

# Enhancing Environmental Awareness and Sustainable Communication Skills in Maritime Education

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**Abstract.** This research study investigates the integration of environmental perspectives and sustainable communication skills into the Standard Campus Communication Phrase (SCCP) program at Sekolah Tinggi Ilmu Pelayaran - Jakarta. In alignment with the theme of Environmental Perspectives in Maritime Education and the sub-themes of teaching sustainable maritime practices and techniques, integrating environmental education into maritime curriculum, promoting awareness of maritime environmental issues among students, and the role of English language education in promoting maritime environmental awareness, this study aims to prepare maritime cadets for excellence in communication while fostering environmental consciousness. The maritime industry faces escalating environmental challenges, necessitating a proactive approach in equipping cadets with both effective communication skills and an understanding of sustainable practices. Leveraging the researcher's expertise in culture, literature, English for Specific Purpose (ESP), English as a Second Language (ESL), and Maritime English, this research focuses on sustainable maritime cadets and their preparation for effective communication. The research adopts a comprehensive mixed-methods approach, encompassing surveys, classroom observations, communication skills assessments, and content analysis of SCCP materials. The primary objectives are to assess the current state of environmental awareness among maritime cadets, evaluate the effectiveness of SCCP in improving communication skills, and examine the integration of environmental perspectives within the SCCP curriculum. The findings of this study will significantly contribute to maritime education by highlighting the pivotal role of English language instruction in promoting sustainable communication skills and environmental consciousness. The research outcomes will provide invaluable insights to educators, curriculum developers, and policymakers involved in maritime education. By preparing cadets to excel academically and professionally while emphasizing effective communication and environmental stewardship, this research aims to produce maritime graduates who are not only proficient in English but also equipped to navigate the environmental complexities of the global maritime industry.

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## 1 Introduction

The maritime industry, as a cornerstone of global trade and commerce, plays an indispensable role in the global economy. It facilitates the movement of goods across the world's oceans, connecting nations and enabling the exchange of resources [1,2]. However, this vital industry is facing a growing concern, one that transcends economic considerations: the environmental impact of its activities. The effects of maritime operations on the environment are profound and far-reaching, including air and water pollution, habitat destruction, and the release of greenhouse gases. As international efforts intensify to combat climate change and promote sustainability, the maritime sector finds itself at a crossroads, compelled to reorient its practices towards a more environmentally responsible course [3]. This emerges as a critical and timely topic of investigation. Recognizing the environmental challenges faced by the maritime industry and the pivotal role of education in addressing them, this research endeavours to examine the integration of environmental perspectives and sustainable communication skills into the Standard Campus Communication Phrase (SCCP) program at Sekolah Tinggi Ilmu Pelayaran - Jakarta. This research not only seeks to align itself with the overarching theme of environmental perspectives but also explores specific sub-themes that are integral to the maritime sector's sustainable future. These sub-themes include teaching sustainable maritime practices and techniques, integrating environmental education into the maritime curriculum, promoting awareness of maritime environmental issues among students, and acknowledging the role of English language education in fostering maritime environmental awareness.

The maritime industry faces a complex conundrum. While it is the lifeline of global trade, it is also a significant contributor to environmental degradation [4]. The emissions from ships, primarily sulphur dioxide, nitrogen oxide, and particulate matter, contribute to air pollution and have adverse health effects on both coastal communities and seafarers. The maritime sector is also responsible for the discharge of ballast water that can introduce invasive species, posing a serious threat to local ecosystems. Furthermore, oil spills and the release of hazardous materials during cargo operations have catastrophic consequences for marine life and coastal ecosystems. Perhaps the most concerning aspect is the role of the maritime industry in global climate change. Ships are responsible for a substantial portion of greenhouse gas emissions, and the International Maritime Organization (IMO) has been actively working to regulate and reduce these emissions [5]. The maritime sector must not only comply with existing regulations but also stay ahead of emerging environmental standards. Consequently, there is a pressing need for mariners to be well-versed in sustainable practices and environmental consciousness.

Maritime education is the foundation upon which the future of the industry is built. Historically, maritime education has primarily focused on technical skills, operational knowledge, and navigational expertise, often relegating environmental awareness and communication skills to secondary importance. However, this approach is no longer tenable in the face of escalating environmental challenges and the imperative for the maritime sector to transform itself into a sustainable industry. The maritime cadets, as the future custodians of the industry, find themselves at the nexus of this challenge [3]. They must navigate a multifaceted dilemma: they must be proficient in the English language, which serves as the global lingua franca of the maritime industry; they must possess environmental consciousness to address and mitigate the environmental challenges posed by their activities; and they must excel in communication, both for professional interactions and to convey environmental concerns effectively. This trifecta of skills – proficiency in English, environmental consciousness, and communication prowess – is essential for maritime cadets to be effective, informed professionals in an environmentally conscious industry.

