Development of Maritime English Learning Materials Based on IMO Standards for Navigational Communication Skills

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ABSTRACT

Effective communication is pivotal in the maritime industry, where safety and efficiency depend on clear interactions among crew members, ships, and shore-based stations. Maritime English, supported by the International Maritime Organization's (IMO) Standard Marine Communication Phrases (SMCP), serves as a universal framework to mitigate miscommunication risks in safety-critical scenarios. However, many maritime learners face challenges due to the technical complexity of the language, diverse linguistic backgrounds, and insufficient alignment of existing learning materials with IMO standards. This study adopts a library-based methodology to explore the development of Maritime English learning materials tailored for navigational communication. By analyzing existing literature, IMO documents, and instructional design principles, the research identifies critical gaps in current educational resources. The findings highlight the importance of task-based learning and multimodal resources, such as simulations and interactive exercises, to enhance learner engagement and practical application of Maritime English. Furthermore, integrating the SMCP into these materials ensures alignment with international standards, fostering clear and effective communication. The study contributes to maritime education by proposing innovative, standards-based learning materials that bridge the gap between theoretical knowledge and real-world application. These resources aim to equip seafarers with the linguistic proficiency and confidence required for effective navigational communication, thereby supporting global maritime safety and operational efficiency. The research outcomes also serve as a foundation for future advancements in specialized language training across other technical domains.

Keywords: *Learning Material Development, Maritime English, International Maritime Organization (IMO)*

1. INTRODUCTION

English serves as the cornerstone of maritime communication, acting as the lingua franca for global shipping and seafaring activities, (James et al., 2018). Its importance lies in ensuring that shipboard operations, navigational decisions, and emergency responses are carried out effectively, thereby reducing the risk of miscommunication that could lead to accidents or environmental damage. To address these needs, the International Maritime Organization (IMO) developed the Standard Marine Communication Phrases (SMCP) to standardize and simplify maritime exchanges, particularly in safety-critical scenarios,(Mujiyanto et al., 2023). However, many seafarers, especially those from non-English-speaking countries, face significant challenges in mastering Maritime English due to limited exposure, the technical nature of the language, and insufficiently practical learning materials. These barriers underline the need for new learning resources that align with IMO standards and focus on practical applications for navigational communication.

English proficiency is particularly critical in the context of maritime navigation. Navigation requires clear and precise communication among crew members, between ships, and with shore-based stations to ensure the safety and efficiency of operations, (Jurdzinski, 2018). The IMO's SMCP serves as a guideline for these interactions, providing seafarers with standardized phrases to avoid ambiguity and misunderstandings. Despite its importance, many existing Maritime English learning resources fail to adequately emphasize these practical communication needs, (Dirgeyasa, 2018). Instead, they often focus on general English or theoretical knowledge that lacks direct application to real-world maritime contexts. This disconnect highlights the pressing need to develop learning materials that are not only aligned with IMO standards but also tailored to the specific linguistic and operational requirements of navigational communication.

One of the primary challenges faced by seafarers in mastering Maritime English is the technical nature of the language. Unlike conversational English, Maritime English involves a specialized vocabulary and structure that can be difficult for non-native speakers to grasp, (Pejaković, 2015). This is further complicated by the fact that seafarers often come from diverse linguistic backgrounds, each with its unique grammatical structures and phonetics. As a result, the learning process becomes more complex, requiring tailored materials that address these specific challenges. Additionally, traditional teaching methods for Maritime English often focus on rote memorization rather than situational learning, limiting the ability of students to apply their knowledge in practical settings, (Čulić-Viskota & Denc, 2016). This gap underscores the need for instructional materials that incorporate real-world scenarios and task-based activities to enhance the learning experience.

Despite the critical role of English in maritime operations, existing learning materials often fall short in addressing the specific requirements of navigational communication skills. Most materials focus on general English proficiency without integrating the practical and technical aspects outlined by the IMO's SMCP. This gap leaves maritime students ill-prepared to handle real-world situations where precise and effective communication is essential, (Ziarati et al., 2011). Recognizing this issue, the study aims to develop Maritime English learning materials tailored to the navigational needs of students, grounded in effective instructional design principles and aligned with IMO standards. Through a comprehensive needs analysis, the research will identify linguistic and practical gaps, ensuring that the materials meet the specific demands of the maritime industry.

