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Research Article

Student Readiness on the Blended Learning Modalities of the Philippine Merchant Marine Academy: An Assessment

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ABSTRACT

This mixed-method research aimed to assess student readiness on the use of blended learning modalities at the Philippine Merchant Marine Academy. It examined the level of readiness towards self-directed learning, online student engagement, and the level of student satisfaction among the midshipmen to assess the effectiveness of these lesson delivery blends.

1CL, 3CL, and 4CL midshipmen officially enrolled in the 1st Semester of the School Year 2022-2023 were surveyed online to establish their demographic profile, their level of readiness in terms of self-directed learning and online student engagement readiness, and their level of student satisfaction. A semi-formal interview asked the faculty about their preferred blend or combination of modalities. The SPSS was utilized to analyze the results.

When grouped according to year level, 4CL Midshipmen demonstrated lower Self-Directed Learning Readiness and Online Student Engagement than the senior cadets. When grouped according to program, BS Marine Transportation midshipmen were more self-directed and satisfied than the BS Marine Engineering midshipmen. Faculty favored the face-to-face and online asynchronous blend.

Gleaning on the results of the study, an assessment tool (PMMA Blended Modalities Readiness Survey for Incoming 4CL Midshipmen) was proposed to address the identified challenges. The recommendations also included the incorporation of the proposed assessment tool into the Quality Operations Manual to serve as guidelines in the implementation of blended learning modalities. A competence assessment between colleges, strengthened collaboration between the IT department and the colleges, midshipmen digital literacy training, and faculty training on digital tools for online learning facilitation were also recommended.

Keywords: *Blended learning modalities, Online student engagement, Self-directed learning readiness, Student satisfaction*

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Introduction

COVID-19 has forced Philippine schools to shut. At the Philippine Merchant Marine Academy, classroom instruction remained uninterrupted due to its quasi-military nature. Midshipmen of the Academy are berthed in dormitories; they can only go out at the end of the semester, during summer and Christmas vacations, or when they desire liberty. The PMMA was safe during the COVID-19 outbreak because Midshipmen were not allowed to leave. The Inter-Agency Task Force for the Management of Emerging Infectious Diseases Resolutions has granted the PMMA special authority to continue classroom learning despite teaching and learning restrictions. The PMMA Superintendent released pandemic-related memorandum orders on March 17, 2020. Classes were held online or modular as a response to CHED COVID Advisory No. 6, released on April 13, 2020, addressing the Guidelines for the Prevention, Control, and Mitigation of Coronavirus Disease 2019 (COVID-19) at Higher Education Institutions (HEIs), this was done to ensure uninterrupted instruction and learning. This guidance made blended learning a curriculum delivery option. During the epidemic, the faculty utilized blended learning. They used online synchronous and asynchronous, modular printed, and the limited 15-minute face-to-face instruction. Faculty were issued laptops, and midshipmen received tablets for online learning. Faculty and midshipmen were enrolled in the Learning Management System. These measures ensured a smooth transition towards blended learning.

Integrated Review of Related Literature
Blended Learning Modalities

Several schools taught online throughout the epidemic. (Valero and Verde 2021) New didactic tools let teachers organize and integrate learning. Blended learning requires teachers to grow. Blended modalities improved accessibility, efficiency, and learning. It used academic resources, managed capacity and social distance, and met government social distancing rules. The pandemic showed that future schooling would be different. Hence other learning modalities are needed. Blended learning, which blends online and in-person instruction, is a 21st-century education innovation. However, face-to-face learning cannot be fully eliminated (Ochavillo, 2020).

Learning Environment

Online students study and take lessons remotely. According to sociocultural theory, children learn when they engage in specialized learning activities that foster cognitive growth and when they are free to adapt, transform, and restructure previously acquired knowledge, values, and skills in instructional environments. (Wang & Hung, 2022). According to socio-cultural theory, multimedia learning helps students comprehend learning processes in students, instructors, and their sociocultural surroundings. (Wang & Hung 2022).E-learning lets students study when and how they choose.

Students must self-regulate to succeed in e-learning. The learner must be self-directed and actively participate in information acquisition, activity planning, and task evaluation. (Kumar et al., 2021) Online learning allows students to pick what to study, while traditional learning is arranged around learned and digested knowledge. (Torun, 2019)

Technological Ability and Awareness

The teaching and learning process must be modernized with dependable internet connections and equipment and software in blended learning. Additionally, the ability to efficiently employ all technologies is needed. (Gestmann, Szalai, Diehl, 2019).

College students need technological skills and resources to find and use relevant, high-quality online learning materials that match their learning styles and habits, according to Robertson. Training e-learning skills enhanced self-directed learning. Students may not be able to construct and coordinate online learning activities without these technologies. Online learning works best when students are cognitively, emotionally, and physically prepared and proficient with technology, social media, and learning responsibilities. (Gestmann, Szalai, Diehl (2019)

Assessment

Assessment is carefully regulated and used to evaluate quality and outcomes rather than

learning. Students are "passive subjects" assessed. Passive pupils may misunderstand professors' criticism (McConlogue, 2020). The UK Quality Assurance Agency advocates explicit and transparent assessment, student aid, and assessment preparation (Ritchie & Sharpe, 2021). During a pandemic, distribution, setting, timing, and even evaluation are altered. Instructors are required to design and apply assessment tools to identify and address student learning gaps. Teachers should assess and remark on three instructional acts. Checking comprehension, offering comments, supporting self-directed learning, and setting pertinent assignments (Chan, 2021).

