CHAPTER I

INTRODUCTION

1.1. The Background of The Study

Today's technology has become an unavoidable part of the passage of time. Technology has not only changed people's lifestyles but has also changed how we work, learn, and interact. Various kinds of innovations appear all the time, making our activities and work more practical and effective.

The specialized training of marine students, seafaring cadets, and crewmembers has seen numerous changes in the last few decades. Reduction in personnel and budget cutbacks have led Maritime Education and Training (MET) institutions and shipping companies to utilize new forms of technology to achieve their training objectives. Training mariners at sea no longer remains the only option. Increased demands to reduce cost have led to the development of new training methodologies. The important goal of any method or program is to ensure that quality training is achieved.

With advances in computing power over the last few years, the ability to develop and run interactive media applications has advanced tremendously. Today's desktop and even laptop computers have the computational power, speed, and storage capacity to handle content-intensive multimedia software applications. Parallel with the gains in computing technology have also come rapid advances in training mediums available to instructors. This field of newly developed training mediums has become filled with terms: computer-based training (CBT), computer-based instruction (CBI), computer-assisted learning (CAL), online learning, multimedia instruction, and digital multime dia instruction, to

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name a few. Each of these terms and existing training systems put a slightly different spin on the same basic theme (Lyras, 2000).

Advances in technology have allowed developers to create CBT applications that include the full range of multimedia content: graphics, animation sequences, high quality digital images, sound files, and video segments. CBT can be used in many ways in the context of training; to simulate the task environment (simulation), to take over low-level or routine tasks (tools), to manage the logistics of education (Computer Managed Instruction "CMI"), to administer tests and keep the scores (Computer-based Assessment "CBA"), to facilitate educational research, and also to provide instruction and training to seafaring cadets and crewmembers (Muirhead, 1995).

In addition, the ability to combine a wide variety of multimedia content is a great advantage to increasing retention of new knowledge. Today's multimedia capable PCs allow developers to take advantage of the fact that people, as educational research indicates, learn 20% of what they see, 40% of what they see and hear, and 70% of what they see, hear, and do (Muirhead, 2000). If that is the case, the combination of computers, networks, and multi-media capabilities is clearly a formidable educational tool. Thus, to create a complete multi-sensory learning program is to allow students to interact with the material, and to learn according to their own needs, pace, and learning styles.

A subset of CBT programs is based on simulations of the real world. Simulation-based programs usually have lower physical fidelity than reality (or Full Mission Simulator, "FMS"). They often provide a more abstract, functional simulation rather than mimi cking the exact physical properties of the task environment. Moreover, most CBT systems are quite straightforward branching systems, the trainee being presented with some domain knowledge followed by a number of questions or exercises to make sure that he/she

has understood the information presented and can apply it in different contexts or environments. The errors trainees might make are foreseen, and feedback or remediation is pre- programmed.

Most CBT programs are relatively brief, and deal with only well-structured domain, because the major goal is to teach specific tasks or knowledge efficiently. Hence, CBT systems are designed for a specific domain and a specific group of trainees. They are often based on the knowledge of experienced lecturers in the domain, rather than on theories of instruction. In addition, technical issues are important; for example, CBT systems must respond rapidly, be attractive to trainees, and run on affordable, widely available computers (Larkin & Chabay, 1992).

There are many reasons for using CBT in MET institutions such as to: reduce the variability of instruction, educe the requirements for the presence of instructors, make training available at any time to match student availability, provide training in remote areas where instructors are unavailable. Another factor to consider when developing and using a computer-based training application is the dynamic content of the course material. If the course material requires frequent updates to remain current, or student training would benefit from frequent updates of the training material content, then computer-based training has an advantage over written course materials. Key changes and updates can easily be edited into CBT applications. Depending on the specific CBT utilized, developers can then post updated applications to their course website, or distribute updated versions of the software package. Thus, users then have immediate access to the most current training information.

Teaching and learning English also has become easier with the development of technology and digital platforms. These now offer the opportunity to improve English language skills. This means that if we have a machine for teaching English, perhaps we do not need any English teachers in the classroom, or English education (Shin, 2018). Therefore, English education need not be replaced by the Fourth Revolution. Instead of that the development of an English class model using Artificial Intelligence should work in collaboration with the English teaching and learning process. Language literacy and digital literacy are a neat combination to improve global competence.

