Study the effects and ways to cope with online learning among graduate students. College of Logistics and Supply Chain

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Abstract

This research is aimed at 1. Analyze students' opinions on the impact and coping strategies of online learning for master's degree students, College of Logistics and Supply Chain. 2. Study students' suggestions on how to develop the quality of online teaching for master's degree students, College of Logistics and Supply Chain. The sample group used in this research were master's degree students, College of Logistics and Supply Chain, Suan Sunandha Rajabhat University.

This research was quantitative research. The sample group used in the research was 200 master's degree students, College of Logistics and Supply Chain. The research instrument was a questionnaire as preliminary data by finding percentages, means, and standard deviations.

The results of the research found that 1) The majority of the sample group was female, more than male, 111 people, or 55.50 percent, and 89 people, or 44.50 percent, were male. 2) The impact of online learning on master's degree students, College of Logistics and Supply Chain When considering each aspect, it was found that the impact on factors supporting online learning, overall, had a moderate average value ($\bar{X}$ = 2.81, S.D.= 1.03). The impact on learning on online learning, overall, had the highest average value ($\bar{X}$ = 4.39, S.D.= 0.56). The impact on physical and mental health of online learning, overall, had a high average value ($\bar{X}$ = 3.61, S.D.= 1.24). 3) Guidelines for developing the quality of online teaching, overall, had the highest average value ($\bar{X}$ = 4.42, S.D.= 0.54).

Keywords: Online Learning, master's degree Students, Impacts, Coping Strategies

1. Introduction

This research entitled "Study the effects and ways to cope with online learning among graduate students. College of Logistics and Supply Chain" originated from the researcher's observation that, in recent years, online learning has become a primary mode of education. This shift has been particularly evident during the outbreak of Coronavirus Disease 2019 (COVID-19), which compelled universities and educational institutions worldwide to transform their teaching and learning formats from traditional classroom-based instruction to online learning to ensure educational continuity.

Master's degree students at the College of Logistics and Supply Chain have also been affected by this transition. The shift to online learning has had various impacts, including

challenges in learning effectiveness, limited convenience, and a lack of social interaction. Social interaction is considered a crucial component of graduate-level education, as it promotes discussion, critical thinking, and the exchange of ideas between students and instructors, as well as among students themselves.

Therefore, studying the impacts and coping strategies related to online learning among master's degree students at the College of Logistics and Supply Chain is of great importance. Such a study provides a deeper understanding of the problems, obstacles, and challenges faced by students in online learning environments. The findings can be utilized to develop appropriate approaches and strategies for effectively managing online teaching and learning. Moreover, the results of this study can assist educational administrators and instructors in improving and enhancing online instructional processes to better align with students' learning needs and the current educational context.

This study is also significant in terms of developing students' adaptability to online learning. Understanding the impacts of online learning on academic performance, mental well-being, and social interaction, as well as identifying effective coping strategies, can help students learn more efficiently while reducing potential negative effects associated with online education. Ultimately, this contributes to improved academic achievement and overall learning outcomes.

Thanratthanasrikul, M., et al. (2021) stated that understanding students' levels of adaptation enables academic advisors to obtain essential information for planning, forecasting, preventing, and solving problems, as well as for forwarding information within student support systems. This process supports the development of instructional quality, mental health, social interaction, and student participation in activities, allowing educational institutions to prepare for future situations effectively. This perspective is consistent with the study by Moawad (2020), who indicated that online learning during the COVID-19 pandemic required students to adapt rapidly, which may lead to stress and anxiety.

Stress and anxiety experienced during online learning can vary depending on several factors. When individuals experience stress or anxiety, hormonal imbalances may occur, affecting the functioning of various bodily systems and leading to physical symptoms such as headaches, back pain, stomach pain, fatigue, or psychosomatic illnesses. Psychological impacts may include decreased cognitive functioning, reduced problem-solving ability, lack of attention to surroundings, confusion, memory impairment, decreased concentration, indecisiveness, inappropriate emotional expression, irritability, insomnia, fear, and loss of confidence in one's ability to manage life. When stress and anxiety stem from online learning, they inevitably affect academic performance. Furthermore, this crisis has exacerbated issues related to educational quality and inequality, with online learning having widespread impacts on the entire education system and related sectors.

Consequently, the College of Logistics and Supply Chain, which delivers all courses within its curriculum through online instruction throughout the academic year, has implemented teaching and learning processes using various software platforms according to instructors' expertise. Additional programs and applications have been utilized as appropriate to enhance students' learning experiences, ensuring that they acquire the knowledge, skills, and competencies specified in the curriculum. Based on these circumstances, the researcher is interested in examining learning behaviors and problem conditions of master's degree students under the COVID-19 pandemic. The findings of this study will be used to improve online teaching and learning management in alignment with students' online learning behaviors, to

address existing problems, and to serve as a guideline for providing effective learning support services for students during the COVID-19 situation.

