Ocean Life: An International Journal of Maritime Occupation and Safety
2024, Vol. 2, No.1, 43 – 52 | ISSN Online: 3028-2039 | ISSN Print: 3028-2799
DOI: https://doi.org/10.62718/vmca.ol-ijmos.2.1.SC-1024-013

Laboratory Training Skills and Career Preparedness of 3rd Year Marine Transportation Students of AIMS

Article History:
Received: 16 October 2024
Accepted: 18 October 2024
Published: 28 December 2024

Melvin T. Catostos, Jr.[1], John Patrick Emmanuel V. Celera[1], Justine S. Guira[1], Jan Jeric M. Lumaban[1], John Leo I. Maulion[1], Chrismer Pagkaliwangan[1]

[1]Bachelor of Science in Marine Transportation, Asian Institute of Maritime Studies, Pasay City, Philippines

Abstract

This study focuses on investigating the correlation between laboratory training skills and career preparedness of 3rd year AIMS maritime students. A structured survey with three sections was utilized. The study involved a sample of 80 marine transportation students who participated in their respective laboratory training. These students were randomly selected from the 3rd year batch of AIMS marine transportation student population during the school year 2023-2024. Employing descriptive-correlational design, the study collected data from purposively sampled respondents using a validated questionnaire (converted into Google forms) and distributed through a social media platform (Facebook). Descriptive-correlational design was used to explore the relationship between laboratory training skills and career preparedness. Findings revealed that most respondents agree that an increase in laboratory training skills correlates with higher levels of career preparedness. This result highlighted the significance of laboratory training in equipping students with essential skills in preparation for a career in the maritime industry. Based on the finding, the researchers recommend that maritime education institutions should continue enhancing their laboratory training programs. Additionally, maritime cadets are encouraged to actively engage in laboratory training, as it plays a vital role in improving their readiness for the evolving demands of the maritime industry.

Keywords: laboratory training skills, career preparedness, maritime students, Asian Institute of Maritime Studies

INTRODUCTION

The maritime industry constantly expanded, and many institutions were created to train and shape globally competent and excellent seafarers. Asian Institute of Maritime Studies, one of the premier higher education institutions for the maritime industry in the Philippines, has shaped many competent Filipino seafarers into becoming maritime professionals. With this achievement, the researchers proposed a study to determine the laboratory training skills and career preparedness of 3rd year maritime students of AIMS. It is worth knowing that shaping globally competitive seafarers is not an easy task. Thus, the endeavor of this study to determine whether skills in laboratory training contribute in the career preparedness of AIMS students thus leading them to becoming maritime professionals.

Stein and Irvine (2015) mentioned that even though an individual is well prepared for their job, it might not be sufficient in today's world where there is so much transformation and instability caused by the internet. They argued that there might be a need to create a new culture of learning that will be able to cope with continuous changes. By comprehending individuals' laboratory training skills and career preparedness, the researchers can propose enhancements for institutional development. This will help future seafarers in becoming adequately prepared and skilled professionals. A seafarer must be trained and educated in creating intended outcomes, teaching strategies, and theories, and measuring these methods unique to maritime education institutions.

In maritime education and training, it is essential to comply with international

agreements and regulations. The laboratory training served as an important place for the trainees to acquire practical skills that met the strict requirements set forth by the Standards of Training, Certification and Watchkeeping (STCW) Convention of 1978 and its subsequent amendments. Additionally, the syllabus of the laboratory is structured and developed by IMO so that it can act as a point of reference against which other institutions' curricula may be measured thereby ensuring uniformity of training imparted to seafarers worldwide (Kherson State Maritime Academy, 2021). These competencies enabled cadets to effectively deal with challenges experienced within maritime zones when such standards are incorporated into their programs.

According to Cortez et.al (2022), for safe and efficient maritime operations, seafarers must have technical knowledge which is very important on ships. This is gained from different types of training programs and practical assessments carried out in simulated laboratories. Such laboratories imitate how machines are operated and maintained while on board, thus equipping seafarers with necessary skills through experience. Additionally, these exact plans guaranteed that they are ready to manage their duties properly while on the ocean which is always difficult, not only to enhance safety but also to make sure that marine activities are successful.

That being said, maritime institution laboratories were necessary to strengthen the knowledge and readiness of maritime cadets. Therefore, this study aimed to investigate the correlation between the laboratory training skills and career preparedness of maritime students.