The researcher embarks on this study with a unique and multidisciplinary background, drawing from culture, literature, English for Specific Purpose (ESP), English as a Second Language (ESL), and Maritime English [6]. Such a comprehensive expertise is well-suited to address the multifaceted challenges faced by maritime cadets. The integration of sustainable communication skills into maritime education necessitates a nuanced understanding of language, culture, and industry-specific knowledge. The scope of this research is dedicated to focusing on the development of sustainable maritime cadets and their preparation for effective communication. To achieve this, a comprehensive mixed-methods approach is employed. It encompasses surveys to gauge the current state of environmental awareness among maritime cadets, classroom observations to understand the practical application of environmental education, communication skills assessments to evaluate the effectiveness of the SCCP program, and content analysis of SCCP materials to determine the extent of environmental perspectives integration.

## 2 Literature review

In the context of the maritime industry, the integration of environmental perspectives and sustainable communication skills into maritime education is an emerging field of research and practice. The literature review presented here seeks to explore the foundational concepts, theories, and existing studies that underpin the rationale for enhancing environmental awareness and sustainable communication skills in maritime education.

### 2.1 Environmental Challenges in the Maritime Industry

The maritime industry's significant contribution to global environmental challenges is well-documented. Perhaps most prominently, ships are a notable source of greenhouse gas emissions, contributing to climate change. Sulphur dioxide, nitrogen oxide, and particulate matter emissions from ships are a major concern, leading to air pollution and

health issues in coastal regions. The industry is also responsible for ballast water discharges, which can introduce invasive species and disrupt local ecosystems. Oil spills from maritime accidents have devastating effects on marine life and coastal communities [7]. The environmental footprint of the maritime sector has prompted international and regional organisations to introduce stringent regulations and guidelines aimed at mitigating these impacts. The International Maritime Organization (IMO) has set out the International Convention for the Control and Management of Ships' Ballast Water and Sediments, the International Maritime Solid Bulk Cargoes Code, and the International Convention for the Prevention of Pollution from Ships, commonly known as MARPOL. These regulations and guidelines reflect a growing commitment to environmental sustainability in the maritime sector, compelling industry stakeholders to focus on environmental issues in education and training [5].

## **2.2 Maritime Education and Training**

Maritime education has traditionally focused on equipping cadets with the technical and operational skills required for navigating and managing vessels. These skills include navigation, ship handling, cargo handling, and emergency response. While this traditional approach remains crucial, there is an emerging recognition of the need to integrate environmental education into the maritime curriculum. The authors advocate for a comprehensive educational approach in maritime education that includes sustainability aspects [8]. They argue that maritime education should address the need for environmental awareness and stewardship, as cadets will inevitably encounter various environmental challenges during their careers. The study highlights the importance of integrating environmental education into maritime training and acknowledges the role of education in promoting sustainable practices in the maritime sector.

## **2.3 The Role of Communication in the Maritime Industry**

The importance of effective communication in the maritime industry cannot be overstated. The sector is characterised by diverse, multicultural crews working together on vessels, and clear communication is essential for safety, efficiency, and problem-solving. While maritime English has long been a focus of language instruction, its traditional scope has often excluded environmental communication. Effective communication skills are not only required for professional interactions within the industry but also for conveying environmental concerns and coordinating responses to environmental incidents. Some research emphasise the role of effective communication in preventing and responding to oil spills, one of the most environmentally destructive incidents in the maritime sector [9,10]. The study highlights the need for comprehensive training in environmental communication, as well as proficiency in the English language, for successful environmental management in the industry.

## **2.4 The Standard Campus Communication Phrase (SCCP) Program**

The Standard Campus Communication Phrase (SCCP) program is a well-established language education initiative in maritime institutions. Its primary focus has been on enhancing linguistic and communicative competence in English. However, there is a growing recognition of the need to adapt this program to encompass sustainable communication skills and environmental perspectives [11,12]. The author argues that the SCCP program should evolve to address the demands of the contemporary maritime industry, including environmental concerns. The study suggests that the SCCP program can be a strategic vehicle for promoting sustainable communication skills and environmental awareness. It underscores the potential of integrating environmental topics and scenarios into the SCCP materials, preparing cadets to communicate effectively about environmental issues in English.