1.1 Research Objective

1. To analyze students' opinions regarding the impact and coping strategies of online learning for master's degree students in the College of Logistics and Supply Chain.

2. To study students' suggestions on ways to improve the quality of online teaching for master's degree students in the College of Logistics and Supply Chain.

2. Literature review

Study the effects and ways to cope with online learning among graduate students. College of Logistics and Supply Chain. It is necessary to study concepts, theories, and research related to the variables of online learning. The researcher has searched academic documents and research from various sources, dividing the content of this chapter into five parts:

1. Online Teaching and Learning
2. Attendance Behavior
3. Factors Affecting the Success of Learning via Electronic Media or Online Lessons
4. LINE Application
5. Related Research
6. Research Framework

Online Teaching and Learning

The term "online learning" or "e-learning" refers to the use of technology on the internet as an alternative way to obtain learning outcomes. It involves coordination of work in a computer-assisted learning format, creating an interactive atmosphere between learners and instructors. Currently, online learning systems have played a significant role, especially during the COVID-19 pandemic. The use of mobile phones and online learning, or e-learning, is a tool or channel that allows easy and convenient access to learning anytime, anywhere (Bezhovski & Poorani, 2016). Further definitions include learning through electronic media, computer-based learning, web-based learning, virtual classrooms, and digital collaboration (Kriengsak Charoenwongsak, 2000). However, while the meanings differ, the common characteristic is the use of computer technology and various devices as essential tools for communication and delivering information effectively to recipients. The development of various teaching and learning formats, including online lessons, is an innovation that transforms learning methods from traditional approaches to learning that relies on advanced technology. In summary, while not a new teaching and learning format, it has been used to address the immediate challenges of the COVID-19 pandemic. It effectively utilizes computer technology and the internet to connect and facilitate communication between learners and instructors, regardless of time or location, enabling timely and immediate communication. This discussion will focus on synchronous learning methods, a system where senders and receivers are present simultaneously, transmitting information and data concurrently, resulting in instantaneous interaction in communication and discussion. Amorn, N., Charoenwiriyakul, C., & Siriwattana, S. (2023). Research findings indicate that: 1) The overall effectiveness of online learning during the COVID-19 pandemic was at the highest level. Online learning achievement had the

highest average score, followed by the convenience of the login-based attendance checking system, reduced stress during online learning, and the ability of learning management to meet learners' needs. The findings indicate that: 1) the curriculum aligns with the study duration, and 2) graduate students with different genders, ages, and faculties/colleges did not differ significantly in their online learning effectiveness during the COVID-19 pandemic, although their educational level differed significantly at the 0.05 statistical significance level. Suan Sunandha Rajabhat University and other educational institutions can utilize these findings to develop teaching plans that better meet student needs and enhance student motivation.

Attendance Behavior

Behavior refers to any action or activity in response to stimuli, which can be observed through expressed behavior and may also be unobservable, including past experiences. Therefore, the behavior discussed here pertains to attendance behavior, encompassing online system usage, the use of devices to access online systems, frequency or number of times attending classes, duration of attendance, and the purpose of attendance.

Factors Contributing to Successful E-learning or Online Lessons

Four key factors contribute to successful e-learning (L, Pachara., & W, Jiratcha., 2013): 1. Instructor Factors: These refer to instructors who determine the teaching schedule via the internet, develop lessons themselves, provide instruction, support learning, offer advice, monitor student progress, supervise students within appropriate boundaries, encourage classroom interaction, and motivate students to learn independently. 2. Student Factors: Students possess computer and internet skills, learning through electronic media. For example, they can access applications like LINE, understand and communicate immediately with instructors and classmates, and demonstrate increased understanding and interaction with technology. They spend more time discussing and asking questions within student groups and teams, and show greater responsibility, enthusiasm, and motivation. 3. Lesson Factors: Teaching and learning are not limited to text; they can be adapted to include images and audio to make lessons more engaging. Lesson materials must be relevant to the lesson content and teaching objectives, and the content must be accurate, up-to-date, interesting, and appropriate for the age, grade level, knowledge, and experience of the students. The methods should not be complicated. 4. Technology Factors: Information technology comprises computers and interconnected telecommunication networks, with ease of use at access points (Monchai Thianthong, 2002) for the convenient and rapid transmission and reception of knowledge, enabling continuous learning and development.

LINE Application

LINE is a communication application used on various communication devices such as smartphones, desktop computers, and tablets. Users can communicate by typing messages from one device to another. The application has been developed to support various uses within different operating systems. Developers create applications to meet user needs, allowing for free calls, video calls, sending photos and stickers, and setting up group conversations. It is available in both free and paid versions, serving various fields including education and communication (Pornpimol Buranyao and Penjira Kanthawong, 2014). The concept behind LINE: LINE is a communication application usable on communication devices such as computers, mobile phones, and tablets. It is a popular application that has won numerous awards. The name LINE originates from the 2011 tsunami in Japan, which disrupted communication systems, forcing many people to queue to use public telephones.

