Polimarlish.id, a game-based learning website to meet the standard marine communication phrases proficiency

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Article Info

ABSTRACT

Previous studies suggested that game learning method could assist students in improving English proficiency. However, Gen Z students in a semi-military maritime vocational school had a lack of motivation to enrich their maritime English mastery because of their many non-academic activities. The goal of this study was to present polimarlish.id as an alternative game learning medium to enhance maritime English phrases, vocabulary, and idioms through interactive game-learning such as matching pictures, matching sounds, jumbled words, and fill-in-the-blank. This website was developed by considering various types of games and details of the user experience, such as giving clear instructions, attaching real pictures, and using a native sound speaker. Therefore, in order to evolve this game-based learning website, the researcher also gained data by taking observations, conducting interviews, and delivering questionnaires. The data was analyzed using a Likert scale. A total of 85.71% of 28 participants agreed that polimarlish.id could enhance their maritime English standard marine communication phrases (SMCP) proficiency.

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1. INTRODUCTION

English has become the prevailing universal language for maritime communication owing to its extensive utilization and acknowledgment in the maritime sector. The international maritime organization (IMO) highlights the significance of standardized communication protocols to guarantee safety and avoid accidents at sea. This theory was put forward in the standards of training, certification and watchkeeping for seafarers (STCW) convention 1978 as amended in 1995 [1] and safety of life at sea (SOLAS) 1974 of the IMO [2]. It stated that English is used as a global language to communicate among crew members to maintain safety and avoid work accidents. Standard marine communication phrases (SMCP) are a standardized set of phrases and vocabulary employed in maritime communication, and it is accessible in several languages, with English being the most prevalent. Maritime institutions of higher education have organized SMCP teaching and learning as part of their curriculum to meet IMO model course 3.17 [2].

In order to become a professional seafarer, cadets or seafarer candidates need to master a good competency in English, including maritime English SMCP proficiency, for conducting both sea and shore-based duties. Furthermore, they need to pass the Marlins test as proof that they are qualified for maritime English proficiency [3]. Marlins test has been chosen by many vessels to seek qualified ship crews regarding IMO requirements [4]. The Marlins test already has a standard score to be passed, which is as important as the

test of English as a foreign language (TOEFL) test score. Each company has already set the Marlinss score standard, which is averagely 70–75 for a fresh seafarer [5].

Maritime English SMCP, as a branch of English for specific purposes (ESP), has been used in the maritime industry sector, including engineering, shipping, navigation, and related activities. Effective communication in the maritime industry is essential for ensuring the safety of crew members, passengers, and vessels. Miscommunication due to language barriers can lead to accidents, collisions, or other dangerous situations. Consequently, Politeknik Maritim Negeri Indonesia (Polimarin) has already put maritime English SMCP study on their curriculum to provide high-quality sources

The implementation of SMCP learning in Polimarin has been run well by applying IMO model course 3.17 and some varieties of teaching strategies, such as student group discussion and the case study method. Monotonous learning activities in the context of student group discussion affect the cadets motivation to improve the SMCP skill [6]. Polimarin's engineering cadets tended to get sleepy during discussion. Some of them just kept quiet when the class started to discuss a topic. Some teaching techniques, such as Kahoot! and Quiziz were also implemented to attract students' attention. Moreover, the implementation of Kahoot and Quiziz was limited to measuring student understanding and was used as a refresher. These learning strategies were not yet able to assist the cadets in developing their maritime English proficiency. Among 12 engine cadets who took the Marlins test in 2022, the average Marlins test score was 57.2. This result did not meet the professional seafarer provision since the standard minimum Marlins test score provided by the ship operator is 70.

In order to meet the standard minimum Marlins test score, cadets should master the maritime phrases and idioms as stated in the SMCP. SMCP (Maritime English) as part of the ESP attracts the learner's intention toward the language and communication needs in the maritime field. A recent study reported that games offer better retention and increase students' engagement and interaction in the classroom, which are worth the time [7]. It could overcome the boredom and negative classroom atmosphere and also increase retention of learning material. However, implementing games should consider the student's needs and the characteristics of maritime English.