The development of Maritime English learning materials involves several key steps. First, a thorough needs analysis must be conducted to identify the specific communication challenges faced by maritime students and professionals. This analysis should include input from maritime educators, industry experts, and seafarers to ensure that the materials are both relevant and practical. The next step is to design the materials, incorporating task-based learning activities that simulate real-world navigational scenarios. These activities should be aligned with the IMO's SMCP to provide learners with practical skills that they can directly apply in their professional roles. Finally, the materials must be pilot-tested and evaluated to measure their effectiveness in improving learners' communication skills. Feedback from these evaluations can be used to refine and enhance the materials further.

The significance of this study lies in its potential to enhance the quality of Maritime English education and support global maritime safety. By providing innovative and standards-based learning materials, the research aims to bridge the gap between theoretical knowledge and practical application, (Saridaki, 2023). The materials will not only improve the linguistic proficiency of maritime students but also equip them to perform effectively in safety-critical scenarios. Additionally, this study will inform future research and development in Maritime English education, serving as a model for integrating international standards into specialized language training. By aligning

maritime training with global best practices, the study contributes to the preparation of competent seafarers capable of navigating the complex demands of the maritime industry.

The study also addresses the broader implications of improving Maritime English proficiency. Effective communication is a cornerstone of maritime safety, as it reduces the risk of misunderstandings that can lead to accidents, delays, or operational inefficiencies, (Chowdhury et al., 2024). By equipping seafarers with the skills to communicate clearly and confidently, the research supports the IMO's mission to enhance safety and environmental protection in the maritime industry. Furthermore, the development of specialized learning materials can serve as a blueprint for other sectors that require technical English proficiency, such as aviation or engineering, broadening the impact of this research.

Another significant aspect of this research is its emphasis on task-based learning. Unlike traditional approaches that focus on grammar and vocabulary in isolation, task-based learning emphasizes the application of language skills in context. This approach is particularly effective for Maritime English, as it allows learners to practice real-world scenarios such as giving navigational commands, responding to emergencies, or coordinating with port authorities, (Liton, 2021). By simulating these situations in a controlled learning environment, students can build their confidence and competence, ensuring they are better prepared for the challenges of their profession.

In conclusion, this study addresses a critical need in maritime education by developing learning materials that are both practical and standards-based. By focusing on navigational communication skills, the study aims to enhance the linguistic proficiency and operational competence of future seafarers, contributing to safer and more efficient maritime operations. The findings of this research will not only benefit maritime students and educators but also have far-reaching implications for the industry as a whole, supporting global efforts to improve safety, efficiency, and environmental sustainability in maritime operations.

Maritime English and Its Importance
Maritime English is a specialized branch of English used within the maritime industry to facilitate effective communication among seafarers from diverse linguistic backgrounds. Its components include both general English proficiency and technical terms related to maritime operations, (Bocanegra-Valle, 2012). Maritime English encompasses a range of communicative functions, from routine exchanges to safety-critical interactions, such as giving navigational commands, responding to emergencies, and coordinating with port authorities. These components are essential for maintaining safety and efficiency aboard vessels, particularly in multinational crews where clear communication is paramount.

The International Maritime Organization (IMO) has recognized the importance of standardized communication in maritime contexts and developed the Standard Marine Communication Phrases (SMCP), (Farjami Asst, 2024). The SMCP serves as a universal framework for maritime English, providing a set of predefined phrases designed to ensure clarity and consistency in communication. These phrases cover a wide range of scenarios, including navigation, cargo handling, and emergency response, and are intended to minimize the risk of miscommunication. The SMCP is particularly valuable in situations where linguistic proficiency varies, as it offers a common reference point for all seafarers.

Despite its importance, many seafarers face challenges in mastering Maritime English, particularly when it comes to applying the SMCP in real-world contexts. These challenges highlight the need for effective training and learning materials that focus on the practical application of Maritime English. By addressing these needs,

educators and researchers can contribute to safer and more efficient maritime operations, aligning with the IMO's goals of enhancing global maritime safety.

Navigational Communication Skills

Navigational communication is a critical aspect of Maritime English, encompassing the exchange of information necessary for the safe and efficient movement of vessels,(Franceschi, 2014). Key skills required for effective navigation communication include the ability to give and receive clear instructions, interpret navigational data, and respond to changing conditions in real-time. These skills are particularly important in high-pressure situations, such as avoiding collisions, docking, or managing emergencies at sea.