Teaching English for special purposes or English for Specific Purposes (ESP) usually begins to be taught at the Vocational High School level and even up to the Doctoral level. Vocational colleges engaged in maritime science education cannot be separated from the implementation of ESP. One of the courses is Maritime English, especially in the Nautical and Engineering study programs. The Nautical and Marine Engineering Study Program curriculum is a derivative of the IMO Model Course 7.03 for Nautical and 7.04 for Marine Engineering. Specifically for the Maritime English course, the basic material is taken from the IMO Model Course 3.17.

It is important to have an effective communication in workplace to ensure the goals. An effective communication is also important at sea life. It will be good to build the relationship among the crews. As it is known that in a ship, there will be some differences among the crews. It is including differences on the background, cultural and language. Therefore, International Maritime Organization (IMO) in

Standard of Training Certification Watchkeeping (STCW) established English as official language used in Maritime industry.

Maritime English is a specialized communication skill that is critically important in the global maritime industry. It ensures safety, efficiency, and effective collaboration among seafarers from diverse linguistic and cultural backgrounds (Sartini, 2018; Sirbu & Alibec, 2023). As the primary language used in navigation, inter-vessel communication, and port and international shipping operations, proficiency in Maritime English is essential for operational effectiveness (Barus & Simanjuntak, 2023). The global maritime industry relies heavily on English as its lingua franca, emphasizing its significance for safe and efficient ship operations (Simanjuntak et al., 2023). English serves as the international working language in various contexts such as ship-to-ship and ship-to-shore communication and among maritime personnel (Rosiana et al., 2023).

Proficiency in Maritime English is also crucial for the recruitment and performance of ship crew members. Crew members are required to have skills in Maritime English to meet international standards, with spoken English, or Standard Marine Communication Phrases (SMCP), being accepted for use at sea (Sudewo, 2023). The necessity for Maritime English resources and materials has been emphasized in various conferences and projects related to Maritime Education and Training (MET) (Ismail et al., 2020).

For ship machinery students, the need for proficiency in Maritime English is even more significant. They must understand the technical terminology used in machinery and ship technology, communicate effectively in emergency situations, follow safety instructions, and collaborate with international crews. Maritime

English is divided into General Maritime English (GME) and Specialized Maritime English (SME) for Deck Officers, Engineering Officers, and Electro technical Officers (International Maritime Organization, 2015). The International Maritime Organization (IMO) stresses the importance of seafarers' knowledge of maritime terms, highlighting the necessity for students to understand these specialized terminologies (Smirnov et al., 2023). Developing language skills in a maritime context aid in technical knowledge acquisition, broadens professional perspectives, and facilitates effective communication in a multicultural environment (Dirgeyasa, 2018; Đurović & Vukičević, 2022).

To conduct effective Maritime Education and Training (MET), institutions must adhere to IMO guidelines. For example, IMO Model Course 7.04 outlines competencies required for officers in charge of engineering watch, including maintaining a safe engineering watch, proficiency in English, and the operation of various machinery and control systems. Additionally, Maritime English courses are based on IMO Model Course 3.17, which is divided into GME and SME (Wahl & Kongsvik, 2018). Achieving the desired training outcomes requires well-designed course outlines and syllabi, necessitating a needs analysis to develop appropriate materials (Wahl & Kongsvik, 2018).

Dudley-Evans and St John describe ESP as a distinctive pedagogical approach that emphasizes specific learner needs and recognizes their subject-matter expertise (Hyland, 2000). Furthermore, the disparity in English language proficiency among instructors highlights the necessity for targeted training programs to meet the specific requirements of English for Academic Purposes (EAP) instructors (Husan & Shakur, 2023).

Maritime English needs analysis has primarily focused on the nautical or deck department, revealing the "necessities, lacks, and wants" of Maritime English (Aeni et al., 2018). However, there is a notable gap in research specifically addressing the needs of the engineering department or ship machinery students. The differing work environments and language requirements between nautical and engineering officers necessitate a focused needs analysis for ship machinery students. This research aims to conduct a comprehensive needs analysis of Maritime English for ship machinery students, addressing typical language content and components they must master for their future careers as seafarers. This analysis will guide the development of specialized instructional materials that align with their specific professional needs, ultimately enhancing their competence and contributing to the overall safety and efficiency of maritime operations.