(Chalemvanichkorn, 2013) Currently, there are 44 million LINE users (2019). Thais use mobile phones for an average of 216 minutes per day, with an average of 63 minutes spent on LINE. LINE's various capabilities include Voice All, a feature allowing face-to-face conversations; group chat; and the sharing of images, videos, and audio during conversations. It also includes LINE Camera, LINE Card Electronic, and LINE Brush Application, among others. Due to the increasing number of features, LINE has a growing role in modern education.

Related Research

Thanjira, J., (2016) found that online learning may be limited by restrictions on access to technology and the internet for both students and teachers, increasing the workload for teachers and potentially leading to unforeseen technological problems. A study by Sarita Chueasrikul et al. (2020) found that the factors most affecting online teaching and learning were equipment, communication, and internet signal, followed by the learning atmosphere and environment. A study by Piya Lailikphan (2020) found that the online learning atmosphere was not conducive to collaborative learning because the anonymity of learners reduced interaction between learners and instructors, and between learners and classmates in online classes. And a study by Chaturanont, W., et al. (2020) found that students encountered problems with online Chinese language learning, including internet issues, the learning environment, and the deadlines for submitting assignments or exams.

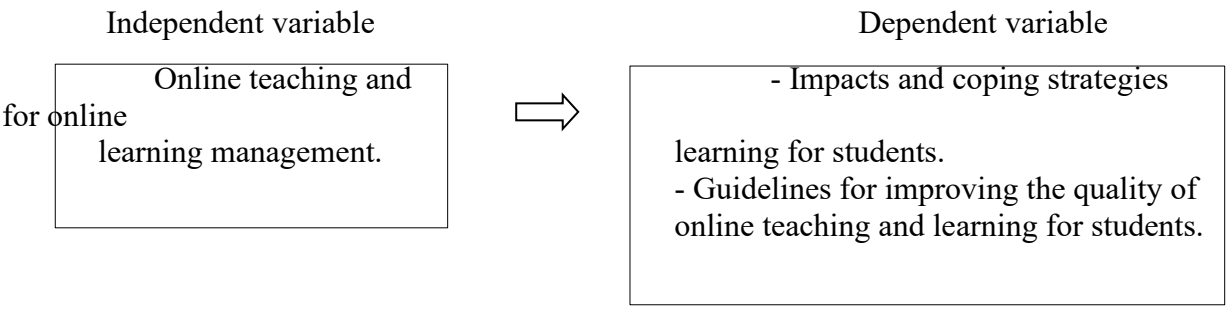
Chaturanont, W., et al. (2020) studied the online learning behavior and satisfaction with online Chinese language learning among Bachelor of Education students in Chinese Language, Faculty of Education, Burapha University. They found that most students used smartphones and notebook computers for online learning and real-time learning according to the class schedule. Similarly, the study by Pongsathorn Sittichan et al. (2021) found that high school students in their final year learned online during the COVID-19 pandemic using their own smartphones. The students exhibited the highest level of online learning behavior, attending classes on time according to the schedule and participating in class.

Panarod, U., et al. (2021) studied the attitudes towards online learning of English major students in the Faculty of Humanities and Social Sciences, Songkhla Rajabhat University. They found that students considered online learning media to be beneficial and easily accessible to a high degree. Furthermore, the study by Mukhtar, Javed, Arooj, & Sethi (2020) found that, from the perspective of medical students and dental lecturers, online learning is a flexible and effective source for teaching and learning. This is because most agreed that online teaching makes distance learning easier to manage and access. Learners can easily access learning without time constraints, promoting learner-centered learning, and is easily managed in the context of the COVID-19 pandemic.

Ketwongsa, P., & Chuanwan, S. (2015) analyzed trends regarding... Demographic and Social Characteristics of Online Social Network Users in Thailand: A Study of Social Networks in Thailand (Journal of Educational Studies, Mahasarakham University, Vol. 18, No. 11, January-March 2017, 2011-2014). The study found that the use of social media continues to grow rapidly, reflecting the fact that "online social networks" are becoming an increasingly large and diverse society in terms of gender, age, and usage purposes. Over the next 5-10 years, social media will likely serve as a supplementary medium, with traditional classroom learning remaining the primary medium. However, with the advent of high-speed internet, advanced hardware technology producing efficient devices (such as flexible monitors, longer battery life per charge, and appropriately sized portable devices), and access to accurate and reliable

learning resources with authentication technologies, educational management may change. Students may no longer need to attend classes, and learning could be achieved entirely through social media.