LITERATURES

Integration of Simulator-Based Training in Maritime Education and Training (MET). Simulator-based training has become an integral part of maritime education due to the STCW Convention and its subsequent Manila Amendments in 2010, which mandate the use of modern technology in training. Despite challenges such as the cost and technical specifications of simulators, advancements in simulation technology provide practical and realistic training experiences for seafarers. These tools bridge the gap between theoretical knowledge and real-world application, offering a dynamic learning environment that enhances individual and team skills. The importance of using simulators lies in preparing seafarers to handle normal and emergency situations effectively, fostering safety and competence in the maritime industry (Farmer et al., 2017; Håvold et al., 2015).

Human Factors and Cognitive Alignment in Training. Human factors significantly influence the effectiveness of maritime education and training. Developing simulators that align with cognitive abilities improves safety and usability across the shipping industry (Sellberg, 2017). Studies emphasize the need for training systems that balance procedural knowledge with critical thinking skills to create well-rounded professionals. A focus on career preparedness through advanced skills and lifelong learning opportunities enhances the employability of future seafarers. This integration of cognitive development with practical training ensures that MET programs meet both industry demands and the complex requirements of global shipping operations (Manuel, 2017; Basak, 2019).

Collaboration and Continuous Improvement in MET. Collaboration among maritime institutions, government, and industry stakeholders is vital for the development of effective MET programs. Local studies highlight the importance of maintaining modern facilities, high-quality instruction, and consistent curriculum standards to prepare competent graduates (Estimo, 2020). Continuous evaluation of training programs and addressing internal and external threats, such as instructor autonomy and rising operational costs, are crucial for sustainability. Institutions must proactively adapt to advancements in the maritime sector to enhance laboratory training and overall student satisfaction (Agbing et al., 2023; Dacuray et al., 2014; Alimen & Gildore, 2020).

Simulation as a Tool for Practical Skill Development. Simulators are essential for building competencies in areas ranging from routine ship operations to complex emergency scenarios. They provide hands-on experiences that mirror real-life situations, helping students understand and apply theoretical knowledge (Demirel & Bayer, 2015; Cross, 2019; Baldauf et al., 2016). Simulation-based learning promotes teamwork and reinforces safety culture by exposing trainees to collaborative problem-solving and crisis management scenarios. Research suggests that integrating scenario-based objectives in MET improves learning outcomes and prepares students to handle the challenges of a demanding and safety-sensitive profession effectively (Håvold et al., 2015).

METHODOLOGY

Research Design. The researchers used descriptive-correlational research design for this study of which it aimed to find out the relationship of two different variables. In reference to the study, the researchers sought to prove any relationship between the laboratory training skills of maritime students and their career preparedness.

Population, Samples, and Sampling Techniques. In this study, the researchers used a purposive sampling technique to select the respondents. This method allowed the researchers to choose respondents who were considered appropriate for the population under study. Specifically, eighty (80) enrolled Bachelor of Science in Marine Transportation (BSMT) students were purposively selected from school year 2023-2024 at the Asian Institute of Maritime Studies in Pasay City, Philippines.

Research Instrument. The researchers used a self-made survey questionnaire to gather the required data. The questionnaire was divided into three parts, all consisting of close-ended questions. The first part a 5-point Likert scale questionnaire to assess the respondents' laboratory training skills. The second part also consisted of a 5-point Likert scale questionnaire to evaluate the respondents' career preparedness.

The questionnaire was validated by the following experts: a maritime expert, a linguistic expert, and a research specialist. This is to ensure the instrument's accuracy. Additionally, it was subjected to a reliability analysis using Cronbach's Alpha, with results indicating consistent inter-item reliability ranging from acceptable (0.74) to excellent (0.92).

Data Gathering Procedure. To collect the necessary data, the researchers obtained permission from potential respondents at the AIMS campus. A total of eighty (80) survey questionnaires were distributed through Google Forms to selected 3rd year Marine Transportation students who had undergone laboratory training. Respondents were given sufficient time to complete the survey, and the researchers assured them that their personal details would remain confidential to protect their privacy.

After data collection, the researchers presented the responses to a certified statistician for tabulation and statistical treatment. The data were analyzed and interpreted based on the objectives of the study.

Statistical Treatment of Data. To analyze the data, weighted mean and Pearson r were used. Weighted mean was used to describe the respondents' career preparedness and laboratory training skills while Pearson r was used to determine if significant relationship exists between the career preparedness and laboratory training skills of the respondents.

RESULTS

Participants' Laboratory Trainings Skills. Respondents strongly agree of having leadership (M= 4.51, SD= 0.50) as a skill in laboratory training (Table 1). That is, they strongly agree to have the ability to encourage everyone to be serious about the said activity (M= 4.56, SD= 0.55); have the willingness to delegate (M= 4.55 SD= 0.53); can organize the group to make things done (M= 4.51, SD= 0.57); are able to lead well the group in activities (M= 4.46, SD= 0.69); and, can build mutual trust and cooperation (M= 4.44, SD= 0.67).

