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Strategies for Online Teaching: A Best Practice Approach Using Three-Domain Theories

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Abstract

As Covid-19 pandemic led to abrupt transformation from face-to-face classes to online learning, questions arise as to which among the lists of teaching strategies can be considered as the best practice for online learning. Hence, this study assessed the best practice approach for online teaching from the three-domain strategy theories: behaviorism; cognitivism; and social constructivism from the lived experience of professors in the Asian Institute of Maritime Studies in the Philippines. The relationship between the teaching strategies and the demographic profiles (age, years of teaching experience, and highest educational attainment) was included to identify factors that could affect the teaching strategies. Using descriptive-correlation design, the study endeavored to describe the teaching strategies of the thirty non-laboratory maritime professors who were selected using complete enumeration sampling. The online platform researcher-made questionnaire was made through Google forms to gather data and distributed to the professors after ensuring the permit, via Microsoft Teams Software, Facebook messenger, or Google mails. To treat the data, percentage, weighted mean, and chi-square were used. Results indicated that the respondents highly utilized the direct instruction strategy under the behaviorism theory followed by flipped instruction strategy under the social constructivism theory and chunking instruction strategy under the cognitivism theory. The chi-square result indicated no significant difference between the teaching strategies and demographic profiles of the professors.

Keywords: *online teaching, teaching strategies, three-domain theories, AIMS Maritime Professors*

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1. Introduction

The pandemic produced various difficulties affecting not only the country but also the learning standards. While the COVID-19 drastically changed the teaching capabilities of the school, some programs inevitably developed new paradigms to sustain educational instructions. For instance, maritime schools are equipped with the simulator for a future seafarer, making professors teaching styles improved, but the pandemic made them rely on e-learning classrooms. In the Philippine setting, the Asian Institute of Maritime Studies was capable of sustaining an online class, but with the consistent changing of rules for the pandemic, some professors could not bring the best teaching compared to their face-to-face class, making it worse for the graduating students (Murphy, 2020). As institutions and universities implement the online classes, the requirements in terms of decisions and choices should be considered for the enhancement of learning strategies as well as student expectations. Similarly, in a practical-based or output-based programs, professors have different tactics to present their ideas while meeting the school requirements. For example, the synchronous class takes place in actual time where students and instructor interact in an online platform for a set period of time. In this way, the lecture is being conducted the same way as the face to face class but through video conference. On the other hand, asynchronous learning is a strategy where students are given a certain time frame to study the material and accomplish the given activities to them.

Although the use of technology in education is not new, the idea of using an online platform as an alternative way for learning can be considered as a good scheme to address the pandemic. However, the unplanned and immediate shift to online learning led to new problems in the teaching and learning. Some of the instructors experienced difficulties in adjusting to the new system (Kamal & Illiyan, 2021; Sahito et al., 2022; Mahyoob, 2020; Siddiquei & Kathpal, 2021; Zheng et al., 2021; Barrot et al., 2021) while students struggle in learning their lessons (Zheng et al., 2021; Barrot et al., 2021; Almahasees et al., 2021; Cabual & Cabual, 2022; Moustakas & Robrade, 2022) with limited knowledge or understanding of the basic competencies (Zheng et al., 2021; Hong et al., 2021; Yan et al., 2021; Amer & Ouhida, 2022; Lestari et al., 2022; Alawamleh et al., 2022; Zhang et al., 2022). All these difficulties led to questioning the teaching strategies being imposed during online classes. According to Petrila et al. (2022), Sahito et al. (2022) and An et al. (2021), teachers use inappropriate strategies to

the type of learners. In relation to teaching strategies in the online learning platform, Mahmood (2021) suggests that teachers maintain slow voice, practice vocal functions and share resources before the class help create interactive online classes.

While there are multitude of studies on the online learning experience of maritime programs during the Covid-19 pandemic (Masuku, 2020; Renganayagalu et al., 2022; Karaca & Söner, 2022; Matsouka et al., 2022; Lokuketagoda & Miwa, 2022), there are only few studies on the teaching strategies of maritime professors during the pandemic. Given the difficulties experienced during the online classes of practical-based programs such as Maritime, this study aims to identify the teaching strategies implemented at Asian Institute of Maritime Studies (AIMS) during the Covid-19 pandemic. The AIMS offers maritime courses delivered by mostly retired seafarers turning into professors. The maritime professors are considered foundation of the institute through teaching the students the proper behavior and discipline. Using the three domain theories, behaviorism, cognitivism, and social constructivism, this study evaluated the best approach based on the lived experiences of the maritime professors. Specifically, the study profiled the teaching strategies under the three domain theories and evaluated any significant relationship between the demographic profile of the professors and teaching strategies. This study argues that:

H_0. There is no significant relationship between the teaching strategies and the demographic profile of the maritime professors.