As a requirement of STCW convention, SMCP defines simple and clear phrases, idioms, and instructions utilized by vessel crew in some scenarios. It covers nautical and engineering fields, including watchkeeping reports, climate, manuals, operation guides, claims, conventions, engine rooms, and regulations on seaports. SMCP is implemented to communicate between ship-to-shore, shore-to-ship, and ship-to-ship using radio communication [2]. In other words, SMCP is focused on the seafarer's ability to communicate competently at sea. Improving students' communication skills requires a multifaceted approach, such as mastery of vocabulary. Vocabulary plays a significant role in effective communication, which can boost seafarer candidates' confidence in their communication abilities [8]. Feeling equipped with the right words to express and share ideas can reduce miscommunication on board.

Teaching vocabulary to Gen-Z students must adapt to technologically advanced learning media since they were born in the digital era. The use of applications or digital media in classroom activities can enhance students' mastery of vocabulary and encourage them to develop their maritime English proficiency. Hence, a study promoted the idea that a digital game is a teaching innovation that works out vocabulary mastery problems [9]. Learners who engage in online vocabulary games tend to learn more effectively, retain the vocabulary longer, and recall more words compared to those who only participate in traditional face-to-face lessons without using the vocabulary games. Fun and interactive games like puzzles, matching words, or word association games could make learning enjoyable and engaging.

Therefore, effective communication on the vessel between multi-national crew members is not only determined by mastery of vocabulary but also listening skills. Listening skills are an integral component of effective communication, which must be mastered by seafarers. Teaching listening to semi-military students who lack motivation to learn English should be overcome using interactive and fun activities such as games. A study found that games could be used as an alternative strategy for enhancing students' listening skills [10]. Teaching listening using game strategy could give the students an experience of a learner-centered process. It would make them conscious of the learning process and absorb the material easily. Moreover, implementing games such as tic-tac-toe or matching pictures would create a crowd situation [10].

Hence, this study has developed a game-learning website that offers various types of games to help the seafarer candidates enhance maritime English SMCP proficiency. Polimarlish.id has applied various types of game learning, such as matching pictures, matching sounds, jumbled words, and complete sentences. The use of matching pictures and words as a strategy to enrich the vocabulary of cadets, especially in the context of SMCP, is a practical and effective approach. Matching picture and word games often involve a wide range of words, which can help them learn new vocabulary. This exposure to new words can enhance their overall English vocabulary. A theory [11] states that matching pictures to words engages visual memory. It helps them to remember the vocabulary associated with specific objects or concepts. This is particularly useful in the

maritime field, where many items and terms are specific to that context. While matching sound with word is often used to improve students' pronunciation and listening abilities, this approach involved associating the spoken or phonetic representation of a word with its written form [12].

While the studies [11], [13] recommended jumbled word games as the most effective games used in the classroom to improve vocabulary, spelling, and grammar. A theory recommended e-modules as a teaching medium to deliver material to the students [14], [15]. It assisted the students critical thinking and help them in learning independently. However, e-modul was just a media which delivered material. Teachers still needed another learning platform to encourage students' attention such as Kahoot! or quiziz to make the teaching learning process lively. Moreover, the researcher believed that teaching process would be better if it presented as a unified whole teaching media in the form of educational game-learning website. The learning website should not only deliver material but also present interactive learning process [16]. This idea had encouraged researchers to develop a platform that presents Maritime English lsearning material as well as educational fun learning website named polimarlish.id.

The goal of this study was to develop a game-based learning website to enhance Maritime English proficiency and encourage student's motivation in learning Maritime English. Semi-military students who tended to get sleepy during classroom activity need an enjoyable and interactive media to comprehend Maritime English proficiency. Consquently, the learning materials on this website were developed in accordance with the provision of IMO model course 3.17.