Table 1
Participants' Laboratory Training Skills in terms of Leadership (N= 80)

Leadership	M	SD	Interpretation
1. Has the ability to encourage everyone to be serious about the said activity.	4.56	0.55	Strongly Agree
2. Has the willingness to delegate.	4.55	0.53	Strongly Agree
3. Can organize the group to make things done.	4.51	0.57	Strongly Agree
4. Can be able to lead well his/her group in activities	4.46	0.69	Strongly Agree
5. Can build mutual trust and cooperation.	4.44	0.67	Strongly Agree
Leadership	4.51	0.50	Strongly Agree

Legend:1.00-1.80= Strongly Disagree1.81-2.60=Disagree 2.61-3.40= Neutral 3.41-4.20= Agree 4.21-5.00= Strongly Agree

According to Albetkova et al. (2019), leadership is necessary for success in the laboratory systems' environment characterized by speed and change. This proficiency involves the knowledge, skills and abilities required by a leader to energize and encourage people towards working together in achieving common goals. It consists of having strategic direction; having a vision as well as plans that will ensure sustainable better performance of labs or lab systems through influencing actions positively so as to produce desired results. In a recent survey conducted, some facts have surfaced related to leadership. This included the need for a mindset that is full of questions and readiness for change particularly.

Table 2
Participants' Laboratory Training Skills in terms of Critical Thinking (N= 80)

Critical Thinking	M	SD	Interpretation
1. Always asking questions to the instructor or professor.	4.30	0.75	Strongly Agree
2. Using the time wisely by not wasting any of it to do the task well.	4.51	0.64	Strongly Agree
3. Always practicing him/herself to improve.	4.49	0.66	Strongly Agree
4. Detects inconsistencies and common mistakes in reasoning.	4.33	0.63	Strongly Agree
5. Ability to solve problems systematically.	4.43	0.65	Strongly Agree
Critical Thinking	4.41	0.52	Strongly Agree

Legend:1.00-1.80= Strongly Disagree1.81-2.60=Disagree 2.61-3.40= Neutral 3.41-4.20= Agree 4.21-5.00= Strongly Agree

Likewise, in Table 2, the results have shown that most participants strongly agree to have critical thinking (M= 4.41, SD= 0.52) as a skill in laboratory training. They strongly agree that they always ask questions to instructor or professor (M= 4.30, SD= 0.75); use the time wisely by not wasting any of it to do the task well (M= 4.51, SD= 0.64); always practice to make improvements (M= 4.49, SD= 0.66); detect inconsistencies and common mistakes in reasoning (M= 4.33, SD= 0.63); and, have the ability to solve problems systematically (M= 4.43, SD= 0.65).

Two of the indicators, namely "systematic problem solving" (M= 4.43, SD= 0.65), and "practice of making improvements" (M=4.49, SD 0.66) conform with Schaller et al.'s (2023) emphases on the importance of critical thinking in laboratory education. Suggesting that active learning approaches, such as problem-based-learning (PBL), are effective in enhancing students' abilities to solve problems critically and systematically. According to Van Peppen et al. (2021), effective methods of teaching critical thinking (CT) are required. Among the instructional methods that could be used for this purpose, however, is the comparison between correct and incorrect worked out examples, also known as contrasting cases. The current research was set to find out if contrasting cases have any effect on acquisition and transfer of CT skills aimed at preventing biased reasoning. The findings from this study resemble those given earlier which show that provision of information in critical thinking within the context of laboratory training is helpful although there may be no much difference realized depending on the particular approach employed.

In contrast, according to Warner et al. (2016), academic programs work to make their laboratory curriculum both instrumentation-rich and up to date as possible. However, little is known about the relationship between instrumentation use in the curriculum and student learning. Two aspects of the laboratory curriculum, explicitly tied to instrumentation, were the focus: technical competence with instrumentation, and the ability of students to use instrumentation to solve chemical problems. Based on these previous studies, the researchers found that the information set in critical thinking points to a potential gap between the intended outcomes of laboratory training and the actual development of critical thinking skills.

