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The Blended Learning System of a Maritime Training Center

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ABSTRACT

The study assessed the blended learning system of Cebu Reliable and Excellent Seafarers Training (CREST) Center in Cebu City, Philippines in teaching their Basic Training (BT) Course. Specifically, the studylooked in the respondents' extent of course experience in the online learning session of their BT course and level of competence. The findings served as basis of the proposed action plan. This study utilized the descriptive-correlational research design with the use of an adapted modified questionnaire. The study was conducted at Cebu Reliable and Excellent Seafarers Training and Assessment Center, Inc. (CREST), Cebu City. The respondents of the study were all the 50 trainees who enrolled in the BT course of CREST.

This study utilized two adapted modified questionnaire to gather data from the respondents. These questionnaires were subjected to validation and pilot testing. The questionnaire for the trainees' course experience in the online learning session of the blended learning system got Cronbach's alpha coefficient of 0.8494. Meanwhile, questionnaire to gather data on perceived self- efficacy of the maritime trainees' competencies in the four areas of BT course got Cronbach's alpha coefficient of is 0.8446. Both reliability coefficient are above the acceptable minimum reliability coefficient of 0.7000.

Before the actual data gathering, the researcher sent a letter to the operations manager asking permission to conduct the study. Upon receiving permission, the researcher conducted a pilot testing and followed by the actual data gathering. Appropriate statistical tools were used to summarize, analyze and interpret the data from the respondents. Based on the findings of the study, the researched concluded that the blended approach to train seafarers for BT course could be an innovative and effective approach of learning, especially for the younger, tech-savvy generation. The findings also show evidence of the importance of developing the generic skills and adopting new technologies in the maritime training as both show association to various safety-related competencies. In general, the COVID-19 pandemic presents an opportunity for MET institutions to be innovative in their practices, especially in the adoption of blended learning.

1. Introduction.

Maritime Education and Training (MET) is a relatively modern academic program that is continually and thoroughly assessed to ensure quality execution. Moreover, further studies and ingenious experiences have allowed the opportunity to various modalities, improved comprehension of MET factors, and proper practices to be conducted in the maritime cluster (Basak, 2017). MET has consistently centered on the procurement and utilization of hands-on proficiency. This style of learning goes in contrast to typical scholastic instruction which has been believed to substantially emphasize the development of systematic and basic reasoning abilities, cognitive thinking that are less dependent on practical-related tasks (Manuel, 2017). By and large, MET assumes an imperative function in the maritime sector.

In the Philippines, the maritime industry plays a vital role in promoting globalization and providing socio-economic security. In a report from the United Nations Economic and So-

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cial Commission for Asia and the Pacific (2012), overseas shipping companies in the Philippines made contributions reaching about 60 million pesos for 4.5 % retaining duty to BIR and P 8.2 million in expenses to the Maritime Industry Authority (MARINA). Furthermore, one study laid importance of the 17 Sustainable Development Goals (SDGs) with regards to the maritime business (Wang et al., 2020), as the various jobs played by the business concerning sustainable objectives are introduced, prompting a transition of social or feasible enterprise. As modern shipping is developing into sophistication, there is a need to fill the gap in the Maritime Education and Training to keep pace with the advanced standards in different countries. According to Russel (2017), seafarers on-board should in any case be fit for diagnosing deficiencies and adhere accordingly to worldwide norms of competence.

The need for continuous training (i.e. recertification) has become a central point of controversy for the development of expert individuals in a competing global market (Boulougouris, 2019). Unfortunately, with the outbreak of the Covid-19 pandemic in the country, travel restrictions and uncompromising health protocols has made it excessively challenging to hold consistent face-to-face training and assessment. Thus, the use of blended learning was proposed as an alternative to physical classroom discussions.

Blended learning is portrayed as a wide range of learning that incorporates some part of modular and web-based approaches (Hrastinski, 2019). Generally, blended learning on maritime training institutions (MTIs) typically consists of a synchronous activity for theoretical part of the training (e.g., video-calls) and face to face for the practical exercise part of the training.

The use of blended learning can be a helpful tool for seafarers who aim to work abroad for their families despite the ongoing pandemic. Although, it is to be noted that the application of blended learning onto Maritime Training Institutions (MTIs) has only been done in the Philippines quite recently and no literature has been able to present how such approach has affected the maritime cluster, particularly how it affects the competency level of the Filipino seafarer trainees. As founder and chairman of Cebu Reliable and Excellent Seafarers Training (CREST) and Assessment Center, the researcher believes that it essential conduct this study to come with an action plan for the continuous improvement of the school's services. Furthermore, there is insufficient data to evaluate the cultural and economic factors of such approach that may affect the learning curve of seafarers in the Philippine setting.

