A study of satisfaction with teaching and learning in online and on-site formats for Subjects of Science and Mathematics of General Education The Office of General Education and Innovative Eletronic Learning, Suan Sunandha Rajabhat University

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Abstract

This study aimed to 1) assess satisfaction levels with online and on-site learning in Science and Mathematics general education courses, and 2) use these insights to enhance the teaching methods in these courses. A sample of 400 undergraduate students from Suan Sunandha Rajabhat University participated, with data gathered through questionnaires and analyzed using percentage, mean, and standard deviation.

Findings showed high overall satisfaction (mean = 4.21, S.D. = 0.55) with both online and on-site learning methods. Students rated coordination by teaching assistants (TAs) particularly highly (mean = 4.25, S.D. = 0.58). Key factors influencing satisfaction included TA coordination with lecturers, TA problem-solving skills, effective communication channels, adequacy of learning equipment, and clear communication from the General Education Office. The study also explored student perceptions of readiness in different learning methods, clarity in grading criteria, and the structure of online, on-site, and on-demand formats.

Keywords: Sentiment Analysis, Generative AI, Opinions Analysis

1. Introduction

Contemporary education management in Thailand has achieved success in several aspects. The government has implemented policies to significantly promote and support educational opportunities, resulting in increased access to education for school-age populations. Efforts have been accelerated to foster lifelong human development, with various measures ensuring that children and individuals of all ages have access to quality education that meets established standards. These initiatives aim to elevate the educational level of the Thai population, positioning them as a critical force in driving the nation's economic and social development. Munnee,J.(2022).

The organization of online learning in the digital age is an educational innovation that transforms traditional learning methods into a learning approach that utilizes advanced technology for effective online teaching and learning management. This will result in learners achieving learning outcomes according to objectives. Online teaching includes components such as instructors, learners, content, learning media, and learning resources, as well as the learning management process, communication systems, information technology networks, and measurement and evaluation. There are various teaching and learning formats that enable

interaction between instructors and learners. Considering the elements and formats that align with the characteristics of the subject and the context of the learners will lead to effective online learning management. The transformation of learning spaces is most evident with today's technology and innovations that create content, making it easy to access learning at our fingertips, allowing us to learn any material from anyone, anywhere, at any time, towards a common goal of new learning pathways (New Normal). The goals of education may remain the same, but learners can use different methods to reach those objectives. Some students may learn faster by watching images or videos, while others may prefer listening to lectures from instructors, as each person's learning style is different. Establishing appropriate guidelines for teaching management is necessary to ensure effective teaching and learning processes. (Lertamornsak, K. & Labbuangam, N. 2024)

The Office of General Education and Innovative Eletronic Learning, Suan Sunandha Rajabhat University The main mission is to manage the teaching and learning of general education subjects at the undergraduate level through large group teaching, with teaching assistants (TAs) responsible for overseeing the classroom and facilitating the teaching process for the course instructors according to the indicators of classroom management. These indicators consist of three components: 1) Creating a conducive learning environment, which involves organizing a flexible classroom with course-related announcements, fostering good interaction between instructors and students, and among students themselves; 2) Compiling classroom information, which involves categorizing necessary information and maintaining classroom documents; and 3) Classroom supervision, which entails establishing agreements for coexistence, overseeing student behavior to ensure compliance with the agreements, and being able to adjust student behavior for smooth collaboration in learning. (The Office of General Education and Innovative Electronic Learning, 2016).