English proficiency plays a central role in navigational communication, as it serves as the medium for conveying critical information, (Andriana et al., 2018). Miscommunication in navigational contexts can have severe consequences, ranging from minor delays to major accidents. For this reason, the IMO emphasizes the importance of Maritime English training, particularly in the use of the SMCP. These standardized phrases provide a structured approach to communication, reducing ambiguity and ensuring that all parties involved can understand each other clearly.

In spite of the availability of the SMCP, many seafarers struggle to use these phrases effectively, often due to a lack of familiarity or confidence in their English skills. This issue underscores the need for targeted training that focuses on the practical application of navigational communication skills. By incorporating realistic scenarios and task-based learning activities, educators can help learners develop the competence and confidence needed to perform effectively in their roles.

Learning Material Development

The development of effective learning materials is a key component of Maritime English education, (Aminah & Refnaldi, 2020). Instructional design principles for language learning emphasize the importance of aligning materials with learners' needs, incorporating authentic content, and providing opportunities for practical application. For Maritime English, this means creating materials that reflect the specific linguistic and operational demands of the maritime industry.

Existing Maritime English learning materials vary widely in their quality and relevance, (Diahyleva et al., 2024). Some focus on general English proficiency, with limited attention to the technical aspects of Maritime English, while others are overly theoretical and fail to address the practical needs of learners. These limitations highlight the need for materials that balance linguistic accuracy with real-world applicability.

One highly effective approach to material development is project-based learning (PBL), which focuses on creating activities that immerse learners in real-life maritime scenarios, (Madoyan, 2016). This approach engages students by simulating tasks that reflect their future professional roles, thereby bridging the gap between theoretical knowledge and practical application. For example, learners can participate in activities such as giving precise navigational commands, responding swiftly and effectively to emergencies, or coordinating seamlessly with port authorities. These tasks are designed to mirror actual challenges faced in maritime operations, providing learners with hands-on experience in using Maritime English in context.

Project-based learning not only enhances linguistic proficiency but also cultivates critical problem-solving and decision-making skills. In high-pressure maritime scenarios, these skills are indispensable for maintaining safety and efficiency. By working on projects that require active participation and collaboration, learners can

develop a deeper understanding of Maritime English while simultaneously building their confidence and competence in its use.

Integrating the IMO's Standard Marine Communication Phrases (SMCP) into these activities further strengthens their relevance and effectiveness. The SMCP provides a standardized framework for maritime communication, ensuring clarity and reducing the risk of miscommunication. Through consistent practice with the SMCP in simulated scenarios, learners become familiar with these essential phrases and gain the ability to apply them confidently in their professional roles. This integration not only prepares learners for real-world challenges but also aligns their training with international maritime communication standards, supporting their readiness to operate in global maritime environments.

Another important consideration in material development is the use of multimodal resources, such as audio recordings, videos, and interactive simulations. These resources can enhance learners' engagement and provide opportunities for immersive practice. For example, a video simulation of a navigational scenario might allow learners to practice interpreting visual cues, responding to spoken commands, and using the SMCP in a realistic context. By combining different modes of learning, educators can create a more dynamic and effective learning experience.

Relevance of IMO Standards
The IMO plays a central role in maritime education, setting international standards for training and certification to ensure the safety and efficiency of maritime operations, (Dlabač et al., 2022). Through initiatives such as the International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers (STCW), the IMO establishes the competencies required for various maritime roles, including proficiency in Maritime English.

The integration of IMO standards into maritime training is essential for preparing seafarers to meet the demands of the global industry,(Kumar & Rajini, 2023). The SMCP, in particular, provides a practical framework for maritime communication, addressing both routine operations and emergency scenarios. By incorporating these standards into learning materials, educators can ensure that learners acquire the skills and knowledge needed to comply with international regulations.

In addition to its contributions to training, the IMO's emphasis on standardization supports the broader goals of maritime safety and environmental protection. Effective communication is a cornerstone of these efforts, as it enables seafarers to coordinate their actions, respond to emergencies, and navigate complex operational environments. By aligning learning materials with IMO standards, educators can help learners develop the competence and confidence needed to contribute to these objectives.