2. Methodology.

This study adapted with modification the Student Course Experience Questionnaire (Ginns et al., 2007) to gather the quality of trainees' course experience in the online learning session of the blended learning system implemented by CREST for its BT course. The scale intends to measure the level of learner's experience in regards to the teaching approach as well as their learning environment. The questionnaire covers the following: good teaching scale, clear goals and standards scale, appropriate assessment scale, appropriate workload scale, and generic skills scale. The scale's role in quality assurance would benefit teachers and course developers in regards to adapting better approaches for blended learning.

3. Results.

This section presents the extent of the course experience of the respondents in their online learning session in Basic Training (BT) course.

Table 1: Extent of Course Experience in the Online Learning Session in Basic Training (BT) Course in Terms of Good Teaching Scale.

Indicators	Mean	Interpretation
1. The teacher normally gives me helpful feedback on how I am going	3.80	Always
2. The teacher of this degree course motivates me to do my best work.	3.76	Always
3. The teacher makes a real effort to understand difficulties I may be having with my work.	3.70	Always
4. The teacher is extremely good at explaining things.	3.78	Always
5. The teacher works hard to make their subjects interesting.	3.76	Always
6. The teacher puts a lot of time into commenting on my work.	3.62	Always
Overall Mean:	**3.74**	**Always**

Source: Authors.

As indicated in Table above, the aspect of good teaching scale got an overall mean of 3.74 and described as always. Likewise, all the indicators under this aspect are all described as *always*. This implies that teachers teaching online learning sessions in the Basic Training course of CREST continue to provide a diversity of mechanisms of engagement and quality education to their trainees amid Covid-19 pandemic. Accordingly, they highlight in providing feedback to their students, which is a highly valuable approach to enhance learning and promote teacher-student support and interaction despite the distance. They also design activities to help learners understand their topics, which explain the high motivation and interest of trainees, as indicated in the results of the study.

Overall, the findings of the study show that online teaching for the basic training course for maritime trainees is possible when teachers continue to deliver quality teaching. Indeed, regardless of the modality of teaching, an effective teacher has the skills, knowledge, and ways of learning in a digital era (Wood & Shirazi, 2020) who provides safe, inclusive, positive classroom environment (Capella et al., 2015; Gildehaus et al., 2019); socio-emotional support (Hadar et al., 2020), active engagement and interaction (Mutalib et al., 2016), among others.

Nonetheless, it is important to note that online education, especially in maritime training, is not the typical modality used in the Philippines. In fact, many Filipinos are still grappling to engage in the seemingly unorthodox approach of teaching and learning, especially those who are technologically disadvantaged and incapable and economically poor (Tanucan et al., 2021; Tanucan & Uytico, 2021). Hence, the training and development of teachers is crucial so that they can respond to the skills needed for online learning.

Table 2: Extent of Course Experience in the Online Learning Session in Basic Training (BT) Course in Terms of Clear Goals and Standards Scale.

Indicators	Mean	Interpretation
1. I have usually had a clear idea of where I am going and what is expected of me in this degree course.	3.76	Always
2. It is always easy to know the standard of work expected	3.78	Always
3. The teacher made it clear right from the start what they expected from students.	3.80	Always
4. It has been easy to discover what is expected of me in this degree course.	3.72	Always
Overall Mean:	**3.77**	**Always**

Source: Authors.

As shown in Table above, the aspect of clear goals and standards scale got an overall mean of 3.77 and described as always. Likewise, all four (4) indicators under this aspect were all described as *always*. This finding implies that the online learning sessions in the Basic Training (BT) course of CREST have clear focus and direction in their lessons, helping their students make sense of their online learning activities and devise strategies to achieve the outcomes expected from them. It has been known that having clear course objectives, goals, and expectations is essential for a successful online education. Existing research concur to this idea, as it helps students devise their personal motivation strategies and have a sense of focus (Swan et al., 2012). This ultimately would help them to prevent burnouts (Roper, 2007) and understand the connections between their class activities and the real world (Dean et al., 2012). It is important to note that course learning outcomes and objectives facilitate effective teaching, as course-related materials and learning activities are purposely aligned to help students see the outline of what pertinent concepts and skills they should attain or develop. For teachers, it may aid them in making the necessary improvements to teaching and learning (Black & William, 2018). Maritime education and training is highly skills-oriented, thus learning objectives for maritime training sessions need to have clear goals and objectives that are align to the professional standards set by associated regulatory and certification bodies.

Table 3: Extent of Course Experience in the Online Learning Session in Basic Training (BT) Course in Terms of Appropriate Assessment Scale.