Sea transport is considered as one of the most vital and dangerous sectors of the world economy; therefore, the safety of seafarers, cargo and ships is a top priority for the shipping industry. Seafarers are expected to go through a Maritime English learning phase. For this purpose, English for Special Purposes (ESP) is a recognized approach in meeting the needs of the global industry. In contrast, English is accepted as a common language of communication in the maritime industry

ESP is an English teaching approach where the things taught and the teaching methods are based on why the learner wants to learn English. ESP is divided into EAP (English for Academic Purposes) and EOP (English for Occupational Purposes). If the purpose of EAP is learning English for academic purposes and needs, then EOP is learning English for work and training purposes

or needs. ESP is built based on EGP (English for General Purposes) and is designed to prepare English language learners who are used in certain disciplines and occupations to achieve certain goals.

By implementing CBT in English for specific purpose learning is believed to be able to help the seafarer candidates to learn better and achieve educational goals more effectively. So, it's not surprising that currently many innovations and breakthroughs are being and will be applied to support the learning process to make it more practical and effective.

This research is driven by the recognition of the critical importance of Maritime English within the maritime industry, particularly for ship machinery students who face unique challenges that differ from those encountered by their nautical counterparts. The current educational resources predominantly offer General Maritime English, which does not cater specifically to the needs of ship machinery students, underscoring the necessity for a thorough needs analysis to develop appropriate materials.

Based on these assumptions, the researcher is interested in conducting a study entitled **"COMPUTER BASED TRAINING MODEL FOR ENGLISH MARITIME COURSE OF THE SEAFARER CANDIDATES"**.

1.2. The Identification of Problems

Based on the background of the study, this research identifies three research challenges to be investigated, they are:

1. The positioning of English in the IMO Model Course 7.03 and 7.04 is very clear that English, both spoken and written, is needed as a means of

communication about safety at sea. It was also explained that the IMO Model Course 7.03 and 7.04 are the minimum standard in general English mastery which includes maritime terminology and English in terms of the use of maps and publications related to other nautical sciences.

2. The need for proficiency in Maritime English for seafarers, they are required must be able to understand the nautical and technical terminologies used in machinery and ship technology, communicate effectively in emergency situations, follow safety instructions, and collaborate with international crews.

1.3. The Limitation of Problems

Regarding to the identification of problems above previously, the researcher limits this study on these following problems only:

1. Developing Computer based Training (CBT) model to gain the seafarer candidates' recognition towards English Maritime course.

2. Developing Computer based Training (CBT) model to be used by the seafarer candidates in English Maritime course.

3. Developing Computer based training (CBT) to increase the seafarer candidates' motivation and proficiency in English Maritime course.

4. Computer based training (CBT) model used in this study is used as the bridge to master English Maritime profiency for the seafarer candidates.

1.4. The Problems of the Study

From the explanation of the introduction, the main problems which identify the specific inquiries of this study are as follows:

1. What are the objective conditions of the current English Maritime course teaching and learning process at Vocational School (SMK) Pelayaran Samudera Indonesia Medan?

2. How is the design of Computer-based Training (CBT) model for English Maritime course teaching and learning of the seafarer candidates at Vocational school (SMK) Pelayaran Samudera Indonesia developed?

3. How was the validity level of Computer-based Training (CBT) model to meet the seafarer candidates' needs in English Maritime Course learning at Vocational school (SMK) Pelayaran Samudera Indonesia from the experts' point of view?

4. How was the practicality level of Computer-based Training (CBT) model to meet the seafarer candidates' needs in English Maritime Course learning at Vocational school (SMK) Pelayaran Samudera Indonesia from the users' point of view?

5. How was the effectiveness level of Computer-based Training (CBT) model to meet the seafarer candidates' needs in English Maritime Course learning at Vocational school (SMK) Pelayaran Samudera Indonesia Medan?