Table 3
Participants' Laboratory Training Skills in terms of Adaptability (N= 80)

Adaptability	M	SD	Interpretation
1. Able to cope in response to stressors.	4.38	0.68	Strongly Agree
2. Easily adjust to changing circumstances.	4.35	0.71	Strongly Agree
3. Plans ahead but has an alternative option if something goes wrong.	4.35	0.68	Strongly Agree
4. Can handle every task given.	4.35	0.64	Strongly Agree
5. Being a positive thinker and optimistic.	4.46	0.69	Strongly Agree
Adaptability	4.38	0.58	Strongly Agree

Legend:1.00-1.80= Strongly Disagree1.81-2.60=Disagree 2.61-3.40= Neutral 3.41-4.20= Agree 4.21-5.00= Strongly Agree

Table 3 presents the participants' laboratory training skills in terms of adaptability. The respondents strongly agree to possess adaptability when asked about their laboratory training skills in terms of adaptability (M= 4.38, SD= 0.58). Participants have a strong stance on being able to cope in response to stressors (M= 4.38, SD= 0.68) and easily adjust to changing circumstances (M= 4.35, SD= 0.71). They strongly agree also that they plan ahead but have an alternative option if something goes wrong (M= 4.35, SD= 0.68), can handle every task given (M= 4.35, SD= 0.64), and are positive thinkers and optimistic (M= 4.46, SD= 0.69).

The high mean scores yielded indicated a strong adaptability from the respondents. This aligns with Laureiro-Martínez and Brusoni (2018) findings on cognitive flexibility emphasizing the importance of adaptability in managing tasks and stressors effectively. Participants in the laboratory training skills study reported mean scores of 4.35 to 4.46 in adaptability, planning, task management, and optimism. This parallels Laureiro-Martínez and Brusoni's (2018) assertion that cognitive flexibility matching cognitive processes to problem types enhances decision-making performance and organizational adaptation.

Similarly, Randall, Moody, and Turner (2021) brought attention to personal and work-related elements impacting compassion fatigue (CF) among staff members within the lab animal field. The adaptability scores observed in the laboratory training skills research represent an ability to handle stressful situations, similar to what Randall et al. (2021) noted about effective coping strategies including self-care and support structures. The sense of task organization coupled with an optimistic mindset identified in the laboratory training skills study is also related to dealing with CF where resilience is required as per Randall et al. (2021).

Table 4
Participants' Laboratory Training Skills in terms of Good Communication (N= 80)

Good Communication	M	SD	Interpretation
1. Active, empathic listener.	4.51	0.55	Strongly Agree
2. Conveys clear messages.	4.41	0.65	Strongly Agree
3. Being open and honest upon communicating.	4.56	0.59	Strongly Agree
4. Using verbal and non-verbal forms of communication.	4.56	0.57	Strongly Agree
5. Affable (Easy to talk to).	4.51	0.60	Strongly Agree
Good Communication	4.51	0.49	Strongly Agree

Legend:1.00-1.80= Strongly Disagree1.81-2.60=Disagree 2.61-3.40= Neutral 3.41-4.20= Agree 4.21-5.00= Strongly Agree

The results of the descriptive statistics in Table 4 show that the respondents strongly agree to have good communication as a laboratory training skill (M= 4.51, SD= 0.49). They strongly agreed that they are active empathic listener (M= 4.51, SD= 0.55); that they convey clear messages (M= 4.41, SD= 0.65); that they are open and honest upon communicating (M= 4.56, SD= 0.59); that they use verbal and non-verbal form of communications (M= 4.56, SD= 0.57); and, that they are affable or easy to talk to (M= 4.51, SD= 0.60).

Participants' Career Preparedness. Table 5 presents the participants' career preparedness in the maritime industry. The respondents strongly agree that they are prepared in terms of self-information (M= 4.53, SD= 0.47). To be more specific, they strongly agree that they are satisfied with the way they carry out responsibilities at present (M= 4.40, SD= 0.76); know their strengths and weaknesses (M= 4.48, SD= 0.64); know the things they are good at (M= 4.51, SD= 0.64); and, choose a work that allows them to do what they believe in (M= 4.54, SD= 0.67).

The respondents also strongly agree that they feel there is a great difference between what they are at present and what they would like to be (M= 4.55, SD= 0.61); that they are more idealistic than realistic when they think of future work (M= 4.41, SD= 0.72); that they consider it

important to use their abilities to the fullest in preparation for future occupation (M= 4.63, SD= 0.54); that when they are really interested in what they are doing, they can keep at it for hours (M= 4.64, SD= 0.56); that they are aware that their interests change all the time (M= 4.45, SD= 0.69); and, that they want to enjoy their future occupation (M= 4.69, SD= 0.56).