Indicators	Mean	Interpretation
1. The assessment is more on the testing of my understanding.	3.74	Always
2. The questions are more on facts.	3.64	Always
3. Understanding and demonstration of skills is the key to do well in this degree course	3.74	Always
Overall Mean:	**3.71**	**Always**

Source: Authors.

Table above shows that the aspect of appropriate assessment scale got an overall mean of 3.71 and described as *always*. Likewise, all three (3) indicators under this aspect are described as always. This finding implies that the online learning of CREST highlights the use of appropriate learning assessments. Learning assessment is an integral part of the learning process for both face-to-face and online set-up. The advancement in Information and Communication Technology (ICT) has facilitated the adoption of technological processes for the education sector to conduct formal and non-formal education (Kumar-Basak et al., 2018) including the adoption of e- learning. Many academic institutions, especially in the tertiary level, have embraced e- learning as it affords many benefits in learning, teaching and assessment activities (Jafarjalali et al., 2018).

While the conduct of learning assessments in the online set-up has been embraced, it is not without its issues (Rajab et al., 2020). These include plagiarism, maintenance of academic integrity, academic dishonesty, among others (Mukhtar et al., 2020; Laitusis, 2020). These issues should be addressed within the organization, as assessment of and for learning should not be under-emphasized in the teaching and learning process. Hence, the discussion of appropriateness of assessment methods must consider the achievement of the intended outcomes of the curriculum (Gachago et al., 2018). Accordingly, in the process of setting appropriate assessment, what the learners need including their safety and well-being must be considered (Dayagbil et al., 2021).

Table 4: Extent of Course Experience in the Online Learning Session in Basic Training (BT) Course in Terms of Appropriate Workload Scale.

Indicators	Mean	Interpretation
1. The course is easy and stress free.	3.74	Always
2. The workload is reasonable.	3.66	Always
3. I am generally given enough time to understand the things I have to learn.	3.80	Always
4. The volume of work in this course is manageable.	3.82	Always
Overall Mean:	**3.76**	**Always**

Source: Authors.

On the aspect of appropriate workload scale, Table above indicates that the overall mean is 3.76 and described as *always*. Likewise, all four (4) indicators under this aspect are all described as *always*. This finding implies that the online learning of CREST sets a reasonable amount of work-load that is manageable and feasible. It is balanced in a way that trainees are learning while having a reasonable amount of challenge. This provides an idea that training or education institutions have to consider customization of learning process as per student's needs, as online learning could be new to most of them.

It is important to note that students are stressed out about education in this time of the pandemic (Shobhit, 2020). More specifically, the physical and mental stress due to online learning (Lathabhavan & Griffiths, 2020; Sahu, 2020; Son et al., 2020) has been the problem that most educators are dealing with in their classes. The cause of this stress is often attributed to the overboard amount of workload (Corrales et al., 2020), and this creates imbalance to students that obstructs learning process (Dhawan, 2020). As the workload of students is not a one-dimensional phenomenon, rather there are many other aspects that come into play such as the mental, physical, and temporal demands as well as the constraints in the use of technology and issues of internet or power connectivity (Sharma, 2020). It is important that education and training institutions make sure that the right amount of academic workload is considered. Suggestions like limiting the academic requirements

and more flexibility provisions could be done (Dayagbil et al., 2021).

Table 5: Extent of Course Experience in the Online Learning Session in Basic Training (BT) Course In Terms of Generic Skills Scale.

Indicators	Mean	Interpretation
1. The degree course has helped me develop my ability to work as a team member.	3.80	Always
2. The degree course has sharpened my analytic skills.	3.72	Always
3. As a result of my degree course, I feel confident about tackling unfamiliar problems	3.84	Always
4. The degree course has developed my problem-solving skills.	3.74	Always
5. The degree course has improved my skills in written communication.	3.80	Always
6. My degree course has helped me to develop the ability to plan my own work.	3.76	Always
Overall Mean:	**3.78**	**Always**

Source: Authors.

On the aspect of generic skills scale, Table above shows that the overall mean is 3.78 and described as *always*. Likewise, the six (6) indicators under this aspect are all described as *always*. The finding implies that the online learning of CREST ensures that its trainees develop the generic skills necessary to comprehend and analyze work situations to succeed in their career. The finding also suggests that trainees were given opportunities for practical application, rather than simply talking about or demonstrating what to do, as the development of the generic skills is believed to happen through various practical and engagement classroom activities (Hadiyanto & Ibrahim, 2013). To survive in the maritime industry, one has to learn specific knowledge and skills in the field as well as the different generic skills in order to cope with the demands set in work. In CHED Memorandum Order No. 14, series of 2013, the generic skills sets was emphasized as one of the abilities and skills that a graduate of a maritime-related degree should possess. The skill includes maritime communication and discourses which can be applicable in many other contexts. This is the reason why academes provide opportunities for their students to develop generic skills that can be transferred to other contexts (Badcock et al., 2010; Klegeris et al., 2017). Further, there are already new technologies and automation being introduced and used in maritime work, thereby requiring higher order cognitive skills (Green 2012), technological skills (Cicek et al. 2019), and generic skills, among others.