2. Literature review

2.1. Online Teaching Strategies During COVID-19

While most maritime professors are well trained on face-to-face laboratories and simulation classes, they had hard time adjusting to the online teaching platform. For example, most students only used mobile enabling limited teaching methods that require more than a mobile gadget. Professors have had to readjust their teaching strategies and methods to attract students in, keep them engaged, and secure interaction within various exercises in the online education of classes (Hubbs & Lee, 2021). In the light of the heated discussions on effectiveness of online learning, scholars have discovered that undergraduate education can be just as prosperous in online courses as in in-person sessions (McDougall et al., 2021) but online classes, though more accessible, requires internet connection and gadgets. An efficient implementation approach works by assuring that all professors are qualified and positive with the explanations they are supposed to employ, from interactive presentations and 1:1 device to

software that powers online education (Castelo, 2020). With this, teachers should create an opportunity for a helpful online community for students to learn. As such, online professors are required to be appealing and approve student's benefit from the start and for the span of the education, to sustain an efficient learning community (Cooper, 2016). Furthermore, the teachers must engage and be supportive of the students' learning. Learning is not limited to one thing; teacher must be available, especially presence must be there for the whole duration of the course to monitor and maintain the students' learning to an effective knowledge community. According to Ralph (2020), teachers cannot just make materials available online. As a teacher, for the adaptation of the instructional process to online format, they should choose content prudently where every student is engaged in rich activities.

According to Goldberg (2017), blended learning is most desirable for developing knowledge, it is additionally the most reliable method to teach the information which holds the skills mariners need. This includes all the hands-on features of skills and simulations of various activities in which can be applied for every opportunity to existent circumstances to the student. It also offers improving skill training and making the student have an excellent performance. However, the difficulty with this strategy is that once each learner achieves their postings and acknowledgements, they frequently quit reading, reacting to, and interested in what others say or think about the subject or topic supporting study, thus missing out on useful insights and participation (Turk, 2021). As a result, students only acquire a few learning and this is one of the reasons why they cannot answer in recitations and even fail an exam. At the end of the day, students are the ones who suffer. According to Schroeder (2020), the inadequate materials are hardly classified to these modes of online teaching and e-Learning. Most of the maritime schools are conducting laboratories physically since it is a hands-on program, which cannot be completely compensated by the online teaching.

In the Philippines, synchronous and asynchronous approaches are prominent tactics used by teachers in online classes to encourage students to participate and learn new things. In synchronous modality, instructors and students meet online using video conferencing software during the designated class hours and instructors give lectures on the course (Lapitan et al., 2021). This online strategy is almost the same as face to face class where students can interact with their instructors. The only difference is that it is being conducted with the use of technology. On the other hand, asynchronous learning is a teaching approach in which students are given a specific amount of time to study a subject and complete the activities that have

been allocated to them. With limited resources, the different approaches lead to the prospect of cultivating a culture of knowledge and inquiry within distance learning, especially via social media. Accordingly, support system has been developed in achieving a high-quality education applying technology-assisted interventions (Marquez et al., 2020). This teacher-led type of learning focuses on organizing and delivering the content to achieve the objective that is needed for the students to understand and be able to learn through online classes.

Using all available means when it comes to learning and teaching, the idea led to the use of flexible learning as "more encompassing than online learning" (Joaquin et al., 2020). It includes the application of digital and non-digital technology and covers both face-to-face/in-person education and out-of-classroom learning methods of delivery or a blend of modes of delivery. As university transition and adjust to the new normal in the higher education aspect, they must be provided with ongoing assistance, education, and improvement and be implemented with ways to further fully understand and increase the opportunities that online education presents (Moralista & Oducado, 2020).

2.2. Theoretical Framework

This study is anchored on the social constructivism, behaviorism and cognitivism theories. One of the education theorists is John Dewey, in which he proved the use of social constructivism – known as a sociological theory that mainly focus on the knowledge in which the development of human is socially related while the knowledge can be acquired through interaction with others. Based on several studies and theories, social constructivism was stated, explained and described that teaching and learning as complex interactive social phenomena between teachers and students. The teacher provides a social environment in a way that students can be able to construct or assemble their knowledge that is necessary to solve the problem.