Table 5
Participants' Level of Career Preparedness in terms of Self-Information (N= 80)

Self-Information	M	SD	Interpretation
1. I am satisfied with the way I am carrying out my responsibilities at present.	4.40	0.76	Strongly Agree
2. I know my strengths and weaknesses.	4.48	0.64	Strongly Agree
3. I know the things I am good at.	4.51	0.64	Strongly Agree
4. I want to choose a job that allows me to do what I believe in.	4.54	0.67	Strongly Agree
5. I feel that there is a great difference between what I am at present and what I would like to be.	4.55	0.61	Strongly Agree
6. At present I am more idealistic than realistic when I think of my future work.	4.41	0.72	Strongly Agree
7. I consider it important to use my abilities to the fullest in preparation for my future occupation.	4.63	0.54	Strongly Agree
8. When I am really interested in what I am doing, I can keep at it for hours.	4.64	0.56	Strongly Agree
9. I am aware that my interest changes all the time.	4.45	0.69	Strongly Agree
10. I feel that I want to enjoy my future occupation.	4.69	0.56	Strongly Agree
Self-Information	4.53	0.47	Strongly Agree

Legend:1.00-1.80= Strongly Disagree1.81-2.60=Disagree 2.61-3.40= Neutral 3.41-4.20= Agree 4.21-5.00= Strongly Agree

In a study on career exploration by Chen et al. (2021), it was revealed that the whole course entails recognizing oneself, including the capabilities and limitations. This confirms what came out in this study where learners knew very well what they were good at besides their strong points thus, this becomes an essential step towards getting ready for employment.

However, it is important to note that there may be some overestimation of self-information by students in the selection of their career path. This opinion counters with the findings of Morin & Racy (2021), who argue that a lack of self-knowledge affects many people since they employ mechanisms such as repression and suppression. Such methods promote wrong self-evaluations implying that certain scholars could feel more ready for work than they actually are or misunderstand their skills and preferences.

More so, the high results in career preparedness in terms of self-information is aligned with the findings of Pignault et al. (2021) indicating the importance of having self-awareness as well as being able to adapt when necessary, especially during difficult times like those brought about by Covid-19 pandemic. For example, in Pignault et al.'s (2021) work, knowing one's strengths and weaknesses among other things was closely related with career adaptability which in turn connected significantly with future job prospects self-awareness.

Table 6
Participants' Level of Career Preparedness in terms of Career Information (N= 80)

Career Information	M	SD	Interpretation
1. I am aware of the related occupations in the field I am interested in.	4.56	0.59	Strongly Agree
2. I obtain information about career possibilities by using the library or other sources of information (inquiries, reading, relevant literature).	4.46	0.71	Strongly Agree
3. I know what a typical workday will be like in the occupation I am considering.	4.45	0.61	Strongly Agree
4. I have knowledge about the working requirements of various jobs or works.	4.54	0.64	Strongly Agree
5. I have an idea of the possible work that suits me.	4.51	0.66	Strongly Agree
Career Information	4.51	0.52	Strongly Agree

Legend:1.00-1.80= Strongly Disagree1.81-2.60=Disagree 2.61-3.40= Neutral 3.41-4.20= Agree 4.21-5.00= Strongly Agree

The participants strongly agree to having career preparedness (Table 6) in terms of career information (M= 4.51, SD= 0.52). They agree that they are aware of the related occupations in their field of interest (M= 4.56, SD= 0.59); obtain information about career possibilities by using the library or other source of information (M= 4.46, SD= 0.71); know what a typical work day will be like in the occupation they consider (M= 4.45, SD= 0.61); have the knowledge about the working requirements of various jobs or works (M= 4.54, SD= 0.64); and, have an idea of the possible works that suits them (M= 4.51, SD= 0.66).

Similarly, in Table 7, the participants strongly agree of having career preparedness in terms of career decision making (M= 4.48, SD= 0.57). They again provided a strong stance when asked if they have clear goal in mind with regards to their future profession (M= 4.54, SD= 0.65); are aware of the possible alternatives to consider in their chosen career fields (M= 4.54, SD= 0.67); can usually think of ways to solve

important problems in daily life (M= 4.48, SD= 0.66); are motivated to take the necessary career decisions that are expected of them at this stage (M= 4.56, SD= 0.57); and, can usually decide on priorities with respect to the things that are important to them (M= 4.45, SD= 0.73).

Table 7
Participants' Level of Career Preparedness in terms of Career Decision Making (N= 80)

Career Decision Making	M	SD	Interpretation
1. I have a clear goal in mind with regards to my future profession.	4.54	0.65	Strongly Agree
2. I am aware of the possible alternatives which I can consider in my chosen career fields.	4.54	0.67	Strongly Agree
3. I can usually think of ways to solve important problems in my daily life.	4.48	0.66	Strongly Agree
4. I am motivated to take the necessary career decisions that are expected of me at this stage.	4.56	0.57	Strongly Agree
5. I can usually decide on priorities with respect to the things that are important to me.	4.45	0.73	Strongly Agree
6. I can make decisions for myself especially with important matters such as choosing a career.	4.41	0.77	Strongly Agree
7. I am an effective decision maker.	4.38	0.77	Strongly Agree
8. When I start something, I can usually see it through.	4.44	0.67	Strongly Agree
9. I know how to make a planned decision.	4.55	0.61	Strongly Agree
10. I've made up my mind when it comes to choosing a career track.	4.46	0.73	Strongly Agree
Career Decision Making	4.48	0.57	Strongly Agree