Table 6: Extent of Course Experience in the Online Learning Session in Basic Training (BT) Course in Terms of Perceived Ease of Use of Technology.

Indicators	Mean	Interpretation
1. My interaction with the technologies used in the lesson are clear and understandable.	3.78	Always
2. I find it easy to use the technologies integrated in the lesson.	3.76	Always
3. Interacting with the technologies integrated in the lesson do not require a lot of my mental effort.	3.70	Always
Overall Mean:	**3.75**	**Always**

Source: Authors.

On the aspect of perceived ease of use of technology, Table 6 shows that the overall mean is 3.75 and described as *always*. Likewise, all three (3) indicators are described as *always*. The findings imply that the trainees of CREST have favorable acceptance in the adoption of online learning for their training in BT course. The reason could be attributed to the profile of the respondents because all of them are generation Z learners who are tech-savvy. In other words, the blended learning set-up of CREST for BT training course is an approach that best fits to their interests and capabilities. Hence, explains the positive results with regards to the perceived ease of use of technology. The TAM explained that the perceived ease of use and perceived usefulness serve as the determinants to the intention to use or adopt a technological innovation (Davis, 1989). More so, with the positive relationship between perceived ease of use and perceived usefulness (Anuar & Othman, 2012), it can be inferred that a technology that is easy and useful to the users is necessary for positive adoption and use. Accordingly, this increases the user's efficiency (Gumussoy & Calisir, 2009).

Covid-19 has forced numerous academic institutions to modify their systems and adopt new technologies to continue education. With the unpredictable and rapid spread of the virus, online education system was adopted within a short period of time and it is now an important key mode of instruction for educators (Han & Sa, 2021). Toquero (2020) noted that there is a need to improve the curricula of institutions with great consideration in the use of new teaching methods and technologies. For maritime education and training, the use of innovative strategies in education is warranted to keep pace with the increasing demands of maritime industry.

Table 7: Extent of Course Experience in the Online Learning Session in Basic Training (BT) Course in Terms of Perceived Usefulness of Technology.

Indicators	Mean	Interpretation
1. The different technologies used in the course improves my performance in my studies.	3.92	Always
2. Using the different technologies in my studies increases my productivity.	3.84	Always
3. I find the technologies used in the course to be useful in my studies	3.86	Always
Overall Mean:	**3.87**	**Always**

Source: Authors.

On the aspect of perceived usefulness of technology, Table above shows that the overall mean is 3.87 and described as *always*. Likewise, all three (3) indicators are described as *always*. The findings suggest that the CREST trainees found the tools to be beneficial for learning the Basic Training (BT) course in an online learning setting. It is critical to keep in mind that effective technology adoption requires an understanding of how the technologies and tools to be used will improve performance (Azman et al., 2020). Nevertheless, there will undoubtedly be a drop in employee performance when companies, especially those that use technology- integrated approaches, fail to appropriately convey or demonstrate how the selected technology boosts effectiveness and efficiency in accordance with their work tasks (Abbas et al., 2021).In this regard, organizations that use online learning systems must evaluate critically the technologies they are utilizing in order for the end users to find them advantageous or useful.

Table 8: Summary Table of the Extent of Course Experience in the Online Learning Session in Basic Training (BT) Course.

Aspects of Online Learning	Mean	Interpretation
• Good Teaching Scale	3.74	Always
• Clear Goals and Standards Scale	3.77	Always
• Appropriate Assessment Scale	3.71	Always
• Appropriate Workload Scale	3.76	Always
• Generic Skills Scale	3.78	Always
• Perceived Ease of Use of Technology	3.75	Always
• Perceived Usefulness of Technology	3.87	Always
Aggregate Mean:	**3.77**	**Always**

Source: Authors.

In summary, the extent of course experience of CREST trainees in the online learning session in Basic Training (BT) course is positive, as indicated in the overall mean score of 3.77. Such result is attributed to the well-designed and properly implemented online content, activities, and tools. When the things are considered well before the implementation of online learning, student engagement is enhanced (Zydney et al., 2020). This finding also coheres to the findings of recent studies. For example, Kahn et al. (2017) found that learners become engaged in academic online activities through a process of reflexive deliberation, with students seeking to establish concrete courses of action and sustained practices in the face of uncertainty and complexity. Hence, Well-structured courses and activities aid in increasing student involvement in the learning process as they deal with ambiguous times and shifting learning environments.