2. METHOD

This study utilized the research and development (R&D) approach proposed by Borg *et al.* [17] which applied seven steps method in developing product, namely i) identification regarding research information; ii) planning and designing; iii) developed preliminary product; iv) preliminary field testing; v) main product revision; vi) operational product revision; and vii) operational product field testing which elaborated and described the finding according to questionnaires and interview data from participants. The participants of this study were 28 participants from the 3rd semester of marine engineer department students of Politeknik Maritim Negeri Indonesia.

Data was analyzed using data collecting technique. This study used questionnaires and interview method which were analyzed in form of descriptive qualitative analysis [18]. The interview result would be elaborated to support the data and gain deeper insight about their experience in accessing polimarlish.id.

The content validation of this study was also obtained from an expert [18] were the stages of data analysis in the qualitative. The researcher delivered 10 questionnaires and open-ended questions to 28 respondents. The data result was analyzed by using likert scale method [19]. Likert scales gather numeric data on subjective traits, which can be summarized and visualized like other quantitative data [20]. The highest score would be given 5 who strongly agreed with the statement. In the event of a substantial disagreement with the statement, individuals would receive a score of 1, representing the lowest possible rating. The neutral response was assigned a value of 3. Therefore, to describe the validation of the content, the calculation of product validity was categorized using validation criteria, see Table 1 [21].

Table 1. Validation criteria

Percentage	Criteria
76-100	Valid
56-75	Valid enough
40-55	Less valid
0-39	Invalid

3. RESULTS AND DISCUSSION

In this study, we developed website as a game-learning media to enhance student's maritime English proficiency. The primary focus of this study was on three key aspects: the demands of students, the process of product development, and the quality of the product's content. With these aspects in mind, the following sections present the results of our investigation into each of these areas.

3.1. The demands of students

Based on the students' open-ended questionnaires, the findings indicated that the students required an enjoyable teaching tool to enhance their motivation in developing their proficiency in Maritime English. Polimarlish.id provided an interactive educational platform that facilitated a full learning experience in the field of Maritime English. Polimarlish.id utilized technological advancements to develop immersive educational settings that accommodate diverse learning methods and preferences. The cadets held the belief

that polimarlish.id had the potential to enhance their proficiency in Maritime English SMCP. The games offered on this game-learning website were not only enjoyable but also delivered high-quality content, often consisting of Marlins exam questions. Hence, a significant majority of 85.71% out of the 28 participants expressed agreement with the notion that polimarlish.id has the potential to augment their motivation in enhancing their proficiency in maritime English SMCP.

Cadets of the Polimarin engine who engaged in several activities had a greater inclination towards acquiring knowledge of Maritime English SMCP through gamification as opposed to traditional instructional approaches. They stated that they maintained motivation to complete all game stages in order to accomplish the objective. The resources provided on polimarlish.id aided in enhancing their Maritime English vocabulary, particularly in the matching photos game portion. Associative memory was enhanced by the presence of pertinent images and words, facilitating the effortless retrieval of new terms. Language learners utilise visual associations with vocabulary to enhance their understanding of word meanings through the use of specific images [22]. Polimarlish.id has prepared a collection of images pertaining to new vocabulary in the context of Maritime English SMCP. Additionally, cadets can derive greater satisfaction from completing the game task compared to traditional methods such as reading the entire text.

3.2. Product development process

In the initial phase of this study, the researcher conducted a comprehensive examination of relevant literature pertaining to the notion of game-learning websites, Maritime English SMCP content, and games that have the potential to enhance the competency of Maritime English cadets. In addition, the researcher also noted the student's conduct during the process of learning English. The observation revealed that a majority of students experienced drowsiness during a repetitive task due to their excessive engagement in non-academic activities. As a result, our study created an educational website that offers an enjoyable online learning experience.

During the second phase, the researcher established the game categories that were deemed appropriate for implementation among learners at the high-education level. The researcher additionally took into account the game activity that is in line with the learning objectives and addresses the special requirements of maritime students, including the acquisition of Maritime English vocabulary, phrases, idioms, and the development of the students' listening skills. Furthermore, the researcher made the decision to employ several techniques such as matching pictures, matching words, matching sounds, jumbled words, and fill in the blank. Multiple research [23], [24] have indicated that enhancing vocabulary through real-life images is advantageous as it facilitates learners' acquisition and retention of vocabulary. The act of associating words with pictures has been found to enhance memory retention. Visual information is frequently more ingrained in the human brain than to text.