Research framework



3. Methodology

This quantitative research Study the effects and ways to cope with online learning among graduate students. College of Logistics and Supply Chain. The study focuses on the learning behavior and challenges of online learning among master's degree students at the College of Logistics and Supply Chain Management. A questionnaire was used to collect data, specifically surveying the students' social media usage. The research methodology is detailed below

Research Methodology

1. Population and Sample

The study comprises 200 master's degree students from the College of Logistics and Supply Chain Management, Suan Sunandha Rajabhat University.

2. Research Methodology

The research instrument focuses on the learning behavior and challenges of online learning among master's degree students. This is research survey utilizing a questionnaire divided into three sections:

Section 1: General information of the respondents

Section 2: Impacts of online learning

Section 3: Strategies for improving the quality of online teaching and learning

Data Collection

The researchers collected data for this research by distributing questionnaires to a sample group of 200 graduate students at the College of Logistics and Supply Chain, Suan Sunandha Rajabhat University. Completed questionnaires were returned to the respondents for further data analysis.

Data Analysis

The data obtained from the questionnaires collected from the sample group will be processed and analyzed using a computer program. The data will be analyzed according to the intended hypothesis, and the statistics used in this research will be as follows:

1. Data related to personal factors will be explained using frequency and percentage.

2. Data related to online learning behavior and problems will be analyzed using frequency distribution. For each answer, find the mean ($\bar{X}$) and standard deviation (S.D.) of each aspect of the questionnaire, then sum all aspects for each item.

4. Results

This research is "Study the effects and ways to cope with online learning among graduate students. College of Logistics and Supply Chain," utilized 200 questionnaires divided into three parts:

Part 1: Analysis of personal factors and online media usage behavior, categorized by gender, age, electronic devices used for online learning, online learning location, internet network used, and required programs and applications. Frequency and percentage were calculated.

Table 1 Percentage of respondents classified by gender.

Sex	Quantity	Percentage
Male	89	44.50
Female	111	55.50
Total	200	100.00

From the results in Table 1, it was found that the demographics of the respondents showed that there were more females than males, with 111 individuals, representing 55.50% and 89 individuals, representing 44.50%.

Table 2 Percentage of respondents classified by age.

Age	Quantity	Percentage
17-25 years	15	7.50
26-35 years	129	64.50
36-45 years	43	21.50
46 years and above	13	6.50
Total	200	100.00

From the results in Table 2, the demographics of the respondents, categorized by age, revealed that most respondents were aged between 26-35 years, totaling 129 people, representing 64.50%. This was followed by those aged 36-45 years, 43 people, representing 21.50%, then 17-25 years, 15 people, representing 7.50% and finally, the least numerous were those aged 46 years and older 13 people, representing 6.50%.

Table 3 Percentage of respondents regarding electronic devices used for online learning.

Electronic devices used in learning	Quantity	Percentage
Smartphones	9	4.50
Laptop computers	71	35.50
Desktop computers	5	2.50
Tablets/iPads	115	57.50
Total	200	100.00

From the results in Table 3, regarding the electronic devices used for online learning, it was found that most respondents used tablets/iPads 115 people, representing 57.50%, followed by notebook computers for 71 people, representing 35.50%, smartphones 9 people, representing 4.50% and desktop computers 5 people, representing 2.50%.

Table 4 Percentage of respondents regarding the location where they used to study online.

Locations used for online learning:	Quantity	Percentage
Home	93	46.50
Dormitory	75	37.50
University area	7	3.50
Coffee shop	25	12.50
Total	200	100.00

From the results in Table 4, it was found that, overall, the locations used for online learning, in descending order, were as follows: online learning at home was the most common, with 93 people, representing 46.50% followed by online learning at the dormitory with 75 people, representing 37.50% online learning at a coffee shop with 25 people, representing 12.50% and online learning within the university area with 7 people, representing 3.50%.

Table 5 Percentage of respondents regarding internet networks used for online learning.

Internet Network	Quantity	Percentage
Home Wi-Fi	93	46.50
Mobile Network (4G/3G)	17	8.50
University Wi-Fi	13	6.50
Public Wi-Fi	3	1.50
Dormitory Wi-Fi	74	37.00
Total	200	100.00

From the results of the study in Table 5, it was found that, overall, the characteristics of the internet network used for online learning, in order from most to least frequent, are as follows Home Wi-Fi with 93 people, representing 46.50% followed by dormitory Wi-Fi with 74 people, representing 37.00% mobile phone network (4G/3G) with 17 people, representing 8.50% university Wi-Fi with 13 people, representing 6.50% and public Wi-Fi with 3 people, representing 1.50%.

Table 6 Percentage of respondents regarding the programs and applications required for online learning.