In regard to the application to distance education, which can be related to the study of psychology known as the cognitivism – wherein it is known to mainly focus on the processes of mental ability of individual, which includes how they were able to think, learn, perceive, and direct their attention from one stimulus rather than the another. The cognitive theory was theorized by Richard Mayer (2003), who is famously recognized for his cognitive theory of multimedia learning. Mayer states that learner-centeredness "*is not what is done to the learner, but how the learner interprets what happens, that is, on the learner's personal experience*." His theory is based on numerous primary hypotheses: auditory and visual are the two separate

ways to process learning. Every channel has a limited capability, and the learner can only handle a limited amount of knowledge in one channel apart. The mind does not perform a multimedia display of information, images, and auditory information in a commonly particular fashion; preferably, these elements are chosen and constructed dynamically to create logical mental constructs. Learning is an on-going process of filtering, deciding, planning, and combining information based upon prior learning, and the student makes sense of incoming knowledge by actively constructing mental representations. Meanwhile, behaviorists learning theory is made on the idea that the brain is a "black box," or a blank slate. Knowledge happens when behaviorists observe conditioned and fit student reactions responses, to the performance of controlled environmental stimulus conditioning (Harasim, 2012).

3. Methodology

This study was designed as a quantitative study, aiming to understand the teaching strategies of AIMS maritime professors under the online teaching. According to Creswell (2013), quantitative research emphasizes objective measurements and the statistical, mathematical, or numerical analysis of data collected through polls, questionnaires, and surveys, or by manipulating pre-existing statistical data using computational techniques. Hence, this study is descriptive that uses questionnaire to obtain necessary data. According to Calderon (2008 as cited by Alberto et al., 2011), the descriptive method is also known as statistical research that describes data and characteristics about the population or phenomenon being studied. It considers two variables and compares it to conclude that one is better than the other. According to Zikmund (2003), this method helps in obtaining complete and precise information.

The participants of the study include 30 non-laboratory maritime professors of AIMS. The study employed quota sampling, a non-probability sampling not based on the probability of appearance, ensuring final sample meets the criteria of the participants required in this study. The demographic characteristics of the participants include: years of teaching experience (46% - 5 years and below; 37% - 6 years to 10 years; 17% - 11 years and above); age (33% - 36 to 50 years old; 30% - 35 years old and below; 30% - 51 to 65 years old; 7% - 66 years old and above) and educational attainment (64% - college degree holders; 10%- with Masters units; 23% - Master's degree; 3% - with doctorate units.

The study used three types of teaching strategies indicated from the list of effective classroom teaching strategies provided by Chris Drew (2019) as the questionnaire to test the

different types of teaching strategies. In addition, the revised questionnaire was written into first person questions. The teaching strategies and items selected from the scale are:

Behaviourism theory. The study uses direct instruction as one of the teaching strategies, wherein, it is a teacher-centered approach that involves the teacher using simple straightforward language to explain concepts to students. Traditionally, direct instruction was embraced by behaviorists who believed in teacher-centered teaching. Today, it is used in most teaching approaches.

Cognitivism theory. The study uses chunking as one of the teaching strategies, wherein, it involves presenting information in manageable 'chunks' to allow students to sufficiently process information before moving on to the next section of a lesson or task. It is theoretically linked to cognitive overload theory: if students are given too much information, their mind becomes 'overloaded' and they are unable to process more information. A person has only limited amount of working memory space in his mind.

Social Constructivism theory. The study uses flipped instruction as one of the teaching strategies that involves asking the students to complete the reading, preparation and introductory work at home. The teacher can spend more time supporting students in a student-centered environment.

The first part of the questionnaire seeks to find the demographic profile of the maritime professors which includes their name, age, years of teaching experience, and highest educational attainment, while the second part seeks to find the teaching strategies of the professors scaled using 5-point Likert style. The distribution of items is reflected in table 1.

Table 1

Distribution of the Items in the Scale

Teaching Strategies Scale	Item Number	Number of Items
Direct instruction (behaviorism theory)	1,4,7,10,13,16, 18	7
Chunking (cognitivism theory)	2,5,8,11,14	5
Flipped instruction (social constructivism theory)	3,6,9,12,15,17	6
Total number of items		**18**

The first step in the data gathering was to ask permission in the school departments to conduct the survey through an online platform. Then, questionnaire was distributed to the professors after ensuring the permit via Microsoft Teams Software, Facebook messenger or Google mails. While conducting the survey, the researchers explained the purpose and

significance of the research thoroughly to the participants. The questionnaire was issued the day after the reliability coefficient was calculated. Reliability coefficient measures the accuracy of a test from measuring same individual twice and computing the correlation of the two sets of measures. Questionnaire is collected the day after the respondent answered. The gathered data were treated with percentage, weighted mean and chi-square.