Learning Management System

LMS enables online and remote learning. It aids learning and improves communication. The system supports learning, competency evaluation, and social community assistance. Moodle, an integrated, secure LMS system, provides generic learning environments for students and educators. It aids teaching and learning. Creative education solutions leveraging information and communication technology have evolved learning management systems. Course management, gradebook, progress tracking, security, communications, and smartphone access enhance online learning. Future LMS versions should increase social interactions, tailored content, and decision-makers analytics. (Turnbull et al., 2019)

Modular Learning Module

Students can get assignments from professors for self-learning using the modular paradigm (Zadiq & Zamir, 2014). Modules organize curriculum and course materials. Progressively building knowledge and abilities, the modular approach is practically self-contained. The module's learning opportunities are topical and arranged. It clearly specifies behavioral goals for a subject's units. The teaching method encourages creative and constructive learning activities that improve topic comprehension and self-directed learning. Modules with clear learning objectives allow students to learn on their own at their own speed

Traditional (Face to Face Learning)

"Traditional teaching method" refers to a mode of instruction that requires face-to-face interaction between students and teachers in a traditional classroom setting, where students receive passive information from the teacher and initiate discussions on notes and textbooks (Li, 2016). The educational institution chooses subject matter in traditional learning. The modality is crucial for less self-realized pupils since it gives more structure and more exams. This modality seeks to provide students with the same information and skills. Basic knowledge acquisition is the teaching strategy, and the instructor organizes student learning activities. Conventional teaching is accepted, lessons are comprehended, and students are motivated to learn.

Blended Learning

Learning and blending make up blended learning. Blending is synthesizing, whereas learning is acquiring new knowledge. (Cronje, 2020) Blended learning employs both online and offline methods. Blended learning allows students to use online learning resources for classwork and engage with teachers and classmates in traditional classrooms. (Dang et al., 2016). Blended learning allows students to work at their own pace. (Namyssova et al, 2019).This technique makes learning tougher by encouraging students to assume more responsibility and creating a shared accountability between instructors and students. Students must create objectives, use resources, and manage time to achieve them. (Sabah 2020). During the pandemic, blended learning helped students understand the role of technology in self-directed and self-paced learning. (Fenech & Baguant 2021).

Blended Learning Readiness

Blended learning uses technology-based pedagogies (Kintu, Zhu, & Kagambe, 2017). Blended learning has become an innovative educational method. It is a successful blend of online and in-person learning. Blended learning efficacy depends on student characteristics, learning objectives, and design. Family support, study time, and workload might lead to

online student dropout. Student-teacher interactions can occasionally derail online learning. Online and face-to-face learners need peer and family support. This novel approach requires a successful mixed-learning environment using technology to teach and learn.

Self-Directed Learning

According to Garrison (1997 cited in Loeng, 2020), the cognitive and social perspectives of an educational experience are reflected in the terms "meaningful" and "worthwhile," so self-directed learning is understood as a method in which students are encouraged to take initiative and collaborate to manage their own learning's cognitive (via self-monitoring) and contextual (via self-management) factors.

Online Student Engagement

Blended Learning requires student engagement. Borup et al. (2020) noted that emotional involvement enhances students' academic and behavioral performance. Student engagement is "the level of attention, curiosity, interest, optimism, and passion that students demonstrate when learning or being taught, which extends to the level of motivation they have to learn and progress in their education." Student engagement includes three components: behavioral (attendance and in-class activities), emotional (interest, optimism, etc.), and cognitive (dedication to learning). (Shohel et al., 2020).

Student Satisfaction

Satisfaction is defined as "the subjective experience of either happiness or dissatisfaction with an experience or outcome" (Kotler & Keller, 2012 as cited in Alkhateeb and Abdalla (2020). Lim, Ab Jalil, Ma'rof, and Saad (2020) call blended learning satisfaction a "short-term attitude resulting from a subjective evaluation of students' educational experience and outcomes." Technology, course design, and execution affect student satisfaction. The student's familiarity with and usage of the course's technology and ability to undertake independent research and apply what they find affect online learning satisfaction (Pham & Nguyen, 2021).

Theoretical and Conceptual Framework

Theoretical Framework

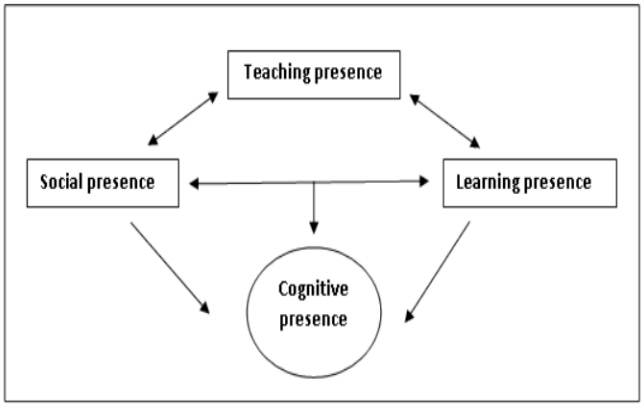

Figure 1. Revised Community of Inquiry Model (Pool et al., 2017)

The "Revised Community of Inquiry (CoI)" by Shea et al. (2012), mentioned in Pool et al. (2017), emphasizes self-directedness as essential to a successful blended learning experience. The Community of Inquiry, developed by Garrison, Anderson, and Archer (2000), stresses instructional, social, and cognitive presences for online learning effectiveness. The Community of Inquiry is essential for online education research and practice because it represents higher-order learning's dynamic character. (Garrison & Arbaugh, 2007, cited in Armellini and De Stefani, 2016).

Social constructivism and the idea that knowledge is built collaboratively underpin the Community of Inquiry (CoI) philosophy.

According to Community of Inquiry theory, effective online education creates a community of students and instructors that fosters deep learning (Jasmina, Alla, Yulia, Grosseck, & Živkov, 2022). Social, instructional, and cognitive presence may boost online course engagement. Online program engagement depends on students' views of all three presences (Malan, 2020).

The dynamics of the following "presences" allows for the student to have the best educational experience, and these indicators are necessary in an online environment:

a. *Social Presence.* The ability of participants to identify with the community, communicate purposefully in a trusting environment, and develop interpersonal relationships by way of protecting their individual personalities (Garrison, Anderson & Archer, 1999, as cited by Bektasi, 2018).
b. *Cognitive Presence.* The extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical Community of Inquiry (Garrison, Anderson & Archer 1999, as cited by Bektasi, 2018).
c. *Teaching Presence.* The design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes (Garrison, Anderson & Archer, 1999, as cited by Bektasi, 2018).
d. *Learning presence*. It is the latest addition to the Community of Inquiry. It is defined as the students' proactive use of specific processes such as goal setting, strategy selection, and personal monitoring of effectiveness (Shea et al., 2012, as cited by Pool et al., 2017). Rather than being complacent and passive, it conveys control over the learning situation. It emphasizes the significance of self-directedness in online and blended learning environments.