Programs and applications	Quantity	Percentage
Microsoft Teams	49	24.50
Zoom Cloud Meetings	62	31.00
Google Meet	89	44.50
Total	200	100.00

From the results in Table 6, it was found that, overall, the programs and applications used for online learning, in descending order of popularity, were as follows: Google Meet was used by 89 people, representing 44.50% followed by Zoom Cloud Meetings with 62 people, representing 31.00% and Microsoft Teams with 49 people, representing 24.50%.

Part 2: Analysis of the impact of online learning on master's degree students in the College of Logistics and Supply Chain. Frequency distribution of each answer, mean ($\bar{X}$), and standard deviation (S.D.) were calculated for each aspect of the questionnaire, and the sum of all aspects was calculated for each item.

Table 7 Mean and standard deviation of the impact of factors supporting online learning.

Impacts on Factors Supporting Online Learning	$\bar{X}$	S.D.	Level of opinion
1. The home or living environment is not conducive to online learning.	3.31	1.39	Medium
2. There is inappropriate or insufficient electronic equipment.	2.39	1.01	Low
3. The information technology network signal for online learning is unstable.	2.57	0.75	Low
4. There are increased costs, such as electricity and internet bills.	2.97	0.95	Medium
Total	2.81	1.03	Medium

The results from Table 7 show that the overall impact of factors supporting online learning had a moderate average score ($\bar{X}$ = 2.81, S.D.= 1.03). Considering each item individually, the primary impact was an unfavorable home or living environment for online learning ($\bar{X}$ = 3.31, S.D. = 1.39). Second was increased expenses such as electricity and internet costs ($\bar{X}$ = 2.97, S.D.= 0.95), and third was unstable network connectivity for online learning ($\bar{X}$ = 2.57, S.D.= 0.75), respectively.

Table 8 Mean and standard deviation of learning impacts.

Impact on Learning	$\bar{X}$	S.D.	Level of opinion
1. Lack of hands-on experience in courses with practical activities.	4.75	0.44	Highest
2. Difficulty accessing online learning.	4.66	0.48	Highest
3. Difficulty communicating with course instructors.	4.58	0.53	Highest
4. Unclear schedule, sequence, and details of activities.	4.30	0.69	Highest
5. Unengaging online learning activities.	4.42	0.49	Highest
6. Incomplete and inconsistent learning.	4.15	0.60	High
7. Anxiety about the system and grading results.	4.01	0.52	High
Total	4.39	0.56	Highest

From the results in Table 8, it was found that the overall impact on learning from online learning had the highest average score ($\bar{X}$ = 4.39, S.D.= 0.56). When considering each item individually, the primary impact was the lack of hands-on experience in subjects with practical activities ($\bar{X}$ = 4.75, S.D. = 0.44), followed by difficulties in accessing online learning ($\bar{X}$ = 4.66, S.D.= 0.48), and finally, difficulties in communicating with instructors ($\bar{X}$ = 4.58, S.D.= 0.53), respectively.

Table 9 Mean and standard deviation of the physical and mental health impacts of online learning.

Impact on Physical and Mental Health	$\bar{X}$	S.D.	Level of opinion
1. Feeling stressed and anxious, afraid of not meeting deadlines due to online learning.	3.83	1.29	High
2. Feeling reluctant to study at home.	3.85	1.31	High
3. Difficulty concentrating on online learning due to environmental noise.	3.87	1.28	High
4. Worrying about internet connection issues during online classes and assignments.	3.59	1.42	High
5. Feeling lonely due to lack of social interaction and not seeing friends.	2.69	1.51	Medium
6. Experiencing eye strain/straining/muscle pain/back pain/neck and shoulder pain from using screens and sedentary behavior, sitting for long periods for online learning.	3.82	1.35	High
Total	3.61	1.24	High

From the results in Table 9, it was found that the overall impact on physical and mental health from online learning had a high average score ($\bar{\mathbf{X}}$= 3.61, S.D.= 1.24). When considering each item individually, the most significant impact was feeling unable to concentrate on online learning when there was environmental noise ($\bar{\mathbf{X}}$ = 3.87, S.D. = 1.28). Second was feeling unwilling to study at home ($\bar{\mathbf{X}}$ = 3.85, S.D.= 1.31), and third was feeling stressed and anxious about not being able to submit assignments on time because of online learning ($\bar{\mathbf{X}}$= 3.83, S.D.= 1.29), respectively.

Part 3: Analysis of strategies for improving the quality of online teaching and learning for master's degree students in the College of Logistics and Supply Chain. Frequency distribution of each answer, mean ($\bar{\mathbf{X}}$), and standard deviation (S.D.) were calculated for each aspect of the questionnaire, and the sum of all aspects was calculated for each item.

Table 10 Mean and standard deviation of guidelines for improving the quality of online teaching and learning.