4. Findings and Discussion

The teaching strategies utilized by the respondents during online teaching are presented in table 1.

Table 1

Utilization of Different Teaching Strategies

Statement	Weighted Mean	Interpretation
Direct Instruction Strategy Using Behaviorism Theory		
I do a teacher-centered approach that involves the teacher using simple straightforward language to explain concepts to students	4.20	Often
I provide clear and direct knowledge to students	4.53	Very often
I followed up with other teaching strategies that involve more active learning so students Can practice and demonstrate their knowledge	4.30	Often
I present the learning objectives for lessons, activities, and projects, and then making sure that learners have understood the goals	4.4	Often
I let my students ask questions to make sure that students have understood what has been taught	4.53	Very ofter
I am correcting the deficiencies and mistakes in students' output	4.23	Ofter
I encourage the students to take notes during the lesson	4.67	Very often
AWM	**4.41**	**Often**
Chunking Instruction Strategy Using Cognitivism Theory		
I only teach two or three key points per lesson	3.23	Sometimes
I provide a lot of discussion and practice time before moving on to presenting new information	4.23	Often
I consistently use formative assessment and reflection in action during the lesson to see when is the ideal time to move on	4.07	Often
I break larger amounts of information into smaller units	3.97	Often
I group information into manageable units	4.17	Often
AWM	**3.93**	**Often**
Flipped Instruction Strategy Using Constructivism Theory		
I assign a video introducing a concept for homework	3.83	Often
I spend the first 10 minutes of the lesson assessing students' comprehension of the video	3.83	Often
I jump straight into student-centered practice tasks	3.20	Sometimes
I talk around the class helping students who need additional support for the rest of the lesson	4.37	Often
I apply what the student learned in class the following day through a variety of exercise or tasks, while I act as a mentor or guide	4.20	Often
I ask my students to provide additional information about the subject and elaborate the information they present	3.96	Often
AWM	**3.96**	**Often**

Legend: 1.00-1.50 (Never); 1.51-2.50 (Rarely); 2.51-3.50 (Sometimes); 3.51-4.50 (Often); 4.51-5.00 (Very often)

In terms of direct instruction strategy, it can be noticed from the table that three (3) of the indicators were rated "very often", with "*I encourage the students to take notes during the lesson*" having the highest weighted mean of 4.67. Previous research studies demonstrate that learners are prepared to acquire the development but needs innovation, leading to the transmutation of conventional face-to-face education to different learning methods (Fageeh, 2011). In this case, teacher-led type online classes assumes big portion of learning depends on the teacher. On the other hand, the statement "*I do a teacher-centered approach that involves the teacher using simple straightforward language to explain concepts to students*" has the lowest weighted mean of 4.20 (often). As a whole, the respondents "often" utilize the direct instruction strategy during their online teaching as reflected by the average weighted mean of 4.41 (often).

In terms of chunking instruction strategy, the indicators were rated "often", with the statement "*I provide a lot of discussion and practice time before moving on to presenting new information*" having the highest weighted mean of 4.23. On the other hand, the statement "*I only teach two or three key points per lesson*" has the lowest weighted mean of 3.23 (sometimes). In general, the respondent-professors "often" use the chunking instruction strategy during their online teaching, as evident from the average weighted mean of 3.93 (often). In terms of flipped instruction strategy, the indicators were rated "often", with the statement "*I talk around the class helping students who need additional support for the rest of the lesson*" having the highest weighted mean of 4.37.