The management of online and on-site teaching for the general education courses in the fields of science and mathematics at the Office of General Education and Electronic Learning Innovation, Suan Sunandha Rajabhat University, which involves numerous processes and steps, has encountered some problems and errors. Therefore, the researcher has collected data on these issues and errors to improve and enhance the effectiveness of the teaching management.
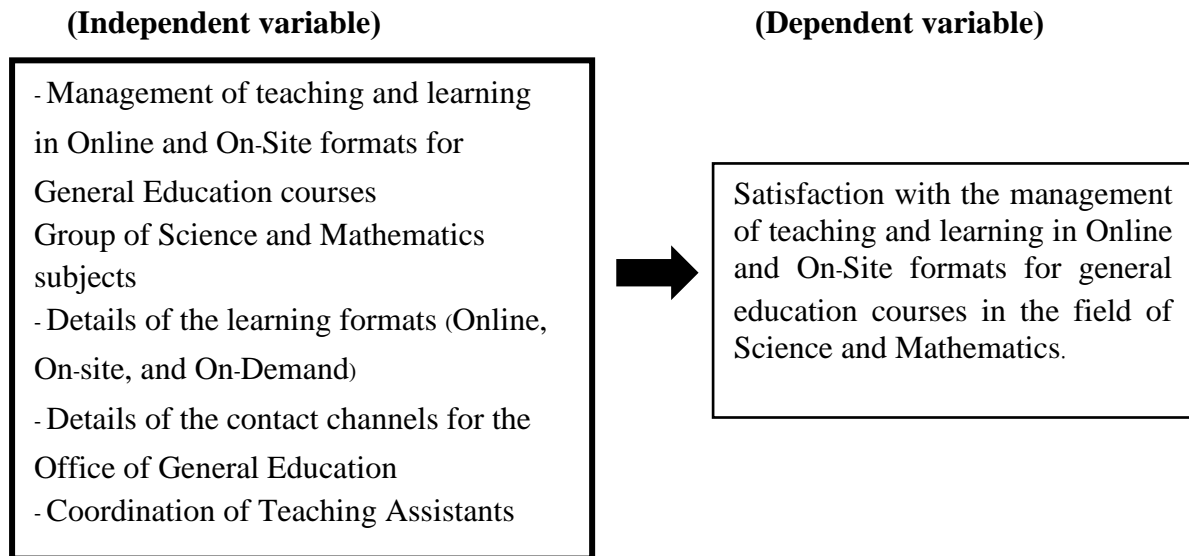
1.1 Research Objective

This research study was aimed to

To study the satisfaction with the management of teaching and learning in both Online and On-site formats of the general education courses in the field of Science and Mathematics.

2. Conceptual Framework

Figure 1. Conceptual Framework of the Study

(Independent variable)   **(Dependent variable)**

- Management of teaching and learning in Online and On-Site formats for General Education courses Group of Science and Mathematics subjects - Details of the learning formats (Online, On-site, and On-Demand) - Details of the contact channels for the Office of General Education - Coordination of Teaching Assistants

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Satisfaction with the management of teaching and learning in Online and On-Site formats for general education courses in the field of Science and Mathematics.

The research framework is divided into two main issues, with the objective of studying student satisfaction with teaching management in both Online and On-Site formats in general education courses within the science and mathematics fields. It considers factors affecting satisfaction in teaching and learning as follows:Teaching management in various formats: This includes details of learning formats (Online, On-site, and On-Demand) and examines how different teaching formats impact student satisfaction by comparing the convenience and appropriateness of each format. Support from Teaching Assistants (TAs): This studies the details of TAs' roles in coordinating and assisting in general education courses and how this affects the learning experience and student satisfaction. Both factors will serve as a guideline for analyzing student satisfaction and applying the research findings to improve teaching management for greater effectiveness.

3. Methodology

The research on the study of satisfaction with the management of teaching and learning in both Online and On-Site formats for the General Education courses in the Science and Mathematics group was conducted using quantitative research methods. Data and opinions were collected from respondents through a questionnaire, with the following research process:The population used in the study consisted of undergraduate students in the regular program at Suan Sunandha Rajabhat University, who registered for General Education courses in the Science and Mathematics group for the second semester of the academic year 2023, totaling 6,516 individuals.

The sample group used in the study comprised undergraduate students in the regular program at Suan Sunandha Rajabhat University, who registered for General Education courses in the Science and Mathematics group. The sample size was calculated using the "Taro Yamane" formula, resulting in a sample size of 400 individuals. (Taro Yamane, 1973).

In this research, the tool used is a questionnaire created from concepts, theories, and research related to online teaching and learning. It serves as a tool for data collection. The primary data was gathered through a set of 400 questionnaires prepared by the researcher, focusing on relevant questions to aid in data collection from various documents for analysis. The questionnaires were collected at Suan Sunandha Rajabhat University. The secondary data involved studying documents and articles related to the research, local newspapers, or publications concerning online teaching and learning behavior, as well as relevant websites. The researcher processed the online teaching and learning behaviors of students at Suan Sunandha Rajabhat University. Data analysis was conducted using descriptive statistics, and all questionnaires were analyzed and processed using a computer with the SPSS (Statistical Package for Social Science) software for data processing and analysis, employing statistics such as mean and standard deviation.

4. Results

The objectives of this research are as follows: 1) To study the satisfaction with the management of teaching and learning in both Online and On-site formats for the general education courses in the fields of Science and Mathematics. The analysis results of the courses that students registered for are as follows:GEN0301 Information Technology for Communication with 86 students, accounting for 21.50%; GEN0304 Digital Literacy with 202 students, accounting for 50.50%; GEN0320 Wealth through Digital with 112 students, accounting for 28.00%.