The development of these games involved the establishment of concise and straightforward rules and instructions, hence facilitating ease of play for cadets. Hence, similar to other prevalent educational websites, polimarlish.id has been furnished with a registration portion, a dashboard including learning objectives, and a gaming section. In addition, the researcher also took into account the game's layout, user interface, and user experience. The websites Polimarlish.id were developed on the NICEPAGE platform. The website employs a straightforward layout to facilitate convenient accessibility for students. Additionally, the researcher carefully chose images that will be utilized within the framework of Maritime English SMCP material.

Furthermore, the researcher made the decision to assign a score to the response. Every accurate response would receive a score of 100. The cumulative score will be displayed on the scoreboard. The content material was compiled by the researcher in accordance with the IMO Model Course 3.17 curriculum, as well as incorporating interview questions and questionnaires completed by the students.

During this phase, the researcher undertook the development of the hosting, domain configuration, and HTML framework for the gaming interface, encompassing elements such as layout, pictures, buttons, dashboard, scoreboards, and register page. The dashboard page comprised three primary components: the student's profile, the learning objective, and the game-learning site. In addition, the researcher employed a Wordpress builder and CSS style to implement color and font configurations, so augmenting the visual appeal of the website. Additionally, the researcher utilized a freely available cedit image for the webpage. The implementation of JavaScript logic game code on the website was crucial in order to enable dynamic gameplay. In addition, content resources were meticulously curated for each section of the game, incorporating both visual imagery and authentic audio elements.

The researcher ensured the preparedness of this website by adhering to the IMO Model Course curriculum for the engine department study program [25]. Polimarlish.id encompassed various subjects, including marine engine tools, safety equipment, surveillance, distress communication, and emergency scenarios. The contents were organized based on the level of expertise in Maritime English, with a specific emphasis on maritime vocabulary, phrases, idiomatic expressions, and grammatical structures.

Following the completion of the initial version of the product, polimarlish.id underwent testing with a sample of 10 participants who were chosen at random. The individuals accessed the website polimarlish.id

and engaged in gameplay by adhering to the provided instructions. Upon the conclusion of all chapters, participants were instructed to complete the assessment sheet. Additionally, the researcher sought the evaluation of polimarlish.id from the professionals. The participants were instructed to assess the product by considering its content and website. The student's evaluation outcome and the expert's recommendation were utilized to enhance and modify the product.

During this phase, the researcher made revisions to the product based on the assessment results provided by the student and the comments provided by the expert. It was utilized to ensure the objectivity of the product. The purpose of this revision was to ascertain the value of the product. Through product revision, the researcher has the potential to mitigate minor errors that may have arisen during field testing, such as navigation errors on the fill-in-the-blank game site. In addition, the researcher sought professional recommendations pertaining to the content material. The specialists validated the content materials.

The last phase was undertaken with the aim of improving the functionality and usability of the website. This stage determined the readiness of the generated product for use. The researcher completed the modification of the designed product as a final outcome. Polimarlish.id underwent pagespeed insights testing to assess its website performance (see Figure 1). The findings indicate that the mean performance score was 80. The accessibility score was recorded as 81. In the interim, the SEO score obtained was 77. In conclusion, the product demonstrated a performance level of 80%, indicating its suitability for implementation as an educational tool.
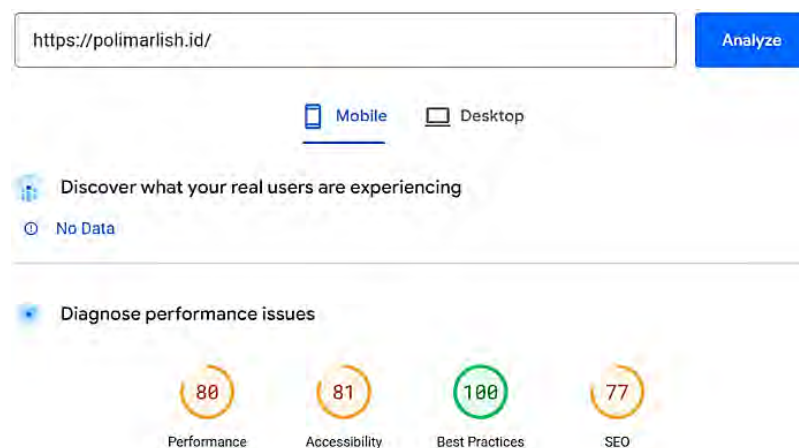

