



Received: 05-09-2025
Accepted: 15-10-2025

International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

Enhancement on the Utilization and Implementation of Flexible Learning Among Maritime Higher Education Institutions

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DOI: <https://doi.org/10.62225/2583049X.2025.5.5.5126>

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Abstract

This study was conducted to determine the level of effectiveness in the utilization and implementation of flexible learning among faculty and students in maritime higher education institutions (MHEIs) in Western Visayas.

The overall findings showed that the utilization of flexible learning was consistently rated as “highly utilized” when considering the respondents as a whole group, as well as when categorized separately as faculty and students. This indicates that the respondents' utilization of flexible learning is almost the same, with no significant difference existing between the faculty and student categories.

Regarding implementation, the overall level was found to be “highly implemented”. Specifically, students rated the implementation as “highly implemented,” but the level of implementation among faculty was rated as “low implementation”. This led to a finding of a significant difference in the implementation of flexible learning when

classified according to category, implying that the two groups' implementation practices differ. The study also revealed a significant positive correlation between utilization and implementation: a higher rating on implementation correlated with a higher rating on utilization.

Based on these results, a proposed program was developed to enhance the utilization and implementation of flexible learning. It is recommended that MHEI administration design a flexible learning scheme that is truly flexible for students, teachers, and modes of delivery, and that they utilize the proposed intervention program. Furthermore, MHEIs should religiously implement the use of online platforms to maximize the teaching and learning process during unforeseen events like bad weather or contagious disease, and follow the implementing guidelines of CHED Memo #4, Series of 2020.

Keywords: Flexible Learning, Maritime Higher Education Institutions, Flexible Learning Utilization and Implementation, Intervention Program, Flexible Learning Utilization and Implementation, Online Platforms

Introduction

The implementation of flexible learning began during the COVID-19 pandemic (AY 2020–2021) when schools were forced to shift from face-to-face to online and blended learning due to government-imposed health and safety restrictions. The sudden shift created significant challenges for both students and faculty, as many were unprepared for the transition to online learning. CHED (2020) defined flexible learning as a learner-centered approach that provides flexibility in content, schedules, access, and assessment using both digital and non-digital tools. Platforms such as Schoology, Google Classroom, Microsoft Teams, Messenger, Google Meet, and Zoom were used to facilitate online learning and communication between students and instructors. Despite these adjustments, several challenges emerged, including limited internet access in remote areas, high data costs, lack of technological resources, and varying levels of digital literacy among students and faculty.

Previous studies have shown that flexible learning has both benefits and limitations, but there remains a lack of systematic assessment of its effectiveness within maritime education, particularly in terms of its impact on learning outcomes and student engagement. Furthermore, there is limited research on how flexible learning specifically affects students in Bachelor of Science in Marine Transportation (BSMT) and Bachelor of Science in Marine Engineering (BSMarE) programs, which require hands-on training and practical applications that are difficult to replicate in an online setting.

The study is justified by the need to evaluate the current status of flexible learning in maritime institutions and provide evidence-based recommendations to improve its implementation. Understanding the effectiveness of flexible learning in maritime education is essential for developing targeted programs that enhance learning delivery and improve student

outcomes, particularly in an industry where practical skills and theoretical knowledge must align closely. Moreover, the study seeks to bridge the gap in understanding how flexible learning strategies can be tailored to meet the unique needs of maritime students and faculty. The findings are expected to benefit curriculum planners, school administrators, maritime institutions, students, and parents by providing insights into the strengths and weaknesses of flexible learning and guiding future improvements in teaching and learning strategies.

The theoretical framework is anchored on several learning theories that support flexible learning environments. The Cognitive Flexibility Theory (Spiro, Feltovich, *et al.*, 1988) [9] explains how learners restructure existing knowledge based on new information, which aligns with the need for students to adapt to the changing modes of learning during the pandemic. The theory suggests that knowledge acquisition in complex and ill-structured domains requires learners to reorganize their understanding and apply new learning strategies. Connectivism (Siemens, 2005) [8] emphasizes the importance of finding and synthesizing information online, highlighting the significance of digital resources and networking in the learning process. It supports the idea that the ability to connect with information and evaluate its relevance is central to successful flexible learning. Constructivism (Ling & Fraser, 2014; Marshall, 2007) [6, 7] focuses on the process of constructing new knowledge through interaction and experience, reinforcing the importance of student-centered learning, peer collaboration, and experiential learning even within a flexible learning framework.