Legend:1.00-1.80= Strongly Disagree1.81-2.60=Disagree 2.61-3.40= Neutral 3.41-4.20= Agree 4.21-5.00= Strongly Agree

They also strongly agree that they can make decisions for themselves especially with important matters such as choosing a career (M= 4.41, SD= 0.77); that they are effective decision makers (M= 4.38, SD= 0.77); that when they start something, they can usually see it through (M= 4.44, SD= 0.67); that they know how to make a planned decision (M= 4.55, SD= 0.61); and, that they have made up their minds when it comes to choosing a career track (M= 4.46, SD= 0.73).

The high results indicate that confidence and preparedness are essential for guiding learners through the complexities associated with career exploration and decision making. The investigation echoes the idea that the respondents reflect a high level of career decision skill like having specific vocational objectives, considering various options, ability to solve problems related to jobs, being motivated towards making decisions on ones' own future employment, possessing effective skills in making up one's mind when faced with different choices as well as staying loyal to chosen professional path even when better ones emerge.

Table 8
Participants' Level of Career Preparedness in terms of Career Planning (N= 80)

Career Planning	M	SD	Interpretation
1. I have a clear idea of what steps to take in planning my career.	4.56	0.63	Strongly Agree
2. It is clear to me what I have to do to reach my career goals.	4.48	0.71	Strongly Agree
3. I have already made plans to reach my career goals.	4.55	0.59	Strongly Agree
4. I have already discussed my career plans with an adult whom I know very well.	4.46	0.64	Strongly Agree
5. I have planned what study courses to take or what occupations to choose.	4.46	0.69	Strongly Agree
6. I have a pretty good idea of the career I want to enter and how to go about It.	4.54	0.57	Strongly Agree
7. I often discuss my future plans with people whose opinion I value.	4.51	0.67	Strongly Agree
8. I regard career planning as a process that continues throughout life.	4.51	0.67	Strongly Agree
9. I think it is necessary to plan a career.	4.58	0.67	Strongly Agree
10. I have a need to learn more about career planning.	4.60	0.65	Strongly Agree
Career Planning	4.53	0.54	Strongly Agree

Legend:1.00-1.80= Strongly Disagree1.81-2.60=Disagree 2.61-3.40= Neutral 3.41-4.20= Agree 4.21-5.00= Strongly Agree

Lastly, similar results were found when asked about the participants' career preparedness in terms of career planning as shown in Table 8 as they strongly agree (M= 4.53, SD= 0.54) to possess one. That is, they strongly agreed that they have a clear idea of what steps to take in planning their career (M= 4.56, SD= 0.63); that it is clear to them what they have to do reach their career goals (M= 4.48, SD= 0.71); that they have already made plans to reach their career goals (M= 4.48, SD= 0.71); that they have discussed their career plans with an adult whom they know very well (M= 4.46, SD= 0.64); and, that they have planned what study courses to take or what occupations to choose (M= 4.46, SD= 0.69).

Moreover, they strongly agree that they have a pretty good idea of the career they want to enter and how to go about it (M= 4.54, SD= 0.57); often discuss their future plans with people whose opinion they value (M= 4.51, SD= 0.67); regard career planning as a process that continues throughout life (M= 4.51, SD= 0.67); think that it is necessary to plan a career (M= 4.58, SD= 0.67); and, have a need to learn more about career planning (M= 4.60, SD= 0.65).

Relationship Between Laboratory Training Skills and Career Preparedness. The results in Table 9 found that there are significant associations at 0.05 p-value. First, the laboratory training skills in terms of leadership is significantly and positively correlated to the career preparedness subfactors, such as self-information (r= .572, p= <.01), career information (r= .533, p= <.01), career decision making (r= .607, p= <.01), and career planning (r= .456, p= <.01). These suggest that the leadership skill gained in laboratory training can predict the career preparedness of the students in all areas like self-information, career information, career decision making, and career planning.