Improving the Quality of Online Teaching and Learning:	$\bar{X}$	S.D.	Level of opinion
1. Implement Active Learning methods with interactive activities.	4.77	0.44	Highest
2. Alternate lectures with self-directed learning.	4.62	0.48	Highest
3. Regularly supplement students' learning with supplementary materials and teaching resources used by the instructor.	4.55	0.53	Highest
4. Regularly supplement students' learning with pre-recorded lecture videos and assignments created by the instructor.	4.30	0.69	Highest

Improving the Quality of Online Teaching and Learning:	$\bar{X}$	S.D.	Level of opinion
5. Regularly supplement students' learning with other resources recommended by the instructor, such as websites, YouTube, and podcasts.	4.42	0.49	Highest
6. Submit assignments online and record video sessions of the lectures.	4.15	0.60	High
7. Regularly complete exercises, assignments, and submit homework assigned by the instructor.	4.01	0.52	High
8. Reduce class hours, workload, group work, and exams.	4.38	0.72	Highest
Total	4.42	0.54	Highest

From the results in Table 10, it was found that the overall average score for improving the quality of online teaching and learning was at a high level ($\bar{\mathbf{X}}$ = 4.42, S.D.= 0.54). When considering each item, the top priority for improving the quality of online teaching and learning was Active Learning with interactive activities ($\bar{\mathbf{X}}$ = 4.77, S.D. = 0.44). Second was teaching using a lecture-based learning approach interspersed with self-directed learning ($\bar{\mathbf{X}}$ = 4.62, S.D.= 0.48), and third was consistently learning from supplementary teaching materials and resources used by the instructor ($\bar{\mathbf{X}}$ = 4.55, S.D.= 0.53).

Discussion

The research study entitled " Study the effects and ways to cope with online learning among graduate students. College of Logistics and Supply Chain" revealed interesting findings regarding the impact and approaches to improving the quality of online teaching and learning, which vary according to demographic characteristics. The research findings can be discussed as follows:

Study the effects and ways to cope with online learning among graduate students. College of Logistics and Supply Chain found that most students learned online using their own tablets/iPads and notebook computers. This aligns with the research by Wattanaporn Chaturanont et al. (2020) on online learning behavior and satisfaction with online Chinese language learning for Bachelor of Education students in Chinese Language, Faculty of Education, Burapha University, which also found that most students used tablets/iPads and notebook computers for online learning. This is because digital technology has become an integral part of people's lives, both in work and daily life, using various electronic devices as tools. Especially for younger generations, Gen Z, who were born with these technologies, they can learn to live in a digital society, communicating wirelessly via the internet, spending most of their time online, and receiving information quickly. (Understanding the Differences Among Four Generations: Bridging the Gap for Happy Work, 2019) Regarding the location where students study online, it was found that most students study online from their homes. This is because the blended learning approach allows some students from other provinces to study from home without having to travel.

This aligns with the finding that most students use their home Wi-Fi for online learning, possibly because the internet signal from a wireless network or Wi-Fi is better and more stable than the internet signal from a mobile phone network (4G/3G). However, there is another group

of students who live in dormitories near the university area. In addition to using their mobile phone network, they also use the university's Wi-Fi for online learning. All students use Google Meet for learning, as it is the main program assigned to instructors for online teaching. However, instructors also use other programs and applications that they are familiar with and deem suitable for teaching their courses, such as Zoom Cloud Meetings, Line, Facebook Group/Facebook Live, Google Meet, etc., because in online teaching, instructors can choose to use a variety of platforms to communicate with students. Because each platform has different advantages and disadvantages (Siriporn Intasorn, 2020, p. 207).

Regarding responsible and consistent online learning behavior, master's degree students at the College of Logistics and Supply Chain exhibited this behavior at the highest level overall. Consistently attending online classes according to the university's schedule was the most frequently displayed behavior, followed by consistently asking instructors questions related to the course/doubts through chat. Similarly, Wattanaporn Chaturanont et al. (2020) found that students exhibited the most real-time online learning behavior according to the class schedule. This is consistent with the research of Pongsathorn Sittichan et al. (2021), which found that in online learning, students were able to attend classes on time and participate in class the most. From the results of these studies, it can be explained that in online teaching, instructors remain a key factor in motivating and encouraging students to study and research knowledge according to the objectives of the course, as well as playing a role as a guide, mentor, coach, and facilitator. (Facilitators) To help learners recognize their own learning potential (Witthaya Wayo et al., 2020). The behavior exhibited by students is consistently completing exercises, assignments, and submitting homework assigned by the instructor. This may be because self-study from documents or content provided by the instructor on an online platform may be difficult to understand and lacks interaction between learners and instructors, leading to boredom and potentially affecting learning outcomes (Kritaporn Sinchai and Ongart Cheyalee, 2020). Therefore, instructors need to learn digital skills and practice using technology in teaching continuously. In addition to lectures, summaries, and online classroom activities, instructors should create other interesting learning materials or seek out other related learning resources to recommend to students for supplementary learning beyond the provided documents.