Conceptual Framework

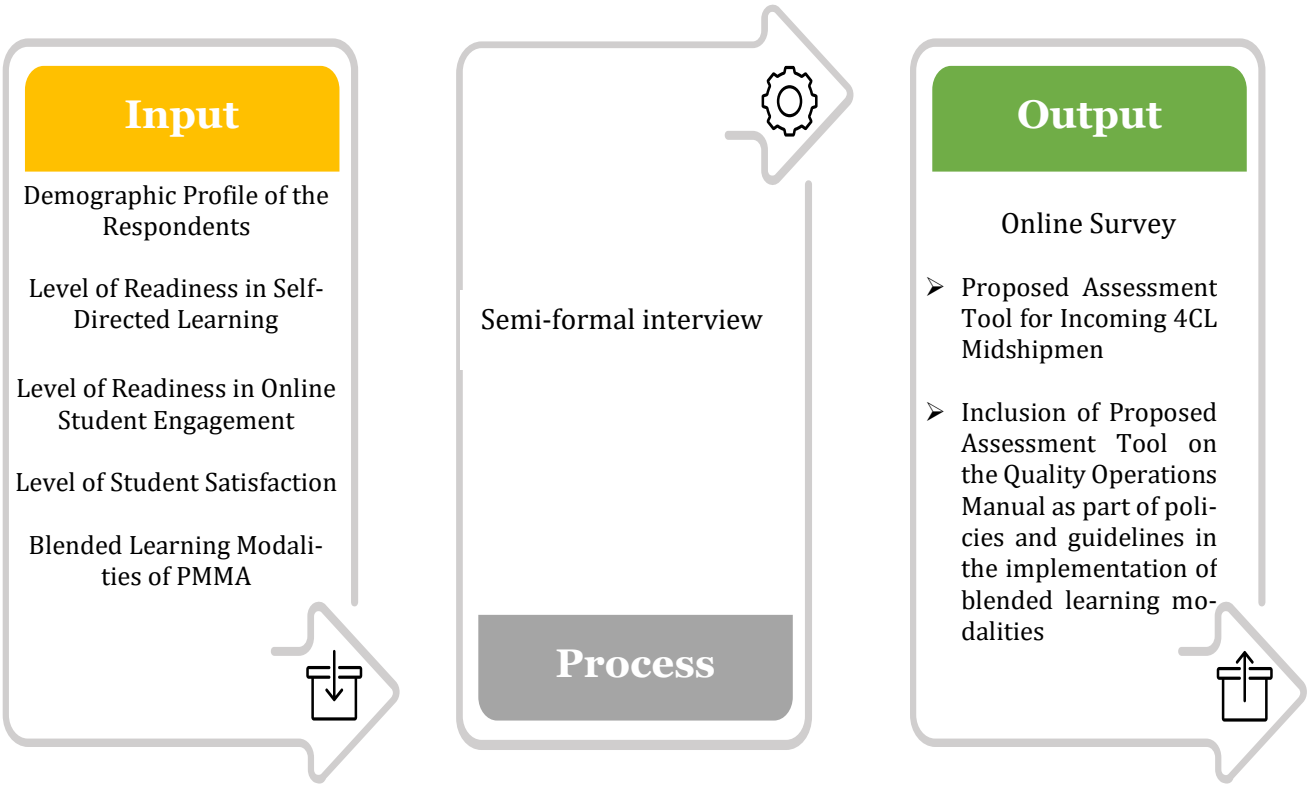

Figure 2. The Input-Process-Output Model

The researcher anchored her theoretical framework to the Input Process Output Model as it allowed her to identify the elements involved in the study while providing the structure of the processes involved in the conduct of this research.

The Input illustrates the respondents' demographics, self-directed learning preparedness, online student engagement readiness, student happiness, and PMMA's blended learning modalities. The Process includes the online survey comprised of the Self-Directed Learning Readiness Scale, Online Student Engagement Scale, and Student Satisfaction Inventory while the faculty were given a brief poll on their preferred blend of modalities. The suggested Assessment Tool for Incoming 4CL Midshipmen and its inclusion in the Quality Operations Manual as part of blended learning rules and guidelines are the study's results.

Statement of the Problem

This research sought answers to the following:

1. What are the demographic characteristics of the respondents in terms of:
   a. Year Level
   b. Strand for 4CL only
   c. Learning Environment Experience (Referring to Learning Modalities for 4CL only)
   d. Program
2. What are the Blended Learning Modalities being implemented by PMMA
3. What is the level of student readiness on the use of Blended Learning Modalities in terms of:
   a. Self-Directed Learning Readiness
   b. Online Student Engagement
4. What is the level of student satisfaction in the Blended Learning environment at PMMA?
5. Is there a significant difference in self-directed learning readiness, online student engagement, and student satisfaction among the Midshipmen when grouped according to the:
   a. Year Level
   b. Program
6. Based on the findings, what policies and procedures can be proposed to enhance student readiness for the use of the Blended Learning Modalities in the Philippine Merchant Marine Academy?

Methods

This study used a quantitative-qualitative mixed technique. The quantitative online midshipmen survey used the online survey questionnaire, while the qualitative method utilized a semi-formal interview with selected members of the faculty with the aim of ascertaining their preferred blend of modalities. Variables for this study included:

1. Blended learning modalities utilized by the Philippine Merchant Marine Academy
2. Self-Directed Learning Readiness
3. Online Student Engagement
4. Student Satisfaction

Respondents for this study were all officially enrolled in 1CL, 3CL, and 4CL Midshipmen and selected faculty in the 1st Semester of the School Year 2022-2023.