3.1. Respondents' Perceived Level of Competence.

This section presents the respondents' perceived level of competence.

Table 9: Respondents' Perceived Level of Competence in Terms of Personal Survival Technique.

Indicators	Mean	Interpretation
1. I am confident to don a life jacket.	3.80	Always
2. I am confident to don and use an immersion suit.	3.70	Always
3. I am confident to safely jump from a height into water.	3.78	Always
4. I am confident to right an inverted life raft while wearing a life jacket.	3.70	Always
5. I am confident to swim while wearing a life jacket.	3.88	Always
6. I am confident to keep a float without a life jacket	3.70	Always
7. I am confident to board a survival craft from ship and water while wearing a life jacket.	3.62	Always
8. I am confident to take initial actions on boarding survival craft to enhance chance of survival.	3.62	Always
9. I am confident to steam a drogue or sea-anchor.	3.70	Always
10. I am confident to operate survival craft equipment.	3.64	Always
11. I am confident to operate location devices, including radio equipment.	3.68	Always
Overall Mean:	**3.71**	**Always**

Source: Authors.

On the aspect of personal survival technique, the overall mean is 3.71 and described as always with all its eleven (11) indicators that got the descriptive score as always. This finding implies that the trainees of CREST have the basic knowledge and skills to survive at sea in the event of ship abandonment. This further suggests that the practical training session of the blended learning of CREST has yielded positive results to the trainees given their scores.

The Personal Survival Techniques (PST) is purposely designed to be part of the mandatory basic safety training in the STCW code so that seafarers acquire self-protection abilities in emergency situations including the survival at sea and deployment of safety equipment. There is no ship which can be operated that is hazard or error-free. As most accidents at the sea are inevitable and they are usually caused by human errors (Gregory & Shanahan, 2012; Lappalainen et al., 2014), training on personal survival is necessary.

Buted (2014) has noted that training activities should equip seafarers with basic competencies, especially in terms of security and safety of passengers and crew. That is why from the donning of a lifejacket to the preparation and operation of survival craft, all of these are essential to the protection and maintenance of the seafarers of their own and others safety at sea. The findings of this study help support that the blended learning approach for the mandatory training of seafarers could be a feasible way for maritime education and training institutions to achieve the mandatory basic safety training stipulated in the STCW code.

Table 10: Respondents' Perceived Level of Competence in Terms of Fire Prevention and Fire Fighting.

Indicators	Mean	Interpretation
1. I am confident to use various types of portable fire extinguishers.	3.80	Always
2. I am confident to use self-contained breathing apparatus;	3.71	Always
am confident to extinguish smaller fires, e.g. electrical fires, oil fires and propane fires;	3.69	Always
am confident to extinguish extensive fires with water (jet and spray nozzles);	3.63	Always
am confident to extinguish fires with either foam, powder or any other suitable chemical agent;	3.73	Always
am confident to enter and pass through, with life-line without breathing apparatus, a compartment into which high expansion foam has been injected	3.71	Always
am confident to fight fire in smoke-filled enclosed spaces wearing self-contained breathing apparatus.	3.67	Always
I am confident to extinguish fire with water fog, or any other suitable fire-fighting agent in an accommodation room or simulated engine-room with fire and heavy smoke.	3.65	Always
am confident to extinguish an oil fire with fog applicator and spray nozzles; dry chemical powder or foam applicators	3.72	Always
I am confident to effect a rescue in a smoke-filled space wearing breathing apparatus.	3.70	Always
Overall Mean:	**3.70**	**Always**

Source: Authors.

On the aspect of fire prevention and fire-fighting, the overall mean is 3.70 and described as *always*. Likewise, all indicators are described as *always*. The finding implies that the trainees of CREST have the basic knowledge and skills necessary to minimize the risk and impacts of fires aboard ship including the causes of fires and means to extinguish them.

Fires and explosions have been assessed by the European Maritime Safety Agency (EMSA) as one of the top five causes of accidents on board ships (Salem, 2019). Fires usually originate in the engine room which can spread to other parts of the ship, halting the ship's operations or even the loss of many lives. Ellis (2011) analyzed the deaths of ships carrying containerized dangerous goods in the years 1998–2008 and found out that ignition of incorrectly declared goods is contributory to the accidents. Uğurlu et al. (2012) examined 18 fire & explosion accident investigation reports of oil tankers in the years 1998-2010 and concluded that the accidents were caused by inappropriate equipment use, hot working, combustible gas accumulation and cargo leakage. You and Chung (2015) analyzed cases of ship fires and explosions in the years 2009-2013 and concluded that

lack of safety awareness was the common reason. Rothblum (2020) also found out that human error contributes to 75% of fires & explosions.