The relevance of IMO standards also extends to the development of assessment tools, which play a critical role in evaluating learners' progress and ensuring the effectiveness of training programs. By designing assessments that reflect the competencies outlined in the SMCP, educators can provide learners with meaningful feedback and identify areas for improvement. These assessments can also serve as a benchmark for evaluating the quality of learning materials, ensuring that they meet the high standards required for maritime education.

2. RESEARCH METODOLOGY

Research Design
This study employs a library study methodology, focusing on the systematic collection, review, and analysis of existing literature and documents related to

Maritime English, navigational communication, and IMO standards, (Rajaram, 2015). The library study approach is particularly suitable for this research as it allows for an in-depth examination of theoretical frameworks, instructional design principles, and the integration of IMO's Standard Marine Communication Phrases (SMCP) in Maritime English education.

Data Collection Methods
The data for this study will be gathered from a wide range of secondary sources, including:
1. Books and Academic Journals: Peer-reviewed articles, textbooks, and academic publications focusing on Maritime English, navigational communication, and instructional design will be reviewed to identify key concepts, principles, and existing practices.

2. IMO Documents and Publications: Official IMO publications, such as the SMCP, the International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers (STCW), and other guidelines, will be analyzed to understand their relevance to Maritime English education.

3. Theses and Dissertations: Previous academic works related to Maritime English and language education will be reviewed to identify gaps in the existing research and potential areas for contribution.

4. Industry Reports and Manuals: Reports and manuals from maritime training institutions, shipping companies, and other stakeholders will be analyzed to understand practical applications and challenges in Maritime English training.

Data Analysis Methods
The data collected from the above sources will be analyzed using a qualitative approach, focusing on the following steps:
1. Content Analysis: The collected documents will be systematically reviewed to identify recurring themes, concepts, and principles relevant to the research objectives. Particular attention will be given to the integration of IMO standards in learning materials and the instructional design approaches used.

2. Comparative Analysis: The study will compare different approaches to Maritime English training and identify best practices based on their alignment with the IMO's SMCP and their effectiveness in addressing navigational communication needs.

3. Synthesis of Findings: The insights gained from the analysis will be synthesized to provide a comprehensive understanding of the current state of Maritime English education, the challenges faced by learners, and the opportunities for improving learning materials.

Reliability and Validity
To ensure the reliability and validity of the findings, the study will:
1. Use Credible Sources: Only reputable and authoritative sources, such as peer-reviewed journals, official IMO publications, and industry reports, will be included in the analysis.

2. Apply a Systematic Review Process: The data collection and analysis process will follow a structured framework to minimize bias and ensure consistency.

3. Cross-Validate Findings: Insights from different sources will be cross-validated to confirm their accuracy and relevance.

Scope and Limitations

While the library study approach provides a comprehensive understanding of the theoretical and practical aspects of Maritime English education, it is limited by the availability of up-to-date and relevant literature. Additionally, this methodology does not involve primary data collection, which may limit the ability to capture the perspectives of current maritime students and educators. However, these limitations are mitigated by the extensive use of diverse and credible secondary sources.

3. FINDINGS AND DISCUSSION

Research Findings
The findings of this study, derived from an extensive review of literature and documents, highlight several critical aspects of Maritime English education, navigational communication, and the integration of IMO standards. These findings are summarized as follows:

1. Challenges in Maritime English Education:
The literature reveals that many maritime students and professionals face significant challenges in mastering Maritime English. These challenges stem from a lack of familiarity with technical terminology, limited exposure to practical applications, and insufficient alignment of existing learning materials with IMO's SMCP.
The diversity of linguistic backgrounds among seafarers further complicates the learning process, as learners often struggle with the nuances of English pronunciation, grammar, and vocabulary.

2. Importance of Navigational Communication Skills:
Effective navigational communication is crucial for maintaining safety and efficiency in maritime operations. The review highlights that miscommunication in navigational contexts often results from inadequate training in using standardized phrases, particularly the SMCP.
Several studies emphasize the need for practical, scenario-based training to help learners develop the confidence and competence to handle real-world situations.

3. Best Practices in Learning Material Development:
The findings identify project-based learning as a highly effective approach for Maritime English education. This method involves creating realistic scenarios that allow learners to practice using Maritime English in context, such as giving navigational commands or responding to emergencies.
Multimodal resources, including audio recordings, videos, and interactive simulations, are recognized as valuable tools for enhancing engagement and retention. These resources provide learners with opportunities to experience authentic communication scenarios, bridging the gap between theoretical knowledge and practical application.