The researcher utilized the online survey for the respondents. The questionnaire was adapted from several instruments from different researches focusing on student readiness on the use of Blended Learning Modalities, namely:

1. ***The Self-Directed Learning Readiness Scale*** (Fisher & King, 2010) with the following indicators – Self-Management, Desire for Learning and Self-Control
2. ***Online Student Engagement Scale*** (Dixson, 2015) with the following indicators – Observational Learning Behaviors and Application Learning Behaviors
3. ***Student Satisfaction Inventory*** (Bryant, 2006) with the following indicators - Student Centeredness, Instructional Effectiveness, Academic Advising, Campus Climate, Campus Life, Campus Support Services, Concern for the Individual, Safety and Security, Service Excellence, Over-all Experience

For the faculty, the researcher conducted a semi-formal interview to find out their preferred blend of modalities.

Data Gathering Procedure

The following steps were employed in the collection of data to address the problems of this study:

1. Secured the approval of the panel for the conduct of data gathering
2. Secured approval from the Superintendent of the Philippine Merchant Marine Academy for the conduct of the survey.
3. Upon approval of the PMMA Superintendent, the researcher obtained the approval of the Dean of the College of Marine Transportation and the College of Marine Engineering, the colleges to which the target respondents belong.
4. Upon approval of the Deans, the researcher conducted an orientation for the respondents on ethical considerations to be undertaken during the online survey.
5. Online survey questionnaire was administered to the identified respondents via Google form.
6. Semi-formal interview was conducted with the faculty from both colleges

Data Analysis

Data for this research were analyzed using SPSS. The following statistical tools were used for the analysis and interpretation of data:

1. **Frequency and Percentage**. This tool was used to describe the respondents' demographic profile and the responses from the faculty
2. **Weighted Mean**. This tool was used to describe the level of readiness for the use of Blended Learning Modalities. The levels of readiness were interpreted as follows:

Weighted Mean Range	Verbal Interpretation
3.26 – 4.00	Very High Level of Readiness (VHLR)
2.51 – 3.25	High Level of Readiness (HLR)
1.76 – 2.50	Moderate Level of Readiness (MLR)
1.00 – 1.75	Low Level of Readiness (LLR)

3. **ANOVA.** This tool was used to describe the significant differences in terms of Self-Directed Learning Readiness, Online Student Engagement, and Student Satisfaction according to year level
4. **t-test**. This formula was used to determine the significant differences in terms of Self-Directed Learning Readiness, Online Student Engagement, and Student Satisfaction according to course

Results and Discussion

Demographic Profile of the Respondents

Year Level

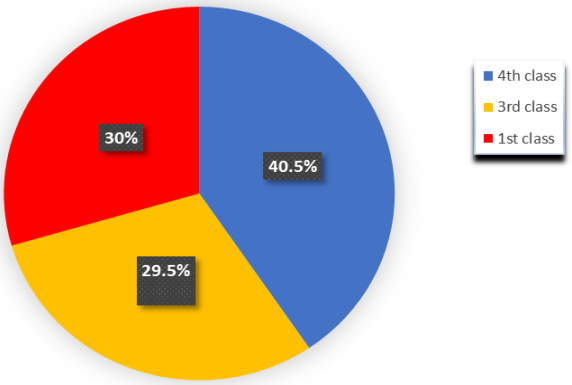

Figure 3. Profile of Midshipmen according to Year Level

As seen in Figure 3, the majority of the respondents belong to the 4th Class Midshipmen or First Year students at 40.5% or 350. This is followed by the 3CL Midshipmen or Second Year students at 30% or 260. The least number of respondents are from the 1st Class Midshipmen or Fourth Year students with 29.5% or 255. The total number of respondents is 865 students.

Academic Strand in Senior High School

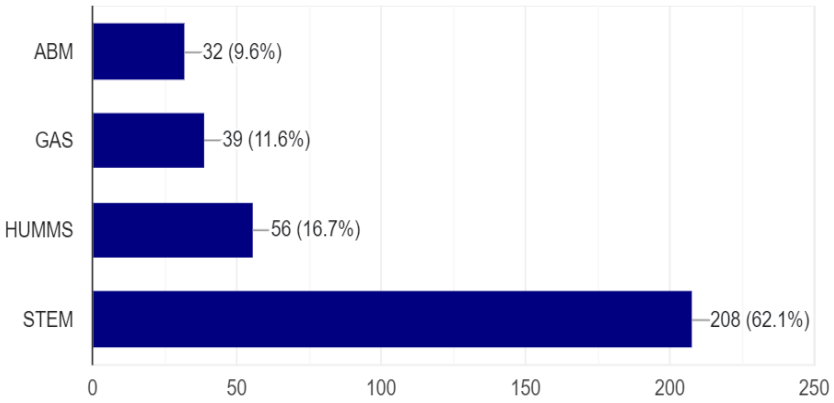

Figure 4. Academic Stand in Senior High School

As shown in Figure 4, the majority of the academic strand taken in high school by the 4CL Midshipmen are from STEM, with 208 respondents comprising 62.1%. This is followed by HUMMS with 56 respondents at 16.7%. GAS has 39 respondents at 11.6%, and in the last place is ABM with 32 respondents at 9.6%.

A Philippine Merchant Marine Academy entry requirement explains why most 4CL respondents pursued STEM in high school. The annual admission test comprises senior high school English, Math, Science, and Abstract Reasoning subjects. STEM (Science, Technology, Engineering, and Mathematics) is the required strand for high school students who want to study marine engineering or nautical sciences in college.

Learning Environment Experience (Learning Modalities)