Table 9

Pearson Correlation (r) Analysis of the Relationship between the Participants' Laboratory Training Skills and their Level of Career Preparedness (N= 80)

Career Preparedness	Laboratory Training Skills			
	Leadership	Critical Thinking	Adaptability	Good Communication
Self-Information	0.572 (*p*= .000)	0.580 (*p*= .000)	0.620 (*p*= .000)	0.740 (*p*= .000)
Career Information	0.533 (*p*= .000)	0.538 (*p*= .000)	0.550 (*p*= .000)	0.691 (*p*= .000)
Career Decision Making	0.607 (*p*= .000)	0.586 (*p*= .000)	0.605 (*p*= .000)	0.658 (*p*= .000)
Career Planning	0.456 (*p*= .000)	0.509 (*p*= .000)	0.561 (*p*= .000)	0.585 (*p*= .000)

Similarly, the results reveal that the laboratory training skills in terms of critical thinking is significantly and positively correlated to the following sub-factors of career preparedness: self-information (r= .580, p= <.01), career information (r= .538, p= <.01), career decision making (r= .586, p= <.01), and career planning (r= .509, p= <.01). This indicates that the critical thinking of the participants can predict their career preparedness.

Furthermore, same findings were seen, indicating that the laboratory training skills in terms of adaptability is significantly and positively correlated to the students' career preparedness in areas like self-information (r= .620, p= <.01), career information (r= .550, p= <.01), career decision making (r= .605, p= <.01), and career planning (r= .561, p= <.01). These suggests that, as they tend to become more adaptable as a result of laboratory training, it helps improve their career preparedness as well in all the specified areas.

Lastly, the statistical results also show that the laboratory training skills in terms of good communication is significantly and positively correlated to career preparedness, such as self-information (r= .740, p= <.01), career information (r= .691, p= <.01), career decision making (r= .658, p= <.01), and career planning (r= .585, p= <.01). These mean that as their communication skills increases, the more likelihood of them gaining more career preparedness in self-information, career information, career decision making, and career planning.

DISCUSSION

This study examined the laboratory training skills and career preparedness of 80 third year AIMS marine transportation students, revealing key insights. The respondents strongly agreed on possessing laboratory training skills in leadership (M = 4.51, SD = 0.50), critical thinking (M = 4.41, SD = 0.52), adaptability (M = 4.38, SD = 0.58), and communication (M = 4.51, SD = 0.49). These skills were found to significantly contribute to their career preparedness, encompassing self-information, career information, career decision-making, and career planning. More so, the participants also demonstrated strong agreement regarding career preparedness in self-information (M = 4.53, SD = 0.47), career information (M = 4.51, SD = 0.52), career decision-making (M = 4.48, SD = 0.57), and career planning (M = 4.53, SD = 0.54), suggesting that laboratory training significantly enhances their readiness for future professional roles.

Pearson correlation analysis confirmed significant relationships between laboratory training skills and career preparedness, indicating a positive association. Enhanced leadership, critical thinking, adaptability, and communication skills predicted higher levels of career preparedness across all domains. The findings underscore the importance of laboratory training in equipping maritime students with the skills necessary for informed career decision-making and effective planning thereby affirming the critical role of hands-on training in fostering professional growth.

Based on the finding, the researchers recommend that maritime education institutions should continue enhancing their laboratory training programs. Additionally, maritime cadets are encouraged to actively engage in laboratory training, as it plays a vital role in improving their readiness for the evolving demands of the maritime industry.

REFERENCES

Agbing, C. J., Chua, J. S., Discaya, C. C., Gochan, E. I., & Osmeña, S. M. (2023). All Hands on Deck: Ensuring Sustainability in Philippine Maritime Education through Global Standards Compliance. *Journal of Maritime Research,* 20(3), 34-45. https://www.jmr.unican.es/index.php/jmr/article/view/727

Albetkova, A., Chaignat, E., Gasquet, P., Heilmann, M., Isadore, J., Jasir, A., & Wilcke, B. (2019). A competency framework for developing global laboratory leaders. *Frontiers in public health,* 7, 199. https://doi.org/10.3389/fpubh.2019.00199

Alimen, R. A., & Gildore, E. S. (2020). Laboratory-Services Leading to Quality of Maritime Education and Training (MET) at Maritime University in Philippines. *Journal of Shipping and Ocean Engineering,* 10, 42-46. https://doi.org/10.17265/2159-5879/2020.02.004

Baldauf, M., Dalaklis, D., & Kataria, A. (2016). Team training in safety and security via simulation: A practical dimension of maritime education and training. *In INTED2016 Proceedings* (pp. 8519-8529). IATED. https://doi.org/10.21125/inted.2016.0983

Basak, S. K. (2017). A framework on the factors affecting to implement maritime education and training system in educational institutions: A review of the literature. *Procedia engineering,* 194, 345-350. https://doi.org/10.1016/j.proeng.2017.08.155