The study's conceptual framework includes the independent variables of faculty and students and the dependent variables of the effectiveness of flexible learning utilization and implementation. The study also aims to design an enhancement program based on the findings to address the identified gaps and improve the delivery of flexible learning in maritime education.

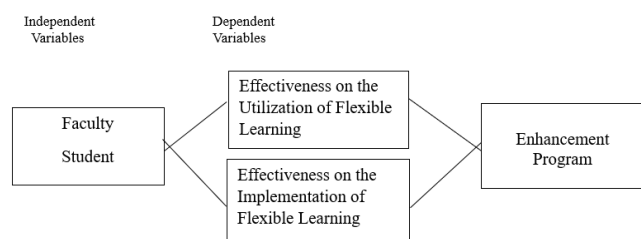


Fig 1: Research Paradigm

This study aimed to determine the level of effectiveness on the utilization and implementation of flexible learning among the maritime higher education institutions in Western Visayas. Specifically, to determine the level of effectiveness of flexible learning utilization as a whole and when grouped according to faculty and students. It also aimed to evaluate the level of effectiveness of flexible learning implementation both collectively and when categorized by faculty and students. The study further examined whether there is a significant difference in the effectiveness of flexible learning utilization and implementation when grouped according to faculty and students. Additionally, it investigated the relationship between the utilization and implementation of flexible learning to identify any

correlation. Finally, the study aimed to design a program that would enhance the utilization and implementation of flexible learning based on the findings.

Methods

Research Design

The study aimed to assess the effectiveness of flexible learning utilization and implementation among faculty and students in maritime higher education institutions (MHEIs) in Western Visayas. It sought to identify differences in effectiveness based on the type of respondents and explore the relationship between utilization and implementation of flexible learning.

Respondents

A total of 381 respondents (112 faculty and 269 students) were selected through stratified random sampling from six maritime schools in Western Visayas. The participating schools included John B. Lacson Foundation Maritime University-Arevalo, John B. Lacson Colleges Foundation-Bacolod, John B. Lacson Colleges Foundation Maritime University-Molo, University of Antique, St. Therese Colleges in Magdalo and Tigbauan, and Aklan Polytechnic College.

Sources of Data

A standardized, validated questionnaire adapted from Alvarez-Risco *et al.* (2021) [1] was used for data collection. It included demographic information and measured flexible learning effectiveness through a 65-item student questionnaire and a 68-item faculty questionnaire. Responses were rated on a 4-point Likert scale: Strongly Disagree (1), Disagree (2), Agree (3), and Strongly Agree (4). Reliability testing using Cronbach's alpha yielded a 0.95 reliability score.

Procedure

After finalizing the reliability-tested instruments, the researcher sought permission from seven maritime schools in Western Visayas to conduct the study. Upon approval, the researcher personally distributed the questionnaires to randomly selected students and faculty, ensuring they understood the instructions to provide accurate responses. After retrieving the completed questionnaires, the data were classified, tallied, and analyzed using appropriate statistical methods. The results became the basis for developing the "Proposed Enhancement Program."

Data Analysis

The study used several statistical tools to analyze the data and measure the effectiveness of flexible learning.

Percentage was used to classify respondents by category, providing a clear distribution of faculty and student responses. The **mean** was employed to determine the level of effectiveness of flexible learning, giving an overall measure of how well flexible learning strategies were applied. **Standard deviation** assessed the consistency of responses, indicating how varied or uniform the respondents' perceptions were. A **t-test for independent samples** was conducted to test for significant differences in the effectiveness of flexible learning between faculty and students. Lastly, **Pearson's r** was used to measure the relationship between the utilization and implementation of flexible learning, identifying whether a strong or weak

correlation existed between the two factors. A 0.05 alpha level was used to determine the significance of findings.

Results and Discussions

Level of Utilization of Flexible Learning

The study showed that flexible learning was "highly utilized" by both students ($M = 3.14$) and faculty ($M = 3.21$), indicating consistent integration of online platforms, blended learning, and digital tools into maritime education. High utilization reflects growing acceptance and adaptation to flexible learning, especially among students who engaged well with digital resources. Faculty also reported active use of flexible learning methods.