5. Conclusion

This research is: “Study the effects and ways to cope with online learning among graduate students. College of Logistics and Supply Chain" aims to: 1. Analyze students' opinions regarding the impact and coping strategies of online learning; and 2. Study students' suggestions for improving the quality of online teaching and learning. The sample group consisted of 200 master's degree students from the College of Logistics and Supply Chain. Data was collected using questionnaires. The data collected was analyzed using percentages, means ($\bar{\mathbf{X}}$), and standard deviations (S.D.) as follows:

Part 1: General Information

Data was collected using a questionnaire from a sample group of 200 people. Regarding the demographics of the respondents, it was found that the demographics of the respondents showed that there were more females than males, with 111 individuals (55.50%) and 89 individuals (44.50%). The largest age group was 26-35 years old, with 129 people, representing 64.50%. This was followed by the 36-45 year old age group with 43 people, representing

21.50%. The 17-25 year old age group had 15 people, representing 7.50%, and the smallest group was 46 years old and above with 13 people, representing 6.50%.

Regarding electronic devices used for online learning, most respondents used tablets/iPads, with 115 people, representing 57.50%. This was followed by notebook computers with 71 people, representing 35.50%, smartphones with 9 people, representing 4.50%, and desktop computers with 5 people, representing 2.50%.

As for the location used for online learning, in descending order, online learning at home was the most common, with 93 people, representing 46.50%, followed by... Online learning took place in dormitories for 75 people, representing 37.50%; in coffee shops for 25 people, representing 12.50%; and within the university campus for 7 people, representing 3.50%. The characteristics of the internet network used for online learning, in order from most to least frequent, are as follows Home Wi-Fi with 93 people, representing 46.50% followed by dormitory Wi-Fi with 74 people, representing 37.00% mobile phone network (4G/3G) with 17 people, representing 8.50% university Wi-Fi with 13 people, representing 6.50% and public Wi-Fi with 3 people, representing 1.50%. The programs and applications used for online learning, in descending order of popularity, were as follows: Google Meet was used by 89 people, representing 44.50% followed by Zoom Cloud Meetings with 62 people, representing 31.00% and Microsoft Teams with 49 people, representing 24.50%.

Part 2: The Impact of Online Learning on master's degree Students in the College of Logistics and Supply Chain.

The overall impact on factors supporting online learning had a moderate average score ($\bar{\mathbf{X}}$ = 2.81, S.D.= 1.03). When considering each item, the primary impact was an unfavorable home or living environment for online learning ($\bar{\mathbf{X}}$ = 3.31, S.D. = 1.39). The second was increased expenses such as electricity and internet costs ($\bar{\mathbf{X}}$ = 2.97, S.D.= 0.95), and the third was unstable network connectivity for online learning ($\bar{\mathbf{X}}$ = 2.57, S.D.= 0.75), respectively.

Impacts on learning through online learning. Overall, the average score was at the highest level ($\bar{\mathbf{X}}$ = 4.39, S.D.= 0.56). When considering each item, the first impact was the lack of hands-on experience in subjects with practical activities ($\bar{\mathbf{X}}$ = 4.75, S.D. = 0.44), followed by difficulties in accessing online learning ($\bar{\mathbf{X}}$ = 4.66, S.D.= 0.48), and thirdly, difficulties in communicating with instructors ($\bar{\mathbf{X}}$ = 4.58, S.D.= 0.53).

The impact on physical and mental health from online learning had an overall average score at a high level ($\bar{\mathbf{X}}$ = 3.61, S.D.= 1.24). When considering each item, the first impact was feeling unable to concentrate on online learning when there is noise from the environment ($\bar{\mathbf{X}}$ = 3.87, S.D. = 1.28), followed by feeling unwilling to study at home ($\bar{\mathbf{X}}$ = 3.85, S.D.= 1.31), and thirdly, feeling stressed and anxious. Afraid of not being able to submit assignments on time because of online learning ($\bar{\mathbf{X}}$ = 3.83, S.D.= 1.29), respectively.

Part 3: Guidelines for Improving the Quality of Online Teaching and Learning for master's degree Students, College of Logistics and Supply Chain

The overall guidelines for improving the quality of online teaching and learning had a very high average score ($\bar{X}$ = 4.42, S.D.= 0.54). Considering each item individually, the top priority for improving the quality of online teaching and learning was implementing Active Learning with interactive activities ($\bar{X}$ = 4.77, S.D. = 0.44). Second was the teaching method of alternating lectures with self-directed learning ($\bar{X}$ = 4.62, S.D.= 0.48), and third was consistently learning from supplementary teaching materials and media used by the instructor ($\bar{X}$ = 4.55, S.D.= 0.53), respectively.