Chen, H., Liu, F., Wen, Y., Ling, L., Chen, S., Ling, H., & Gu, X. (2021). Career Exploration of High School Students: Status Quo, Challenges, and Coping Model. *Frontiers in psychology,* 12, 672303. https://doi.org/10.3389/fpsyg.2021.672303

Cortez, M. A., Escala, L. E., & Pepito, W. M. (2022). Effectiveness of Laboratory Simulations in Developing Technical Skills in Assessing, Maintaining, and Operating Different Machineries Onboard for the Maritime Students in Different Universities Offering Maritime Courses in Southern Tagalog. *Enverga University.* https://mseuf.edu.ph/research/read/1703

Dacuray, M. J., De La Rosa, R., De Chavez, J., Dolor, P. C., Guevarra, L. J., Caiga, B. T., & Mandigma, L. B. (2015). Maritime Students' Satisfaction on the Services of one Training Center in the Philippines. *International Journal of Management Sciences,* 4(8), 343-353.

Demirel, E., & Bayer, D. (2015). Further studies on the COLREGs (collision regulations). Transnav-International *Journal on Marine Navigation* and Safety on Sea Transportation, 9(1), 17-22. https://doi.org/ 10.12716/1001.09.01.02

Estimo, E. (2020). Ship to Academe, Seafaring to Teaching: Seafarer Teachers in Maritime Higher Education Institutions in the Philippines. *Higher Education Research,* 5(2), 44-51. https://doi.org/ 10.11648/j.her.20200502.12

Farmer, E., Van Rooij, J., Riemersma, J., & Jorna, P. (2017). Handbook of simulator-based training. *Routledge.*

Håvold, J. I., Nistad, S., Skiri, A., & Ødegård, A. (2015). The human factor and simulator training for offshore anchor handling

operators. *Safety Science,* 75, 136-145. https://doi.org/10.1016/j.ssci.2015.02.001

Kherson State Maritime Academy. (2021). *Training Laboratory Survival at Sea and Fire Fighting Training Complex.* https://ksma.ks.ua/?page_id=6744&lang=en

Laureiro-Martínez, D., & Brusoni, S. (2018). Cognitive flexibility and adaptive decision-making: Evidence from a laboratory study of expert decision makers. *Strategic Management Journal,* 39(4), 1031-1058. https://doi.org/10.1002/smj.2774

Manuel, M. E. (2017). Vocational and academic approaches to maritime education and training (MET): Trends, challenges and opportunities. *WMU Journal of Maritime Affairs,* 16, 473-483. https://doi.org/10.1007/s13437-017-0130-3

Morin, A., & Racy, F. (2021). Dynamic self-processes. In The handbook of personality dynamics and processes (pp. 365-386). *Academic Press.*

Pignault, A., Vayre, E., & Houssemand, C. (2022). What Do They Want from a Career? University Students' Future Career Expectations and Resources in a Health Crisis Context. *Sustainability,* 14(24), 16406.https://doi.org/10.3390/su142416406

Randall, M. S., Moody, C. M., & Turner, P. V. (2021). Mental wellbeing in laboratory animal professionals: a cross-sectional study of compassion fatigue, contributing factors, and coping mechanisms. *Journal of the American Association for Laboratory Animal Science,* 60(1), 54-63. https://doi.org/10.30802/AALAS-JAALAS-20-000039

Ryals, J. (2023). *Gender Equality is a Maritime Issue: Examining Structural and Social Barriers to Closing the Gender Gap in the Maritime Industry (Master's thesis).*

Schaller, M. D., Gencheva, M., Gunther, M. R., & Weed, S. A. (2023). Training doctoral students in critical thinking and experimental design using problem-based learning. *BMC medical education,* 23(1), 579. https://doi.org/10.1186/s12909-023-04569-7

Sellberg, C. Simulators in bridge operations training and assessment: a systematic review and qualitative synthesis. *WMU J Marit Affairs* 16, 247–263 (2017). https://doi.org/10.1007/s13437-016-0114-8

Stein, J., & Irvine, A. (2015). *Career preparedness and lifelong learning: A global perspective.* https://www.voced.edu.au/content/ngv%3A70637

Van Peppen, L. M., Verkoeijen, P. P., Heijltjes, A. E., Janssen, E. M., & van Gog, T. (2021). Enhancing students' critical thinking skills: is comparing correct and erroneous examples beneficial?. *Instructional Science,* 49, 747-777. https://doi.org/10.1007/s11251-021-09559-0

Warner, D. L., Brown, E. C., & Shadle, S. E. (2016). Laboratory instrumentation: An exploration of the impact of instrumentation on student learning. *Journal of Chemical Education,* 93(7), 1223-1231. https://doi.org/10.1021/acs.jchemed.5b00566