The shift to flexible learning during the COVID-19 pandemic likely drove this high utilization, supported by platforms like Google Classroom, Microsoft Teams, and Schoology. The alignment of flexible learning with maritime training requirements further encouraged its use. While flexible learning has become essential in maritime education, ongoing support and training are needed to maximize its benefits for both students and faculty.

Table 1: Level of Utilization of Flexible Learning as whole and Grouped According to Category

	<i>M</i>	Description	<i>SD</i>
Entire Group	3.16	Highly utilized	0.39
Students	3.14	Highly utilized	0.39
Faculty	3.21	Highly utilized	0.39

Note. Scale: 1.0 – 1.5 = Not utilized, 1.51 -2.5 = Utilized, 2.51 -3.5 = Highly utilized, and 3.51-4.0 = Very highly utilized.

Level of Implementation of Flexible Learning

The study found that flexible learning was "highly implemented" overall ($M = 3.04$, $SD = 0.37$). Students reported a "highly implemented" level ($M = 3.09$, $SD = 0.38$), indicating that they widely adopted flexible learning methods. In contrast, faculty reported a "low implementation" level ($M = 2.92$, $SD = 0.33$), suggesting limited use of flexible learning among them.

The study revealed a contrast in flexible learning implementation between students and faculty in maritime higher education institutions (MHEIs). Students' high implementation levels reflect successful adaptation to digital platforms and blended learning, likely due to increased exposure during the pandemic. In contrast, faculty reported low implementation, suggesting challenges such as limited technical skills, lack of support, and inadequate training. Despite high utilization, the low implementation among faculty highlights the need for targeted training and improved infrastructure to enhance consistent adoption of flexible learning methods.

Table 2: Level of Implementation of Flexible Learning as whole and Grouped According to Category

	Mean	Description	<i>SD</i>
Entire Group	3.04	Highly Implemented	0.37
Students	3.09	Highly Implemented	0.38
Faculty	2.92	Low implementation	0.33

Note. Scale: 1.0 – 1.5 = Not implemented, 1.51 -2.5 = Low Implementation, 2.51-3.5 = Highly implemented, and 3.51-4.0 = Very highly implemented.

Significant Differences on the Utilization and Implementation of Flexible Learning

The study found no significant difference in the utilization of flexible learning between students and faculty, $t(379) = -1.617$, $p = .107$, indicating that both groups used flexible learning at similar levels. However, a significant difference was found in the implementation of flexible learning, $t(379) = 4.165$, $p = .000$, suggesting that students implemented flexible learning more effectively ($M = 3.09$) compared to faculty ($M = 2.92$).

The study showed no significant difference in the utilization of flexible learning between students and faculty, suggesting similar engagement with platforms like Google Classroom and Microsoft Teams. However, the significant difference in implementation levels (students: $M = 3.09$; faculty: $M = 2.92$) indicates that students adapted more effectively to flexible learning methods. Faculty's lower implementation may result from limited technical skills, lack of training, and insufficient support. Targeted training and improved infrastructure are needed to enhance faculty implementation and ensure consistency in maritime education.

Table 3: t-test Results for Significant Difference in the Effectiveness of Utilization and Implementation of Flexible Learning

Category	Utilization (M)	t-value	df	Sig. (2-tailed)	Implementation (M)	t-value	df	Sig. (2-tailed)
Students	3.14	-1.617	379	.107	3.09	4.165	379	.000
Faculty	3.21				2.92			

Relationship between Utilization and Implementation

The study found a strong positive correlation between the effectiveness of utilization and implementation of flexible learning ($r = .770$, $p = .000$). This indicates that higher implementation levels are associated with higher utilization ratings. The coefficient of determination (59%) suggests that 59% of the variance in utilization effectiveness can be explained by the implementation of flexible learning.

Table 4: Relationship between the Implementation and Utilization of Flexible Learning among Faculty and Students

	Source of Variation	Implementation
Utilization	Pearson Correlation	.770**
	Sig. (2-tailed)	.000
	N	381

Note: **. Correlation is significant at the 0.01 level (2-tailed).