## **2.5 Environmental Awareness and Maritime Education**

Environmental awareness is a cornerstone of any educational effort to promote sustainability in the maritime industry. Cadets need to understand the ecological and environmental consequences of their actions, as well as the global and regional regulations governing environmental protection. The importance of enhancing cadets' environmental awareness through curriculum development [13,14]. The study suggests that environmental content should be integrated into various subjects, emphasising the interconnectedness of environmental issues with other aspects of maritime knowledge.

## **2.6 Sustainable Maritime Practices and Techniques**

Teaching sustainable maritime practices and techniques is another critical component of maritime education. Cadets must learn how to navigate vessels in an environmentally responsible manner, minimise emissions, and respond to environmental incidents effectively [15]. The role of education in teaching sustainable maritime practices, calls for the integration of sustainability principles into the maritime curriculum and emphasises the need for hands-on training in sustainable ship operations.

## **2.7 English Language Education and Environmental Awareness**

The role of English language education in promoting maritime environmental awareness is fundamental. English is the primary language of communication in the maritime industry, and proficiency in English is essential for effective communication. Furthermore, many international environmental regulations and guidelines are published in English. Therefore, the development of specific language skills related to environmental communication. The study argues that cadets need to be equipped with the language proficiency to understand and communicate environmental regulations and to effectively participate in global environmental discussions. In the quest to enhance environmental awareness

and sustainable communication skills in maritime education, various research methodologies have been employed [16,17]. The most common approaches include surveys, classroom observations, communication skills assessments, and content analysis. Surveys are widely used to gauge the current state of environmental awareness among maritime cadets. They provide valuable insights into cadets' existing knowledge and attitudes towards environmental issues.

Classroom observations offer an opportunity to understand the practical application of environmental education. Observing how environmental topics are integrated into classroom teaching can reveal the strengths and weaknesses of the educational approach. Communication skills assessments aim to evaluate the effectiveness of language programs, such as the SCCP program, in enhancing communication skills, including sustainable communication. These assessments can reveal how well cadets are equipped to convey environmental concerns. Content analysis of educational materials, such as SCCP materials, is a critical step in determining the extent to which environmental perspectives are integrated into the curriculum. It helps identify the presence or absence of environmental content and its alignment with the goals of sustainable communication.

The literature reviewed here underscores the pressing need to enhance environmental awareness and sustainable communication skills in maritime education. The maritime industry's environmental challenges necessitate a proactive approach in preparing cadets to navigate the complexities of an environmentally conscious industry. Integrating environmental education into the maritime curriculum, promoting environmental awareness among students, and adapting language programs like the SCCP to incorporate sustainable communication skills are crucial steps towards this goal. As the maritime sector continues to evolve in response to environmental imperatives, education and training play a pivotal role in shaping a more sustainable and environmentally responsible industry. This literature review provides the foundation upon which this research is built, highlighting the significance of the chosen research direction and the need to address the multifaceted challenges faced by maritime cadets.

### **3 Methods**

This study employs a comprehensive mixed-methods approach, blending both quantitative and qualitative methods to offer a well-rounded investigation into the integration of environmental perspectives and sustainable communication skills within the Standard Campus Communication Phrase (SCCP) programme at Sekolah Tinggi Ilmu Pelayaran - Jakarta. The research is driven by the aim of understanding how this integration influences maritime cadets' environmental awareness and communication skills [15,18,19]. Qualitative data collected from classroom observations and content analysis will be analysed thematically. The thematic analysis will identify recurring patterns, themes, and insights regarding the integration of environmental perspectives and sustainable communication skills in maritime education. This qualitative analysis will provide depth and context to the quantitative findings. The mixed-methods approach adopted in this study aims to provide a comprehensive understanding of the integration of environmental perspectives and sustainable communication skills within maritime education [20]. By utilising both quantitative and qualitative data, the research aims to shed light on the current state of environmental awareness among maritime cadets, the impact of the SCCP programme on their communication skills, and the degree to which environmental perspectives are integrated into the curriculum. This robust methodology will facilitate a nuanced evaluation of the research objectives, contributing to a deeper understanding of the interplay between environmental education and communication skills in the maritime context.

### **4 Findings**

The findings of this research provide significant insights into the integration of environmental perspectives and sustainable communication skills in maritime education, specifically within the context of the Standard Campus Communication Phrase (SCCP) programme at Sekolah Tinggi Ilmu Pelayaran - Jakarta. The study's objectives centred on assessing the current state of environmental awareness among maritime cadets, evaluating the effectiveness of the SCCP programme in enhancing communication skills, and examining the extent to which environmental perspectives are integrated into the SCCP curriculum. The mixed-methods approach encompassed surveys, classroom observations, communication skills assessments, and content analysis of SCCP materials. The following section presents the research's key findings.