Figure 1

Distribution of the Respondents as to Frequent Teaching Strategies Utilized

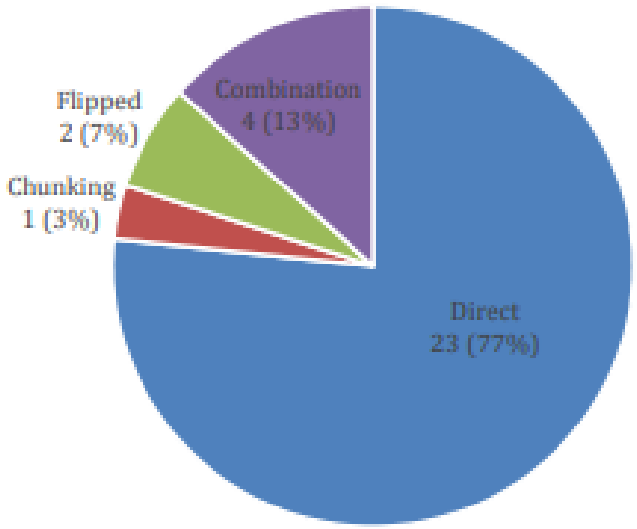

Figure 1 shows the distribution of the professors as to frequent teaching strategy during online teaching. It can be seen from the graph that more than three-fourths (77%) utilize direct instruction as their main online teaching strategy. Teaching in face-to-face classes is different when teaching online, so teachers provide new strategies for students suitable for online classes. This is a teacher-led type of learning focused on organizing and delivering the content to achieve the objectives needed for the students to understand and learn. In this method, professor has more comprehensive control over student actions. Hence, previous studies suggest professors should devise various activities (Bao, 2020) that can motivate the students. As this teaching style is often characterized as one-way communication, professors should ask challenging problems from learners through online classes (Smith & Diaz, 2004). Furthermore, these actions can guarantee that students are more attentive in learning. On the other hand, only 7% mainly use flipped instruction, and 3% utilize chunking strategy. The remaining 13% of the respondents use combination of at least two main teaching strategies for online teaching.

Table 2

Relationship between Teaching Strategy and Demographic Characteristics

	Teaching Strategies		Chi-Square	p-value	Interpretation
	Direct	Combination & Non-direct			
Years of Service					
5 and below	10	4	0.403	0.526	Not significant
6 and above	13	3			
Age					
35 and below	8	3			
36 to 50	8	2	0.164	0.921	Not significant
51 and above	7	2			
Educational Attainment					
Undergraduate Degree	16	6	0.716	0.398	Not significant
Master's Degree	7	1			

Table 2 presents the results of the analysis on the relationship between teaching strategy and the various demographic characteristics. In terms of years of teaching experience, it can be seen that the computed chi- square is 0.403 with p-value of 0.526, which is interpreted as "not significant". This implies that the teaching strategy utilized by the professors are the same, regardless of the number of teaching years they have. Similarly, the age of the professors resulted to computed chi-square of 0.164 with p-value of 0.921, which is interpreted as "not significant." This also means that the teaching strategy used by the professors are the same,

regardless of their age. Lastly, the educational attainment of the respondents showed a computed chi-square of 0.716 with p-value of 0.398, which is interpreted as “not significant”. This implies that the teaching strategy utilized by the professors are the same, regardless of their educational attainment.

5. Conclusion

This study showed that the behaviorism theory, cognitivism theory and social constructivism theory characterized by the teaching strategies as direct instruction, chunking instruction, and flipped instruction, respectively were all utilized “often” by the maritime professors in their online teaching as reflected by the average weighted mean. Of the three domain theories, maritime professors utilized direct instruction as their teaching strategy, which is considered the “best practice.” Furthermore, the results indicated no significant relationship between the demographic characteristics – years of teaching experience, age, and highest educational attainment, and the teaching strategies used in online teaching.

As more than three-fourths of the professors utilized direct instruction as their online teaching strategy, this study recommends professors to maintain the presentation of lessons through different ways and not just only through verbally and visually, but also in pictures, audio tapes, and hands-on formats. Furthermore, part of their responsibilities as a professor is to be able to adapt approaches that are within the preference of the students in different theories such as behaviorism, cognitivism, and social constructivism. Professors should also put into consideration the individual differences when choosing the suitable teaching strategies, and be able to develop his or her teaching strategies that will interest the learners, and get them involved. With the very limited teaching strategy, curriculum developers must establish appropriate and proper implementation of the curriculum that consider the view of both the teachers and learners. Therefore, it was suggested that the people in positions shall provide a model that is suitable to teaching-learning strategies, teaching methods, instructional materials for maritime professors. The educational institution need to develop and enhance the teaching improvement plans addressing the needs of the students in different factors such as pace, process, place, and products to acquire new learning, skills, and teachings.

As this study is limited to 30 participants conducted in a single maritime school, further studies can be conducted with larger sample size and increased number of schools to increase the likelihood of obtaining statistically significant results which were not found and concluded by the present study. The replication of the present findings with larger samples would increase

the possibility of identifying whether such relationship would be statistically significant given a large sample. Furthermore, given a purely quantitative data, future studies should therefore employ some qualitative research technique, such as open-ended questions and interviews to avoid the limitation for in-depth exploration of interaction among professor and their teaching strategies, but more importantly, to supplement the findings from the current study.

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7. Declaration

The authors are given authority to disclose the name of the institution - Asian Institute of Maritime Studies, for the purpose of this study.

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