Proposed Blended Learning Program

Blended learning combines traditional classroom instruction with online learning, offering flexibility and catering to diverse learning styles. It integrates the strengths of face-to-face teaching with interactive digital tools, enhancing engagement and making learning more accessible. This approach allows for real-time interaction while enabling self-paced learning through learning management systems (LMS).

Objectives:

1. Develop a framework for improving teaching and learning through blended strategies.
2. Strengthen communication between instructors and students.
3. Explore innovative teaching methods aligned with industry demands.

4. Promote collaboration among educators to improve maritime education.
5. Emphasize sustainable practices in the use of educational resources.

Proposed Enhancement Program

Area	Category	Objective	Action to Take	Responsible Person
Utilization	Faculty	The students believed they have benefitted from flexible delivery methods compared with traditional methods.	Improve the quality of the delivery of flexible methods from among the different models hereto attached.	Administration Academics
		Teachers can monitor student's needs. They can see each student's growth	Devise or improve the monitoring system for students' performance	Administration Academics SAS
		The assessment methods that are adopted by the instructors/professors are suitable	Devise an appropriate assessment method	
Implementation	Faculty	Access to flexible delivery is difficult	Improve the connectivity of the college or university	Academics, Administration, I.T.
		There are no penalties for late submission due to some technical system failures and others	Improve the connectivity of the college or university	Same offices
		Teachers are not obliged to stick to the curriculum.	Allow a certain degree of deviation from the topic	Professors
Utilization	Students	Teachers can monitor students' needs. They can see each students' growth.	Devise or improve the monitoring system for students' performance	
		An adequate level of support is provided in areas such as web training, trouble shooting and other technical support.	This should be provided to both the faculty and students	Administration
		There is balance between school and personal life.	Provide with varied activities both indoors and outdoors.	
Implementation	Students	There are no penalties for late submission due to some technical system failures and others	Establish policies for on time and late submission with reference to their grades	Administration SAS Academics
		Access to flexible delivery is difficult		

Conclusions

In view of the research findings, the following conclusions were drawn:

1. The high utilization among the students and faculty alike means that regardless of their category, they are utilizing flexible learning in the maritime schools in Western Visayas to a greater extent. With flexible learning, students can learn and take classes wherever and whenever they want to. This also enables students to fit their learning around family life or work commitments and schedules. A more flexible environment ensures that students do not feel overwhelmed and pressured when it comes to learning.
2. The high implementation of the flexible learning as assessed by the faculty and students indicates that the use of flexible learning is indeed beneficial and contributes to the success of the delivery of instruction.
3. The low degree of implementation among the faculty may be related to the fact that certain maritime schools included in this study have restricted connectivity, making it impossible for them to fully adopt flexible learning when it comes to internet connections.
4. The uniform utilization of flexible learning among both faculty and students indicates a balanced adoption and adaptation to these methods, reflecting positivity on the support systems in place and providing a foundation for continuous improvement in flexible learning initiatives.
5. The significant difference in the level of implementation of flexible learning among faculty and students at maritime higher institutions in Western

Visayas highlights the need for targeted interventions. By addressing the unique needs and challenges of both groups, institutions can enhance the overall effectiveness and equity of their flexible learning programs, ultimately leading to better educational outcomes.

6. The significant positive correlation between the effectiveness of utilization and the level of implementation underscores the importance of high-quality implementation practices in flexible learning programs. Educational institutions should prioritize comprehensive and quality-focused implementation strategies to maximize the benefits and effectiveness of flexible learning for both faculty and students.

Recommendations

The following are the recommendations on the basis of the findings of this investigation:

1. The administration of maritime schools should design a flexible learning scheme that is truly flexible for students and teachers and the modes of delivery are applicable in particular situations.
2. All MHEIs should utilize the proposed intervention program to enhance the use and implementation of flexible learning.
3. Faculty and students shall report discrepancies immediately to the IT In-charge on the use of any flexible platform.
4. During untoward events such as bad weather or contagious disease, the MHEIs should religiously implement any flexible platform to maximize the

teaching and learning process.

5. MHEI's should follow the implementing guidelines of CHED Memo No.4, Series of 2020 pertaining to flexible learning delivery.

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