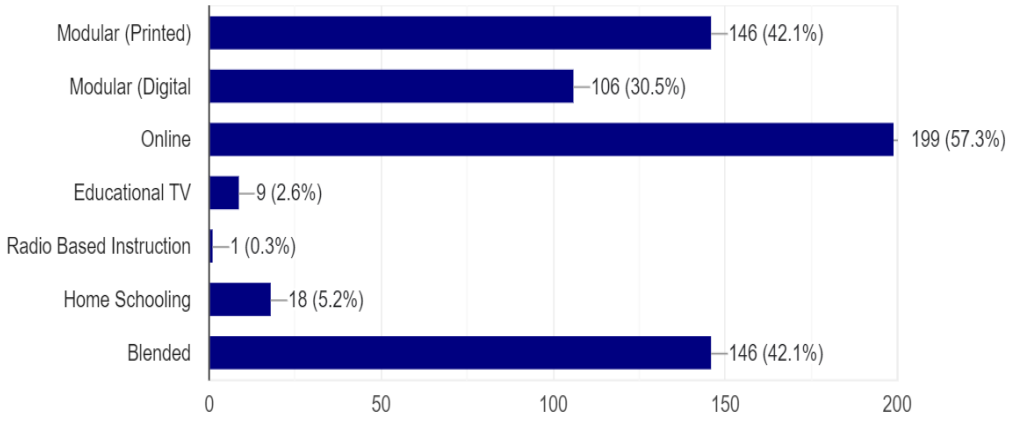

Figure 5. Learning Environment (Modalities) Experience

Figure 5 shows 4CL Midshipmen's Learning Modalities. 199 respondents (57.3%) utilized online. Blended and Modular Printed had 146 replies (42.1%). Modular Digital had 106 (30.5%) replies, and Home Schooling 18 (5.2%). Nine respondents used Educational TV at 2.6%, and one used Radio Based Instruction. The numbers presented were in alignment with the demographics released by the Department of Education in July 2022. Their data showed that the top 3 learning delivery modalities preferred by parents and learners are Modular Distance Learning (Print), Blended Learning, and Online Distance Learning.

Program

Table 1. Respondents from the College of Marine Transportation

	BSMT		
Class	**Total Number of Respondents**	**Percentage by Program**	**Percentage by Total Respondents**
1CL	119	26.98%	13.76%
3CL	105	23.81%	12.14%
4CL	217	49.21%	25.09%
Total	**441**	**100%**	**50.9%**

Table 1 shows that 119 1CL respondents from the BSMT Program comprise 26.98% of the program population and 13.76% of all respondents (CMT and CME). 3CL respondents made up 23.81% of the program population and 12.14% of the total population. The 4th CL comprise 49.21% of the program population and 25.09% of the total population. Gonzales (2019) found that the BS Marine Transportation Program had more graduates than the BS Marine Engineering Program. Deck officers earn more than engine officers (Gonzales, 2019), which is why they are more popular. This is affirmed by an annual statistical report by the Maritime Industry Authority. According to their report, there were 28,028 Master Mariners and 25,495 licensed Chief Engineers as of December 2022 (Marina Statistical Report, 2022).

Table 2. Respondents from the College of Marine Engineering

	BS Mar-E		
Class	**Total Number of Respondents**	**Percentage by Program**	**Percentage by Total Strength**
1CL	136	32.08%	15.71%
3CL	155	36.56%	17.92%
4CL	133	31.37%	15.38%
Total	**424**	**100%**	**49.1%**

Table 2 shows that 32.08% of the program population and 15.71% of the total population (CMT and CME) are 136 1CL respondents from the BS Marine Engineering Program. 155 3CL responders made up 36.56% of the program population and 17.92% of the total population. 133 or 31.37% of responders are 4CL Midshipmen. The overall number of respondents is 424. Gonzales (2019) predicts a 12% increase in engineer and naval architect jobs from 2016 to 2026 due to the rising need for eco-friendly ships to carry energy goods worldwide; marine engineers are projected to be in high demand. This study supports that prediction.

Types of Blended Learning Modalities Implemented by PMMA Faculty

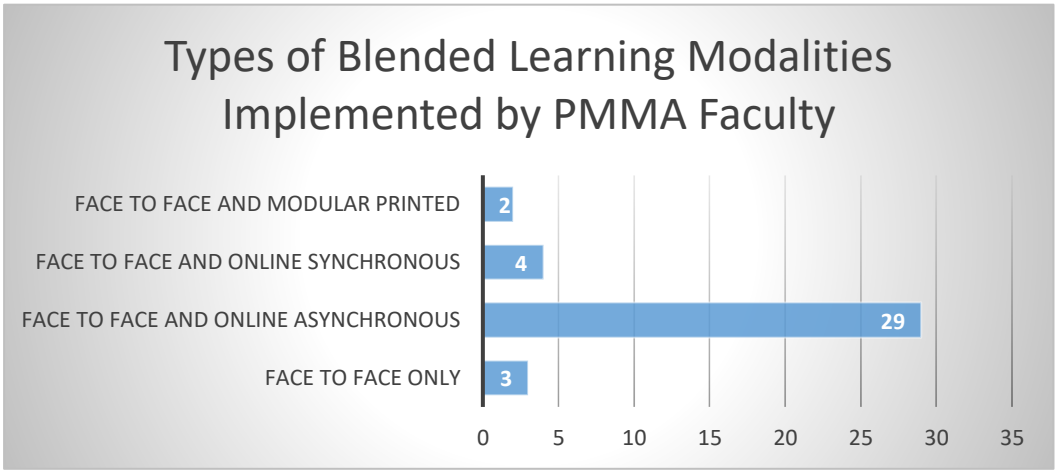

Figure 6. Types of Blended Learning Modalities Implemented by PMMA Faculty

As shown in Figure 6, there are four (4) types of learning modalities utilized by the faculty of the Philippine Merchant Marine Academy. These are Face to Face and Modular Printed, Face to Face and Online Synchronous, Face to Face and Online Asynchronous and purely Face to Face. There were 38 faculty who responded to the informal interview.

Results of the semi-formal interview show that there were two (2) who utilized Face to Face and Modular, four (4) for Face to Face and Online Synchronous, 29 chose Face to Face and Online Asynchronous, and three (3) for pure face-to-face.

Thirty-five (35) faculty respondents preferred Face to Face as their primary mode of instruction and varied only in their chosen combinations. In addition, three (3) faculty were using purely Face to Face. In interviews with the faculty, face-to-face instruction allows them to discuss difficult lessons that require extensive and substantial explanation. They receive immediate feedback on whether a particular topic has been comprehended or requires further explanation. They also prefer the more dynamic interaction in face-to-face classes.

Faculty who handle courses with laboratory likewise chose the face-to-face setup. Laboratory courses require actual demonstration by the faculty during the lesson proper; vis-a-vis, the students are also required to perform an actual demonstration during their assessments.

On the other hand, the most popular blend with face-to-face was online asynchronous. This method allows the faculty to facilitate the course without meeting the students. The procedure involves uploading the content, requesting students to study and execute a task, and offering feedback (Almahasees, Mohsen, & Amin Mohammad, 2021). Sela et al. (2022) discovered that the asynchronous model had a favorable influence on students, particularly in terms of their independence, understanding of technology, and responsibility in completing assignments.