Given the occurrence of the many fire-and explosion-related accidents in on board ships, it is important that seafarers are continuously trained and assessed to prevent fires or minimize its impact more efficiently and effectively. The results of this study would help shed light on the feasibility of Blended Learning (BL) as an innovation for seafarer's training.

Table 11: Respondents' Perceived Level of Competence in Terms of Elementary First Aid.

Indicators	Mean	Interpretation
1. I am confident to position casualty.	3.68	Always
2. I am confident to apply resuscitation techniques.	3.60	Always
3. I am confident that I can control bleeding.	3.66	Always
4. I am confident to apply appropriate measures of basic shock management.	3.62	Always
5. I am confident to apply appropriate measures in events of burns and scalds, including accidents caused by electric current.	3.68	Always
6. I am confident to rescue and transport a casualty.	3.62	Always
7. I am confident to improvise bandages and use materials in the emergency kit.	3.72	Always
Overall Mean:	**3.65**	**Always**

Source: Authors.

On the aspect of elementary first aid, the overall mean rating is 3.65 and described as *always*. Likewise, all of the seven (7) indicators are described as *always*. The findings implies that the trainees of CREST have the basic knowledge and skills necessary to take on immediate action for most common emergencies aboard ship. These include the ability to check for vital signs, bleeding, and other forms of injuries. The finding further suggests the feasibility of Blended Learning (BL) in developing the competence of elementary first aid.

Seafaring is a high risk-occupation given that its nature usually takes place in the isolated environment (Oldenburg et al., 2010). More so, accidents are inevitable and the predominant medical emergencies were trauma (Dahl, 2005; McKay, 2007), which usually are caused by the ship's movements and the dangerous nature of the working environment, especially on container and general cargo ships (Oldenburg et al., 2010). Further, seafarers often feel overwhelmed due to low personnel and their lack of experience with large-scale rescue operations on the high seas (Dittmann et al., 2015). This sometimes could lead to injuries and sickness, which calls for seafarers to perform first aid treatment themselves.

The telemedical reports also noted that medical emergencies related to surgical , internal, and urological health disorders were the frequently observed (Flesche & Jalowy, 2007; Grappasonni et al., 2012) While having a medical doctor on passenger and larger research ships is mandatory, on merchant vessels the emergency interventions is carried out by nautical officers. Thus, the reason why all seafarers have to receive first aid training as part of their studies at maritime education and training schools or institutes. As to the question on the feasibility of Blended Learning (BL) as a form of training approach for first aid, the findings of this study help shed light on this matter.

Table 12: Respondents' Perceived Level of Competence in Terms of Personal Safety and Social Responsibility.

Indicators	Mean	Interpretation
1. I am confident that I have the ability to comply with emergency procedures.	3.76	Always
2. I am confident that I have the ability to take precautions to prevent pollution of the marine environment.	3.74	Always
3. I am confident that I have the ability to observe safe working practices.	3.76	Always
4. I am confident that I have the ability to contribute effective communications on board ship.	3.68	Always
5. I am confident that I have the ability to contribute effective human relationships on board ship.	3.78	Always
6. I am confident that I understand and can take necessary actions to control fatigue.	3.70	Always
Overall Mean:	**3.74**	**Always**

Source: Authors.

On the aspect of personal safety and social responsibility, the overall mean rating is 3.74 and described as *always*. Likewise, all the indicators under this aspect are described as *always*. This finding implies that the trainees of CREST have the knowledge and skills to comply with various emergency and safety procedures, accident prevention, clear and effective communication, and harmonious working relationships. The finding further suggests the feasibility of Blended Learning (BL) in developing the competence on personal safety and social responsibility.

In the maritime industry, apart from the efficient maritime transport and navigational system, the safetyof the crew and environment, are among the top line priorities (Javier & Aguado, 2012). This is because the continuous expansion of the industry has not onlyled to the growth of the number of vessels, but also the potential risks and hazards (Baalisampang et al., 2018). More so, apart from the idea that working on board ships has a higher fatal accident rate than other industries like the construction industry (Roberts et al., 2014), manymaritime accidents are directly or indirectly attributed to the unsafe acts and/or errors of crews (Heij & Knapp, 2018) To ensure safe and successful operation of ships, seafarers need to have qualification and competence. The different on board training are also essential to prepare them to continuously develop their knowledge and skills. Various studies have been conducted regarding the improvement of maritime training. Aside from making sure that the training curriculum is realistic, training conditions should be improved in a way that targets the satisfaction of the seafarers (Sin & Im, 2015).