Table 1. The Subject of Science and Mathematics Groups.

Subject	Amount	%
GEN0301 Information Technology for Communication	86	21.50
GEN0304 Digital Literacy	202	50.50
GEN0320 Digital Millionaire	112	28.00
Total	**400**	**100.00**

Table 2. The mean and standard deviation of satisfaction with the management of teaching and learning in Online and On-Site formats for general education courses in the field of Science and Mathematics.

Satisfaction with the management of teaching and learning in Online and On-Site formats for general education courses in the fields of Science and Mathematics.	Level of Opinion		
	Mean ($\bar{x}$)	**Standard Deviation (S.D.)**	**Interpretation (Level)**
Details of the teaching and learning format.			
1. Details of the class schedule and exam dates.	4.22	0.6431	Excellent
2. Details of collected scores and exam scores.	4.16	0.8159	Good
3. Details of the learning format. (Online, On-site และ On-Demand)	4.12	0.3644	Good
4.Readiness for teaching and learning management	4.21	0.4187	Excellent
5. The readiness of the equipment used for teaching and learning management.	4.23	0.4094	Excellent

Satisfaction with the management of teaching and learning in Online and On-Site formats for general education courses in the fields of Science and Mathematics.	Level of Opinion		
	Mean ($\bar{x}$)	**Standard Deviation (S.D.)**	**Interpretation (Level)**
(Online, On-site และ On-Demand)			
Total	**4.19**	**0.52**	Good
Contact channels			
6. Many Channels for Contact	4.22	0.5415	Excellent
7. Detail for Information	4.24	0.6243	Excellent
Total	**4.23**	**0.58**	Excellent
Coordination of Teaching Assistants (TA)			
8. The response to questions in the teaching of teaching assistants (TAs).	4.18	0.6252	Good
9. The immediate problem-solving of teaching assistants (TAs) regarding teaching management.	4.25	0.5610	Excellent
10. Co-ordinating with the instructor of the teaching assistant (TA).	4.32	0.5565	Excellent
Total	**4.25**	**0.57**	Excellent
Total	**4.21**	**0.5560**	Excellent

The table shows that overall satisfaction with the management of teaching and learning in both Online and On-Site formats for general education courses in the fields of Science and Mathematics is at a high level ($\bar{x}$ = 4.21, S.D. = 0.5560). When considering individual items, the highest rated aspect is the coordination with the instructor by the teaching assistant (TA) ($\bar{x}$ = 4.32, S.D. = 0.55). The next highest aspect is the problem-solving by the teaching assistant (TA) regarding teaching management ($\bar{x}$ = 4.25, S.D. = 0.56). Other details include the communication channels ($\bar{x}$ = 4.24, S.D. = 0.62), the availability of equipment used in teaching (Online, On-site, and On-Demand) ($\bar{x}$ = 4.23, S.D. = 0.40), details of the contact channels for the General Education Office ($\bar{x}$ = 4.22, S.D. = 0.54), the readiness of teaching management ($\bar{x}$ = 4.18, S.D. = 0.40), details of the grading and exam scores ($\bar{x}$ = 4.16, S.D. = 0.81), and details of the learning formats (Online, On-site, and On-Demand) ($\bar{x}$ = 4.16, S.D. = 0.81).

5. Conclusion

A study on the satisfaction with the management of teaching and learning in Online and On-Site formats for the General Education course in the field of Science and Mathematics showed that the majority of the sample group were female first-year students enrolled in the course GEN0304 Digital Literacy. Overall satisfaction with the management of teaching and learning in Online and On-Site formats for the General Education course in Science and Mathematics was at a very high level ($\bar{x}$ = 4.21, S.D. = 0.55). Regarding the coordination of the Teaching Assistants (TA) ($\bar{x}$ = 4.25, S.D. = 0.58), the results from the respondents who used the online learning, teaching, and examination system through Zoom and FlexSpace showed a very high level of satisfaction. When considering the role of the Teaching Assistants (TA), their importance in managing teaching and learning in terms of coordinating with students, providing information, and monitoring learning was evident, allowing the teaching and learning management, regardless of the format, to be conducted effectively. In the online system, user satisfaction outcomes ranked highest in terms of the process of configuring

settings, followed by satisfaction with functional usage, and overall usability outcomes. Users expressed satisfaction with the program's functionality, comprehensibility, and ease of configuration. Additionally, the system was perceived as user-friendly in terms of functional understanding and ease of setting adjustments. (Wimolluck,N 2024).

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