The faculty of PMMA are given a free hand in the utilization of their preferred blended modalities. The interview reveals that this gives them the advantage of choosing the modality based on the time frame and depth of discussion required for a particular lesson. The Face to Face and Online Asynchronous are their ideal "blends" as it allows faculty and midshipmen substantial opportunities for classroom interaction and, at the same time, provide room for independence and self-paced learning.

Midshipmen's Level of Readiness in Terms of Self-Directed Learning

Table 3. Midshipmen's Level of Readiness in Terms of Self-Directed Learning

Program	N	Mean	Standard Deviation	Standard Error Mean	VI
BSMT	441	3.60	.3913	.0186	VHLR
BS Mar-E	424	3.54	.4490	.0218	VHLR
TOTAL	**865**	**3.57**	**.4196**	**.0143**	**VHLR**

Legend: *3.25 – 4.00 – Very High Level of Readiness (VHLR); 2.50 – 3.24 – High Level of Readiness (HLR); 1.75 – 2.49 – Low Level of Readiness (LLR); 1.00 – 1.74 – Very Low Level of Readiness (VLLR); VI – Verbal Interpretation*

Table 3 shows both BS Marine Transportation and BS Marine Engineering Programs obtained a verbal description rating of Very High Level of Readiness in terms of Self-Directed Learning.

According to Adinda and Marquet (2018), students who participate in an active blended learning environment are more likely to adopt a self-directed learning style. It is, therefore, essential for instructors to evaluate the level of preparation of their students for self-directed learning so that they may optimize the number of opportunities for learning and develop relevant educational experiences for their students. According to Nordin, Abd Halim, and Malik (2016), students who have a higher score on the Self-Directed Learning Readiness Scale are more likely to learn from the courses they take, to be pleased with the courses they take, to interact with the courses they take, and to be motivated by the courses they take. It is crucial, therefore, for educators to employ self-directed learning strategies that would strengthen their students' ability to self-regulate.

Online Student Engagement

Table 4. Online Student Engagement

Course	N	Mean	Standard Deviation	Standard Error Mean	VI
BSMT	441	3.44	.4587	.0218	VHLR
BS Mar-E	424	3.40	.4435	.0215	VHLR
TOTAL	**865**	**3.42**	**.4512**	**.0153**	**VHLR**

Legend: *3.25 – 4.00 – Very High Level of Readiness (VHLR); 2.50 – 3.24 – High Level of Readiness (HLR); 1.75 – 2.49 – Low Level of Readiness (LLR); 1.00 – 1.74 – Very Low Level of Readiness (VLLR); VI – Verbal Interpretation*

Table 4 presents the Midshipmen's Level of Readiness in terms of Online Student Engagement. Data for this table was derived from Part 3 of the survey. The Online Student Engagement Scale by Dixson of 2015 was utilized and measured the following factors; Observational Learning Behavior and Application Learning Behavior. The Mean and Standard Deviation were computed by Program, and based on the weighted mean range, the verbal interpretation was obtained.

Both BS Marine Transportation and BS Marine Engineering Programs obtained a verbal description rating of Very High Level of Readiness in terms of Online Student Engagement.

After completing the entrance exam, candidates must be at least 17 years old and no older than 23 on August 1 of the following year to enroll in the Philippine Merchant Marine Academy. Therefore, midshipmen respondents belong to what is known as Gen Z. The first "digital natives" were born between 1996 and 2010, according to Michigan Virtual (2022). Technology gave them instant access to information. Smart home technologies, cell phones, voice commands, and social media are familiar to them (Rijmenam, 2022). Gen Z has no memory of life without the internet. When they want to learn something new, they use apps, videos, social media, and influencers. TikTok, YouTube,

Facebook, and other social media sites and apps are their go-to for short learning clips. Rapid technology improvements have decreased Gen Z's attention span and social abilities (Tuscano et al., 2023).

Midshipmen Level of Student Satisfaction on the Blended Learning Environment of PMMA

Table 5. Midshipmen Level of Student Satisfaction on the Blended Learning Environment of PMMA

Course	N	Mean	Standard Deviation	Standard Error Mean	VI
BSMT	441	3.50	.4765	.0227	VHLR
BSMarE	425	3.43	.4906	.0238	VHLR
TOTAL	**866**	**3.47**	**.4834**	**.0164**	**VHLR**

Legend:*3.25 – 4.00 – Very High Level of Readiness (VHLR); 2.50 – 3.24 – High Level of Readiness (HLR); 1.75 – 2.49 – Low Level of Readiness (LLR); 1.00 – 1.74 – Very Low Level of Readiness (VLLR); VI – Verbal Interpretation*

Table 5 presents the Midshipmen Level Student Satisfaction on the Blended Learning Environment of PMMA. Results for this table were derived from Part 4 of the survey. The Student Satisfaction Inventory (Bryant, 2006) was utilized and measured the following factors: Student Centeredness, Instructional Effectiveness, Academic Advising, Campus Climate, Campus Life, Campus Support Services, Concern for the Individual, Safety and Security, Service Excellence and Over-all Experience.

BSMT students obtained a mean of 3.50, a Standard Deviation of .4765, and with Verbal Interpretation of Very High Level of Readiness.

BS Mar-E students obtained a mean of 3.43, a Standard Deviation of .4906, and with Verbal Interpretation of Very High Level of Readiness.

Students choose institutions that fit their academic, economic, and social demands. Students are happy when a university meets or exceeds their expectations, according to Sabbah Khan & Yildiz (2020). Due to the pandemic, PMMA has had trouble implementing blended learning due to issues with (1) internet connectivity from service providers, (2) access to computing devices like laptops and tablets, and (3) faculty and student familiarity with the online software platform (Mobo, 2021). To address the aforesaid difficulties, the academy took the following proactive steps: (1) Issued tablets to all incoming 4CL Midshipmen for online studies (2) Issued laptops to all teachers for online classes (3) LMS accounts for all Midshipmen and Faculty and (4) Additional ISP to remedy poor internet connection (PMMA, 2023). Student activities show contentment, according to Browne et al. (1998 referenced in Sabbah Khan & Yildiz, 2020). They recommend the university to friends and relatives if they like it. If given a second chance, students' willingness to maintain or acquire university services is another sign of student happiness. A student's reaction should rise with satisfaction. A change in brand impression, word-of-mouth recommendations or cautions, and complaints or acclaim are examples of these responses (Woodruff, Cadotte & Jenkins, 1983, quoted in Jurkowitsch et al., 2017).