Table 13: Respondents' Perceived Level of Competence.

Indicators	Mean	Interpretation
• Personal Survival Technique	3.71	Always
• Fire Prevention and Fire Fighting	3.70	Always
• Elementary First Aid	3.65	Always
• Personal Safety and Social Responsibility	3.74	Always
Aggregate Mean:	**3.70**	**Always**

Source: Authors.

For this reason, the maritime industry is making sure that high-quality innovative programs for training are in place. One of these is the use of online learning. While the use of online learning has become a norm for many maritime companies, this learning set-up is still new in the Philippines. Hence, questions

about the feasibility of online learning for maritime training are still being tabled. This study helps answer this gap.

In summary, the CREST trainees perceived level of competence in Basic Training (BT) course competencies is positive, as indicated in the overall mean score of 3.70. Such a result suggests that CREST's blended learning approach is effective in assisting its students in meeting the outcomes expected of them. The goal of the Basic Training (BT) course is to give seafarers the knowledge and skills in doing the responsibilities related to the handling, usage, and emergency response. This comprises four short courses, namely personal survival techniques, fire prevention and fire-fighting, elementary first aid and personnel safety and social responsibilities. The teaching-learning process is still being tested by the pandemic, thus institutions need to find new ways to reinvent their methods in order to keep teaching and learning going and ensure that students are continually receiving high-quality instruction.

3.2. Relationship of the Extent of Course Experience and Level of Competencies.

This section presents the test of the significance of the relationship between the extent of the course experience in the Basic Training (BT) course and the level of competencies of the respondents. Tables below summarized the results.

As shown in table 14, there are pairs of variables that the test of the relationship cannot be performed considering that all responses are the same. Hence, cross tabulation, a requirement in doing Chi-square test of association, is impossible. Furthermore, there are pairs of variables which yield not significant results. It means that those paired variables have no significant relationship of effect to one another. Moreover, there are pairs of variables which yield significant results. It means that the paired variables have a significant effect on one another. However, these significant effects between the paired variables vary according to the strength based on the computed Pearson's coefficient C.

As indicated in table above, generic skills scale and fire prevention and fire- fighting has moderate significant relationship (15.986>3.841, C=0.49, moderate), while two (2)pairs of variables have yield slight significant relationship – generic skills scale and elementary first aid (4.228 > 3.841, C = 0.28, slight) and generic skills scale and personal safety and social responsibility (4.228 > 3.841, C = 0.28, slight). This finding demonstrates the importance of generic skills in maritime industry, especially in the accomplishment of the safety and hazard- prevention competencies in the Basic Training (BT) course such as the prevention and fire- fighting, elementary first aid, personal safety and social responsibility. This finding supports the contention regarding the importance of generic skill sets in the modern workplace and in preparation for entry to the labor market (Mclean et al., 2013).

Accordingly, with the maritime industry that is extremely high-risk (Hetherington et al., 2006) due to the vulnerability of being exposed to noxious substances, minor and major injuries, extreme weather events, fire, and explosions, among others (Håvold, 2010), having well- developed general skill set can help navigate with life circumstances (Arum & Roksa, 2011; Hyytinen et al., 2019).

On the other hand, as gleaned in Table 3, there is a slight relationship observed in the two (2) variables related to technology such as the perceived usefulness of technology and elementary first aid (4.228 > 3.841, C = 0.28, slight), and perceived usefulness of technology and personal safety and social responsibility > 3.841, C = 0.028, slight). This finding demonstrates the link of technological skills and maritime safety skills; albeit slightly. It is important to note that the successful accomplishment of elementary first aid and personal safety and social responsibility necessitates one to have the knowledge and skills in the use of technology. For instance, the use of accelerometer (ACC), Spo2, and ECG sensors are the technologies used to monitor vital signs in this modern time. Being aware of the different technological demands in the workplace is a component in the achievement of personal safety and social responsibility onboard ships. With the tenets of industry 4.0, it is increasingly important to integrate new technology with traditional technology, equipment, and management to realize not only industrial transformation and upgrading (Lee et al., 2017), but also work safety (Lyu et al., 2022). There is a recognized need worldwide for on board training in maritime safety. Engaging the trainees with the current and latest technology would help ensure that they can operate within the basic technical environment of the ship and they can help in terms of the technical requirement needed to successfully conduct safety measures and provide immediate medical care to patients in an emergency situation.