4. Alignment with IMO Standards:
The integration of IMO's SMCP into learning materials is highlighted as a key factor in ensuring their relevance and effectiveness. The SMCP provides a standardized framework that reduces ambiguity and fosters clear communication, particularly in high-pressure situations.
The review underscores the need for assessments that align with IMO standards, enabling educators to evaluate learners' proficiency in using the SMCP accurately and confidently.

Discussion
The findings of this study underscore the critical importance of aligning Maritime English education with the practical needs of the maritime industry and the standards established by the IMO. The challenges identified, such as linguistic diversity and the technical nature of Maritime English, highlight the need for innovative instructional approaches that prioritize practical application and learner engagement.

Addressing Challenges in Maritime English Education
To overcome the challenges faced by learners, educators must develop materials that are both accessible and contextually relevant, (Haqimin Mohd Salleh et al., 2019). The use of project-based learning and multimodal resources offers a promising solution, as these approaches enable learners to practice real-world scenarios in a controlled environment, (Ngadiso et al., 2021). For example, simulations of navigational communication scenarios can help learners develop the skills needed to interpret visual cues, respond to spoken commands, and use the SMCP effectively.

Enhancing Navigational Communication Skills
The findings emphasize the importance of focusing on navigational communication as a core component of Maritime English education,(Hellystia & Budiwaty, 2023). By incorporating scenario-based training and standardized phrases, learners can gain the confidence and competence needed to communicate effectively in high-pressure situations. This approach not only enhances individual proficiency but also contributes to the overall safety and efficiency of maritime operations.

Developing Effective Learning Materials
The best practices identified in the literature provide a roadmap for developing effective Maritime English learning materials,(Sari & Sari, 2020). These materials should be designed to align with IMO standards, ensuring their relevance and applicability to real-world maritime contexts. Additionally, the use of assessments that reflect the competencies outlined in the SMCP can help educators measure learners' progress and identify areas for improvement.

Implications for Maritime Education
The integration of IMO standards into Maritime English education has far-reaching implications for the maritime industry, (Ziarati et al., 2009). By equipping seafarers with the skills to communicate clearly and confidently, educators can support the IMO's mission to enhance global maritime safety and efficiency. Furthermore, the development of innovative learning materials can serve as a model for other sectors that require technical English proficiency, broadening the impact of this research.

4. CONCLUSION

The findings and discussion of this study underscore the urgent need for a strategic and comprehensive approach to Maritime English education. The challenges identified, including linguistic diversity, technical complexity, and the disconnect between theoretical knowledge and practical application, highlight the necessity for targeted interventions. By focusing on practical application, educators can bridge the gap between classroom learning and real-world maritime operations, ensuring that learners acquire not only linguistic proficiency but also the confidence and competence to use Maritime English effectively in safety-critical scenarios.

Aligning learning materials with IMO standards, particularly the Standard Marine Communication Phrases (SMCP), is a cornerstone of effective Maritime English education. The SMCP provides a universal framework for clear and unambiguous communication, addressing the diverse linguistic backgrounds of seafarers and minimizing the risk of miscommunication. By integrating these standards into learning resources, educators can create materials that are both relevant and impactful, equipping learners to meet the demands of the global maritime industry.

Moreover, the incorporation of best practices in instructional design, such as task-based learning and the use of multimodal resources, plays a pivotal role in enhancing learner engagement and retention. Realistic simulations, interactive exercises, and scenario-based tasks provide learners with hands-on experience, allowing them to practice and refine their skills in a controlled environment. These approaches not only improve linguistic proficiency but also foster critical thinking and decision-making skills essential for maritime professionals.

The implications of this study extend beyond individual learners to the broader maritime industry. Effective Maritime English education contributes directly to global maritime safety, efficiency, and environmental protection. By preparing seafarers to communicate clearly and confidently, this study supports the International Maritime Organization's mission to enhance safety and operational standards in the maritime sector. Furthermore, the findings and methodologies of this research can serve as a foundation for future studies and innovations in Maritime English education, paving the way for continuous improvement in training and instructional design.

In conclusion, a strategic approach to Maritime English education that emphasizes practical application, learner engagement, and alignment with IMO standards is essential for addressing the challenges faced by today's maritime professionals. By adopting these principles, educators and training institutions can enhance the quality of Maritime English training, contributing to the safety, efficiency, and success of the global maritime industry.

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