Significant Difference in the Self-Directed Learning Readiness According to Year Level

Table 6. Self-Directed Learning Readiness according to Year Level

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.992	2	.996	5.667	**.004**
Within Groups	151.646	863	.176		
Total	153.638	865			

A one-way analysis of variance was conducted to ascertain the significant difference between the self-directed learning readiness and year level. The resultant p-value is the indicator that there is a significant difference between the variables. If the p-value is less than

0.05, the result is significant, which means the null hypothesis will be rejected. If the p-value is greater than or equal to 0.05, the result is not significant, and the null hypothesis will be accepted.

The variables differ significantly, F=5.667, p =.004. Tukey's Post Hoc analysis determined which groups differed. Based on this, the self-directed learning readiness of 4th class cadets *(M = 3.51; SD = .45)* is statistically different with those of 3rd class *(M = 3.61; SD = .41)* and 1st class *(M = 3.61; SD = .39)*.

1st class and 3rd class cadets are more mature as they are more experienced in the academic environment and the quasi-military training they have received. The 1st class and 3rd class cadets have matured through the years they have spent in the academy, and this distinguishes them from the 4th class cadets. Self-Directed Learning is a skill which can be improved through self-directed learning strategies catered to increase the readiness level of Self-directedness. Therefore ensuring that learners are on a good level of Self-Directedness in the early stages can allow them to prepare for working life later. (Osman, 2013, cited in Nordin et al., 2016)

Significant Difference in Student Self-Directed Learning Readiness according to Program

Table 7. Student Self-Directed Learning Readiness according to Program

	Statistic	**Df**	**Sig. (2-tailed)**
Student's t	2.121	864	.034

Table 7 presents Student Self-Directed Learning Readiness according to Program. The resultant p-value is the indicator that there is a significant difference between the variables. If the p-value is less than 0.05, the result is significant, which means the null hypothesis will be rejected. If the p-value is greater than or equal to 0.05, the result is not significant, and the null hypothesis will be accepted.

Based on independent samples t-test, there is a significant difference between the self-directed learning readiness of cadets when grouped according to their course, *t = 2.121, p = .034*. This implies that the self-directed learning readiness of BSMT cadets *(M = 3.60; SD = .39)* is significantly different from those of BS Mar-E cadets *(M = 3.54; SD = .45)*.

The social context in which learning occurs is crucial to its efficacy. The environmental and sociopolitical climate, such as culture, power, learning environment, finances, gender, learning climate, organizational policies, political milieu, race, and sexual orientation are taken into consideration by the learning context (Brockett and Hiemstra, 1991 cited in Laine et al., 2021).

In the learning context of the Academy, the two colleges have different faculty, different courses, different academic facilities, and different student-to-student and student-to-instructor dynamics. This accounts for the significant difference in terms of Self-Directed Learning Readiness.

Significant Difference in Online Student Engagement According to Year Level

Table 8. Online Student Engagement According to Year Level

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	3.495	2	1.747	8.725	**.000**
Within Groups	172.846	863	.200		
Total	**176.341**	**865**			

Table 8 presents the Online Student Engagement according to Year Level. A one-way analysis of variance was conducted to ascertain the significant difference between the online student engagement and year level. To determine which of the groups differ, a Tukey Post Hoc analysis was performed. Based on this, the student readiness in terms of Online Student Engagement of 4th class cadets (M = 3.35; SD = .45) is statistically different with

those of 3rd class (M = 3.49; SD = .46) and 1st class (M = 3.46; SD = .42).

Studies conducted by Bagssit et al. (2021) and Baloran et al. (2021) corroborate the findings of this study. Both of their investigations demonstrated that the online engagement of students varied significantly by year level.

4th class is associated with the first year of university in the Philippines higher education system. This year, students confront numerous obstacles as a result of their transition from a less autonomous school environment to a more open, liberated, and independent university environment. (Alghamdi, 2015).

With the disruption caused by the pandemic, the 4CL Midshipmen also had to transition from a traditional classroom setting to a blended learning environment.

No Significant Differences in Online Student Engagement According to Program

Table 9. Online Student Engagement

	Statistic	Df	Sig. (2-tailed)
Student's t	1.338	864	.181

Table 9 presents the Online Student Engagement according to Program. The resultant p-value is the indicator that there is a significant difference between the variables. If the p-value is less than 0.05, the result is significant, which means the null hypothesis will be rejected. If the p-value is greater than or equal to 0.05, the result is not significant, and the null hypothesis will be accepted. Based on independent samples t-test, there is no significant difference between the online student engagement of cadets when grouped according to their Program, t = 1.338, p = .181.

Midshipmen respondents of this study fall within the age bracket of what is known as Gen Z. They were those who were born in the years 1996-2010. They are the first true generation of digital natives. They live in a world that is "digitally driven" (Tuscano et al., 2023).

In this day and age, teachers must be digitally aware in the classroom. This knowledge has the potential to greatly enhance interactions with and lessons for Generation Z students. For example, if educators are aware that Generation Z students are accustomed to having information at their fingertips, they may design engaging lesson plans that meet them where they are most comfortable. Lessons that foster critical thinking by teaching students how to filter through enormous volumes of material and identify what is valuable should be included in the curriculum. Teachers should think about using apps, web-based platforms, and other digital tools to engage students at their level and allow them to genuinely connect with their lectures (Michigan Virtual, 2022).