Conclusions

The blended approach to train seafarers for Basic Training (BT) course could be an innovative and effective approach of learning, especially for the younger, tech- savvy generation. The findings also show evidence of the importance of developing the generic skills and adopting new technologies in the maritime training as both show association to various safety-related competencies. In general, the COVID-19 pandemic presents an opportunity for MET institutions to be innovative in their practices, especially in the adoption of blended learning.

Recommendations.

Based on the findings of the study, the following are recommended:

1. Future researchers may conduct studies on the following:
   (a) Experimental studies to prove the effectiveness of blended learning in the development of the competencies in Basic Training (BT) course and other mandatory courses stipulated in STCW manual;
   (b) Correlational studies that will take into account more possible related factors (e.g. age, sex, socio-economic status) in the success of the implementation of Blended Learning (BL);

Table 14: Relationship Between the Extent of Course Experience and Level of Competencies in Basic Training Course.

Variables	Df	Chi-square	Critical Value	Decision on Ho	Interpretation
Good Teaching Scale in relation to:					
• Personal Survival Technique • Fire Prevention and Fire Fighting • Elementary First Aid • Personal Safety and Social Responsibility	(test cannot be performed; all responses are the same)				
Clear Goals and Standards Scale in relation to:					
• Personal Survival Technique • Fire Prevention and Fire Fighting • Elementary First Aid • Personal Safety and Social Responsibility	(test cannot be performed; all responses are the same)				
Appropriate Assessment Scale in relation to:					
• Personal Survival Technique	(test cannot be performed; all responses are the same)				
• Fire Prevention and Fire Fighting	2	0.113	5.991	Failed to Reject Ho	Not Significant
• Elementary First Aid	2	2.817	5.991	Failed to Reject Ho	Not Significant
• Personal Safety and Social Responsibility	2	2.871	5.991	Failed to Reject Ho	Not Significant
Appropriate Workload Scale in relation to:					
• Personal Survival Technique	(test cannot be performed; all responses are the same)				
• Fire Prevention and Fire Fighting	1	0.021	3.841	Failed to Reject Ho	Not Significant
• Elementary First Aid	1	0.65	3.841	Failed to Reject Ho	Not Significant
• Personal Safety and Social Responsibility	1	0.065	3.841	Failed to Reject Ho	Not Significant
Generic Skills Scale in relation to:					
• Personal Survival Technique	(test cannot be performed; all responses are the same)				
• Fire Prevention and Fire Fighting	1	15.986	3.841	Reject Ho	Significant C=0.49, moderate
• Elementary First Aid	1	4.228	3.841	Reject Ho	Significant C=0.28, slight
• Personal Safety and Social Responsibility	1	4.228	3.841	Reject Ho	Significant C=0.28, slight
Perceived Ease of Use of Technology in relation to:					
• Personal Survival Technique	(test cannot be performed; all responses are the same)				
• Fire Prevention and Fire Fighting	1	0.065	3.841	Failed to Reject Ho	Not Significant
• Elementary First Aid	1	0.204	3.841	Failed to Reject Ho	Not Significant
• Personal Safety and Social Responsibility	1	0.204	3.841	Failed to Reject Ho	Not Significant
Perceived Usefulness of Technology in relation to:					
• Personal Survival Technique	(test cannot be performed; all responses are the same)				
• Fire Prevention and Fire Fighting	1	0.065	3.841	Failed to Reject Ho	Not Significant
• Elementary First Aid	1	4.228	3.841	Reject Ho	Significant C=0.28, slight
• Personal Safety and Social Responsibility	1	4.228	3.841	Reject Ho	Significant C=0.28, slight

Source: Authors.

(c) Qualitative studies that will provide an in-depth exploration of experience and perception in the use of blended learning for maritime-related training.

2. Implement the proposed action plan.

Proposed Action Plan.

Instead of reverting back to how maritime training was developed and conducted in the past, the pandemic has introduced the use of Blended Learning (BL), a new system that favorably accepts the employment of diverse teaching approaches with a strong emphasis on technological integration. With training institutions all over the world redesigning its practices to spur innovation and improve clientele satisfaction and engagement, blended learning is becoming a new normal. The Cebu Reliable and Excellent Seafarers Training (CREST) Center intends to demonstrate through the action plan for an enhanced blended learning system, a renewal of its commitment to improve its training practices and protocols in order to provide responsive and up-to-date international training standards for professional mariners.

Objectives:

- To equip physical classrooms and other learning environments with the necessary infrastructure to support blended learning;
- To provide continuing professional learning support to staff on blended learning;
- To establish Information Technology Services (ITS) for staff and trainees to assist them with their technology-related concerns; and
- Reward best practice blended learning programs utilized at CREST.

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