11.14 *	.000

*Statistically significant at the .05 level

From Table 2, it was found that the learning achievement on matrix of the students, after receiving the learning activities using the questioning and feedback was significantly higher than the criteria of 60 percent. significance at the .05 level.

CONCLUSIONS

From the results of using of questioning techniques in conjunction with feedback in online learning management on matrix achievement, concluded were as follows:

1. Learning achievement on matrix of first year students in Mathematics; after receiving learning activities using questioning and feedback techniques in online learning management found that overall, the students' average score of achievement after class was 25.58 points, out of 30 points, or 85.27%; With students doing question-answer activities in the allotted time, and answering questions for students as soon as submitted, making students understand more content, and making students more active in learning, resulting in students being effective High learning achievement, consistent with Watcharin Utra and Thanyaras Chidthaisong (2020) found that students were able to reason by applying mathematical principles to explain reasonableness, concepts and solve more complex problems correctly; The most responsive feedback technique is questioning by the teacher; The comparative results of mathematical comprehension found that post-learning was higher than before at the statistical significance at the .05 level. Similarly, Thanatyod Jampawai, Chouang Utitsarn and Suranon Yensir (2021) studied the causes that affect educational achievement in calculus courses of students in mathematics, faculty of education, and found that the reasons for the learners were to perform exercises and assignments.

2. Comparison of learning achievement with the criteria of 60 percent, after receiving learning activities using questioning and feedback techniques in online learning management, it was found that after receiving activities Learning using questioning and feedback techniques in online learning management, 38 students achieved the required learning achievement criteria, representing 92.68%; With students having a better understanding of the content, they had a passing achievement of 60 percent,38 students; Corresponding with Chanokporn Faksang

(2021) that action research on developing writing skills, by feedback technique, for Mathayomsuksa 5 students, it was found that students had average scores on writing achievement tests before class, and after class is 9.31 and 11.27 points, respectively, out of 15 points; with a large increase from taking the pre-writing achievement test of 1.96 points; In the same way as Kanlayarat Thepbut, Siriyupin Suthanatphakchana, Parinya Thongsorn (2019), it was found that the Mean of mathematics analytical thinking of Mathayomsuksa 1 students who received learning management by using feedback and questioning techniques after learning was higher than before learning at statistical significance at the .05 level; The overall was at a high level, consistent with Satini Wareesri (2021) found that learning management in calculus subjects of first year students, Yala Rajabhat University, the feedback learning management with the cooperative learning technique STAD, the first year students, had higher learning achievement after learning than before learning at the statistical significance level of 0.05, and consistent with Chulalak. Chua Ngoen Chaweng Sonboon and Sirawan Jarasaraweewat (2019) found that the learning achievement in mathematics, after receiving a mathematics learning activity by using an open method together with Badham's question on the addition and subtraction of numbers that have results, and the setter is not more than 10 of Prathomsuksa 1 students, is statistically significantly higher than the threshold of 70 percent at the .05 level.

SUGGESTIONS

The further research should be studied the other direct and indirect factors for getting the depth cause that will be used to develop the achievement in Mathematics.

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