1.5. The Objectives of the Study

In line with the problems of the study, the objectives of this study are :

1. To investigate the existing model implemented by teachers in English Maritime Course learning at Vocational school (SMK) Pelayaran Samudera Indonesia Medan,

2. To develop Computer-based Training (CBT) model to meet the seafarer candidates' needs in English Maritime course learning at Vocational school (SMK) Pelayaran Samudera Indonesia Medan,

3. To explain the validity level of Computer-based Training (CBT) model to meet the seafarer candidates' needs in English Maritime course learning at Vocational school (SMK) Pelayaran Samudera Indonesia Medan,

4. To elaborate the practicality level of Computer-based Training (CBT) model to meet the seafarer candidates' needs in English Maritime course learning at Vocational school (SMK) Pelayaran Samudera Indonesia Medan,

5. To investigate the effectiveness level of Computer-based Training (CBT) model to meet the seafarer candidates' needs in English Maritime course learning at Vocational school (SMK) Pelayaran Samudera Indonesia Medan.

1.6. The Significances of the Study

The findings of this study are expected to have both theoretical and practical significances as intended in the following:

1. Theoretically, the findings of the study are expected to add up new horizons to the ESP learners especially in English Maritime Course.

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2. Practically, the findings are expected to be useful for:

a) For Teachers

The result of this study, the teachers are expected will gain confidence in using technology as a teaching tool. By incorporating Computer based Training (CBT) Model into their lessons, teacher will expand their digital literacy and became more adept at integrating innovative tools into their pedagogy, which enriched their teaching practices.

b) For Students

The result of this study, the Students will show measurable improvements in English Maritime course, as in the Computer based Training (CBT) model provide personalize learning paths, adapting to each student's individual needs. This personalize approach allow students to progress at their own pace, which led to better retention and application of new words.

c) For the students at vocational school of Merchant vessel and engineering of merchant vessel programs

The result of this study will give positive impact on seafarer candidates' coompetence in English Maritime course , because Computer based Trainng (CBT) gives insights features, data-driven recommendations for optimization, and long-term learning outcomes to support future developments.

d) The other researchers

The other researchers, it is hoped that the result of this research will preserve an overview of studies on opportunities, challenges, and

recommendations for future research which focusing on specific educational outcomes.

1.7. The Limitation of the Terms

There are some related terms that can be defined in this study, namely:

1. Computer based Training (CBT)

    Computer-based training (CBT) is a form of learning that uses computers to deliver educational content. It has gained recognition as a popular way to learn new skills or improve existing ones. Computer-based training (CBT) for seafarers is a way to educate seafarers using technology. CBT can be used to teach seafarers a variety of skills, including survival techniques, firefighting, and first aid. CBT can also be used to teach seafarers how to reduce their environmental impact.

2. English Maritime

    Maritime English is a specialized form of English used in the maritime industry. It's also known as Standard Maritime Communication Phrases (SMCP) or sea speak. Maritime English is also an umbrella term which refers to the English language used by seafarers both at sea and in port and by individuals working in the shipping and shipbuilding industry.

3. Model

    The definition of model in this study is a pattern or conceptual framework which is used as the guidance to plan and realize a process in order to achieve the existed objectives.

4. IMO (International Maritime Organization)

IMO is the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships. IMO's work supports the UN sustainable development goals.

5. Seafarer

A seafarer can be defined as literally being someone who is employed to serve aboard any type of marine vessel. This usually refers to active seafaring workers, but can be used to describe a person with a long history of serving within the profession.

6. SMCP (Standard Marine Communication Phrases)

SMCP is a set of phrases that are used to help ensure safety at sea and to avoid misunderstandings. The International Maritime Organization (IMO) developed the SMCP to standardize the language used for navigation at sea, in ports, and on-board ships, to help prevent accidents caused by language barriers, and to cover all major safety-related verbal communication.

7. STCW (Standards of Training, Certification, and Watchkeeping)

STCW is an international convention that sets standards for training, certification, and watchkeeping for seafarers. STCW training includes Personal safety and social responsibility, Personal survival techniques, Marine firefighting, fire prevention, and Elementary first aid.

8. Development

Development is a process that produces a detailed systemic product which finally evaluated to have the valid, practical and effective product.