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References

Amorn, N., Charoenwiriyakul, C., & Siriwattana, S. (2023). Graduate Student Effectiveness of Online Learning in COVID-19. The Journal of Development Administration Research, 13(2), 458-468.

Bangkok Business News. (2021). *Research reveals student stress from online learning; Ministry of Education orders reduced study time and homework*. Retrieved November 7, 2021, from https://www.bangkokbiznews.com/social/956195

Boonphak, K. (2020). *Learning management in the New Normal era*. *Journal of Industrial Education*, *19*(2), 1–6.

Busara Niyomvej, Hitagovit, S., Lertchana, T., & Suthadarat, S. (2020). *Learning management of instructors at Ramkhamhaeng University using active learning approaches*. *Suthiparithat Journal*, *34*(111), 17–31.

Chaturanont, W., Chanchingyutthachai, S., Kaensarn, S., & Panmanee, R. (2020). *A study of online learning behavior and satisfaction with online Chinese language learning among Bachelor of Education students majoring in Chinese Language*. *Journal of Chinese Language and Culture, Huachiew Chalermprakiet University*, *7*(2), 291–310.

Chueasrikul, S., Tiranasan, A., Charoenphattrawut, T., Srijai, N., Makkhao, M., Chacharangsi, W., … Wirot, A. (2020). *Guidelines for managing online practical art instruction in emergency situations: A case study of COVID-19*. *Journal of Education*, *14*(2), 99–114.

Chulalongkorn University News. (2020). *Rethinking and redesigning online teaching and learning during COVID-19*. Retrieved December 14, 2021, from https://www.chula.ac.th/news/29739/

Intasont, S. (2020). *COVID-19 and online teaching: A case study of a web programming course*. *Journal of Management Science Review*, *22*(2), 203–213.

Ketwongsa, P., & Chuanwan, S. (2015). *Demographic and social characteristics of online social network users in Thailand*. *Journal of Educational Studies, Mahasarakham University*, *18*(11), xx–xx.

Lailikphan, P. (2020). *Problems and opportunities of online teaching during the COVID-19 crisis: A case study of lecture-based teaching in IND143 Western decorative art history*. Retrieved from http://dspace.spu.ac.th/handle/123456789/7041

Lamanauskas, V., and Makaraskaite-Petkevitciene, R. (2021) Distance lectures in university studies: advantages, disadvantages, improvement. *Contemporary Educational Technology,* 13 (3), 309-324.

Maneewong, N. (2021). *A study of online behavior and success factors of the LINE application during the COVID-19 crisis*. *Journal of Education*, *15*(1), 161–173.

Manlae, W., Prathum, B., Kaewon, S., & Jamnian, K. (2021). *Impacts and adaptation of people during the COVID-19 pandemic in Nakhon Si Thammarat Province*. *Mahachulalongkornrajavidyalaya University Journal*, *8*(11), 327–340.

Panarod, U., Thapphet, S., Suwanmanee, C., & Sinraksa, T. (2021). *Attitudes toward online learning among English major students, Faculty of Humanities and Social Sciences, Songkhla Rajabhat University*. In *Proceedings of the 3rd National Conference on Humanities and Social Sciences: New Paradigms of Humanities and Social Sciences for Local Development*. Songkhla: Songkhla Rajabhat University.

Penrattanahiran, R. (2021). *General psychology* (2nd ed.). Chiang Mai: S. Karnpim Information Technology.

Satasin, T., & Wongwiseskul, S. (2021). *Lessons learned from online teaching: Challenges for instructors during the COVID-19 pandemic*. *Royal Thai Army Nursing Journal*, *22*(1), 1–9.

Sinchai, K., & Jeyyalee, A. (2020). *Online teaching and learning management are under changes in the 21st century*. *Academic Journal of Phuket Rajabhat University*, *16*(2), 1–18.

Thonghattha, M. (2021). *Conditions of online learning management during the COVID-19 pandemic among foreign language teachers*. *Lavasri Journal, Thepsatri Rajabhat University*, *5*(1), 43–52.

Wayo, W., Charoennukul, A., Kanokayan, C., & Khonyai, J. (2020). *Online teaching and learning under the COVID-19 pandemic: Concepts and instructional applications*. *Regional Health Promotion Center 9 Journal*, *14*(34), 285–298.

World Health Organization. (2022). WHO coronavirus (COVID-19) dashboard. *Online*. Retrieved December 5, 2021. from https://www.covid19.who.int/.

Zhu, N., Zhang, D., Wang, W., Li, X., Yang, B., Song, J., et al. (2020). A Novel Coronavirus from Patients with Pneumonia in China, 2019. *The New England Journal of Medicine,* 382, 727–733.