Figure 1. Website performance

This process was used to assess whether a created product or teaching instrument was prepared enough to be utilized by the students without the guidance. Consequently, in order to be completely prepared for usage in operations, the researcher tested the operational model's validity. The suggested material and media expert verified the generated medium. Following that, each participant evaluated the interactive website that had been created. Hence, this step was a last evaluation and confirmation that the produced product had improved. Clear and effective instructions on a website are essential to ensure that users can navigate and interact with the site without confusion. Polimarlish.id was fulfilled with plain language instruction. The researcher avoided complex language to keep it simple and clear. The cadets agreed that the instruction was easy to be followed.

Moreover, as mentioned above, cadets faced displeased experience in playing matching sound and fill the blank section. When some of them looked frustrated, the researcher tried to regulate their emotion by assissting and motivating them. By giving them a courage, they would not drop into negative situation [24]. To conclude, polimarlish.id has good accessibility for the user which may increase high engagement and satisfaction. As cited on Tsai *et al.* [25], integrating learning material into a game-based context can enhance student learning effectiveness. Having great experience in accessing the game could motivate them gaining better achievement.

3.3. Content quality
The objectives of IMO Model Course 3.17 are to develop the cadets' ability in establishing effective communication according their duties and responsibilities including in emergency and overall situation onboard [26]. Clear communication facilitates the efficient coordination of emergency response, enabling cadets and crew members to quickly assess the situation. Therefore, in order to gain the goal, this game-learning

website was provided materials such as safety equipment, emergency situation, job responsibilities onboard, and daily routine vocabulary whicih stated on it. Each topic was presented in a game stage which consisted some questions to be accomplished.

Furthermore, the content materials were validated by the experts by answering 10 questionnaires. The data was analyzed using Likert scale method. The data analysis result showed that the material provided in this website was valid since the percentage score was 96.7%. In addition, the quality of interactive games was calculated according to students' questionnaire. The result presented that total 85.71% of 28 participants agreed that polimarlish.id could enhance their maritime English SMCP proficiency. They believed that completing all stages of this game-learning website would encourage their motivation in mastery Maritime English proficiency.

4. CONCLUSION

Based on the feedback from both experts and cadets, it can be stated that polimarlish.id was a great alternative teaching media to enhance Maritime English ability. This media was provided Maritime English SMCP learning materials which are required by IMO. As an interactive game-learning website, polimarlish.id also allowed the students to be involved in improving their Maritime English skill. They were also encouraged to complete the tasks by themselves. In addition, this website did not only assist them in comprehend the material but also help them in evaluating the result since this game-learning website gave them direct feedback after completing the task. Moreover, polimarlish.id offers teachers powerful tools to engage students Maritime English skill and promote deeper learning. Teachers can also create dynamic and interactive learning environments that inspire curiosity, creativity, and academic achievement by implementing this game-learning website.

In a nutshell, polimarlish.id could be used as a tool to help cadets in learning Maritime English SMCP in fun way to overcome their law motivation. It presented edu-game learning which attached SMCP vocabularies and phrases. The cadets agreed that this website was more interesting comparing to conventional teaching method. The content materials were delivered as instructed on IMO model course 3.17. Polimarlish.id could be accessed independently without the teacher existence. Moreover, this edu-game learning must be developed with presence pictures to avoid ambiguity.

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