No Significant Difference in Student Satisfaction According to Year Level

Table 10. Student Satisfaction according to Year Level

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.549	2	.275	1.170	**.311**
Within Groups	202.527	863	.235		
Total	**203.076**	**865**			

Table 10 presents Student Satisfaction according to Year Level. Based on one-way ANOVA, there is no statistically significant difference between the Student Satisfaction of cadets when grouped according to their year level. The resultant p-value is the indicator that there is a significant difference between the variables. If the p-value is less than 0.05, the result is significant, which means the null hypothesis will be rejected. If the p-value is greater than or equal to 0.05, the result is not significant, and the null hypothesis will be accepted.

There is harmony in the level of student satisfaction regardless of the student year level,

whether 4th class, 3rd class, or 4th class. According to the 2013 National Adult Learners Satisfaction-Priorities Report, satisfied students are more likely to be successful students, i.e., students who successfully complete courses. According to research, satisfied students have higher graduation rates, which is evidence of their perseverance and retention (Bigatel & Williams, 2015).

This study found that the midshipmen are very self-directed. Hettiarachchi et al. (2021) say student satisfaction depends on self-directedness or self-regulation. Self-regulated learners are independent, self-directed, and have an internal locus of control over their learning, according to their research. Self-motivated online students are more satisfied with their education. Thus, online education performance and satisfaction depend most on learner motivation. (Hettiarachchi, 2021)

Thus, based on the data gathered from this research, the Very High Level of Readiness in terms of Self-Directedness contributes to the Very High Level of Student Satisfaction among the Programs

Significant Difference in Student Satisfaction according to Program

Table 11. Student Satisfaction According to Program

	Statistic	Df	Sig. (2-tailed)
Student's t	2.181	864	.029

Table 11 presents Student Satisfaction according to Program. The resultant p-value is the indicator that there is a significant difference between the variables. Based on the independent samples t-test, there is a significant difference between the student satisfaction when grouped according to their course, *t = 2.181, p = .029*. The student satisfaction of BSMT cadets *(M = 3.50; SD = .48)* is significantly different from those of BS Mar-E cadets *(M = 3.43; SD = .49)*.

Anderson, Fornell, and Lehmann 1994, cited in Jurkowitsch et al., 2017, state that students must have prior experience with the product in order to establish their level of satisfaction with it. This level of satisfaction is determined not just by the student's current experience but also by their prior experiences, as well as any future or expected events.

Course structure and instructional choices vary by type (Eastman et al., 2017). Again, context matters for student happiness. Courses moderate student satisfaction. Satisfaction is a learner-defined result. Personal expectations, experiences, and successes in a certain setting and learning environment shape his or her view. In this research, the course (BSMT and BS Mar-E) is the setting and learning environment for students.

Mastoi et al. (2019) assessed Student Satisfaction using five different types of quality determinants: Administrative Quality, Physical Environment Quality, Core Educational Quality, Support Facilities Quality, and Transformative Quality. They defined satisfaction as a construct of students' perceptions of various university amenities and instructional environments. Their research found a link between the quality of higher education services and student satisfaction.

Conclusion

The results of this study lead to the following conclusions:

The research included 1CL, 3CL, and 4CL Midshipmen in the 1st Semester of the School Year 2022-2023. The majority of the responses are from the 4CL Midshipmen. This investigation focused on them since the data showed that they were adjusting to the blended learning environment and their quasi-military training.

STEM was the most popular choice of strand by the 4CL Midshipmen since this was the most aligned with the prescribed core subjects of the Academy. This implies that the PMMA has an effective screening process as the aspiring entrants chose the strand most aligned to maritime sciences.

The majority of the 4CL Midshipmen had Online as the learning environment experience (modality) in high school. They scored the lowest in online engagement mainly due to the transition phase that is expected in their first year as cadets.

There were more respondents from the College of Marine Transportation than from the College of Marine Engineering. This implies that maritime sciences students prefer to be captains rather than chief engineers, mainly due to the salary differences in the deck and engine departments. (Gonzales, 2019)

Face to Face was the most popular primary modality, while Online Asynchronous was the most preferred blend or combination among the faculty of the Philippine Merchant Marine Academy. This blend optimizes learning by providing substantial opportunities for classroom interaction while allowing for autonomy and self-paced learning among their students. The faculty opting for face-to-face among the modalities is most advantageous to its students since PMMA is considered a technical school where there are laboratory and hands-on classes. In subjects with laboratory, learning is optimized by the practical application of skills through drills, practice, and simulations.

The Midshipmen had very high levels of readiness in terms of Self-Directed Learning on the use of blended learning modalities. An active blended learning environment fosters Self-Directedness (Adinda & Marquet, 2018). When the instructors recognize their students' ability to self-direct, learning opportunities are optimized, and meaningful learning experiences are created.

Year Level is a key element in Self-Directedness. The 1CL and the 3CL Midshipmen have higher levels of Self-Directedness than the 4CL Midshipmen. This is attributed to their longer exposure to regimented training and the academic learning environment of the Academy.

Learning context impacts Self-Directedness. BSMT respondents had higher levels of Self-Directed Learning Readiness as compared to the respondents from the BS Mar-E. The Academy's two colleges account for the differences in curriculum, facilities, faculty, teaching styles and strategies, student to student and instructor-to-student dynamics. This accounts for the significant differences in the levels of Self-Directedness in terms of Program.

There were lower levels of Online Student Engagement noted among the 4CL respondents when grouped according to Year Level. For the 4CL Midshipmen, this is the year of transitioning not only from civilian into a quasi-military training regime but also into a blended learning environment. The lack of familiarity and adapting to both transitions account for the lower levels of engagement noted among the 4CL Midshipmen.

Midshipmen respondents belong to Gen Z. This is evident in the Very High Levels of Readiness in terms of Online Student Engagement. These digital natives are accustomed to the use of technology in their daily lives. Apps, web-based platforms, and other digital learning resources are what engage them and enable them to connect to their learning.

The Academy is able to respond proactively to the challenges brought about by the pandemic and the implementation of blended learning modalities. This was evident in the Very High Levels of Satisfaction among the midshipmen in all year levels. When grouped according to Program, BSMT respondents had higher levels of Student Satisfaction. This implies the need for the Colleges to conduct a competence assessment of the services, facilities, and quality of instruction in the implementation of blended learning modalities to ensure equally high levels of Student Satisfaction in both Programs.

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