#### **4.1 Environmental Awareness Among Maritime Cadets**

The first research objective sought to assess the current level of environmental awareness among maritime cadets. The studies conducted as part of this study yielded insightful results. It revealed that while cadets demonstrated a reasonable understanding of general environmental concepts, such as climate change and pollution, there were significant knowledge gaps regarding specific maritime-related environmental issues. A substantial proportion of respondents displayed limited knowledge about ballast water management, marine pollution regulations, and the maritime industry's role in greenhouse gas emissions. This indicated the need for more targeted environmental education within the maritime curriculum. The studies also unveiled a positive trend in cadets' attitudes towards environmental stewardship. A majority of respondents expressed concern about the environmental impact of the maritime industry and a willingness to engage in sustainable practices. This willingness reflects an emerging environmental consciousness among maritime cadets, which presents a valuable foundation for further educational interventions.

## **4.2 Effectiveness of the SCCP Programme in Enhancing Communication Skills**

The second research objective focused on evaluating the effectiveness of the SCCP programme in improving communication skills, including sustainable communication skills, among maritime cadets. Communication skills assessments were conducted to gauge the cadets' proficiency in English and their ability to convey environmental concerns effectively. The results demonstrated significant improvements in linguistic proficiency and communicative competence, affirming the SCCP programme's efficacy in enhancing communication skills.

Moreover, the assessments indicated that cadets were increasingly capable of engaging in sustainable communication. They demonstrated the ability to discuss environmental issues, explain sustainability principles, and express ideas related to ecological awareness. This improvement underscored the adaptability of the SCCP programme in addressing the nuanced demands of environmental communication.

## **4.3 Integration of Environmental Perspectives within the SCCP Curriculum**

The third research objective sought to examine the extent to which environmental perspectives were integrated into the SCCP curriculum. Content analysis of SCCP materials revealed that environmental topics were present in the materials, albeit to varying degrees. While some materials contained comprehensive sections on maritime environmental issues, others featured minimal coverage. However, the analysis also indicated that environmental content within the SCCP materials was often dispersed throughout various modules, rather than presented as a dedicated segment. This scattered approach posed a challenge in achieving a cohesive and structured understanding of maritime environmental issues.

## **4.4 Qualitative Insights from Classroom Observations**

In addition to the quantitative findings, the qualitative insights gained from classroom observations enriched the research outcomes. These observations provided a deeper understanding of how environmental education was implemented within the maritime curriculum. The observations highlighted the dedication of instructors in integrating environmental perspectives into their teaching methods. Instructors utilised real-life scenarios, case studies, and industry-specific examples to enhance cadets' understanding of environmental challenges and sustainable practices.

Moreover, the observations revealed that environmental education was not confined to standalone environmental modules. Instead, instructors interwove environmental concepts into various subjects, demonstrating the interconnectedness of environmental issues with other aspects of maritime knowledge. This interdisciplinary approach was pivotal in fostering a holistic understanding of environmental awareness among cadets.

## **4.5 Synthesis of Findings**

The research findings converge to present a comprehensive picture of the integration of environmental perspectives and sustainable communication skills in maritime education. While cadets exhibited an emerging environmental consciousness and improved communication skills, the study revealed specific areas that necessitate attention and improvement.

The results indicate a need for more focused education on maritime-related environmental issues. Cadets should be equipped with in-depth knowledge of topics such as ballast water management, marine pollution regulations, and the maritime industry's contribution to greenhouse gas emissions. The findings highlight the importance of bridging these knowledge gaps to ensure that maritime professionals are well-informed and capable of addressing environmental challenges effectively.

The success of the SCCP programme in enhancing communication skills, including sustainable communication, underscores the adaptability of the programme. The improvements in linguistic proficiency and communicative competence demonstrated that cadets were increasingly capable of articulating environmental concerns. This indicates the SCCP programme's potential to serve as a platform for integrating sustainable communication skills within maritime education. Moreover, the qualitative insights from classroom observations emphasised the value of interdisciplinary teaching methods, where environmental concepts are seamlessly interwoven into various subjects, thus nurturing a holistic understanding of environmental awareness among cadets.

## **4.6 Implications and Recommendations**

The research findings have several implications for maritime education and industry stakeholders. To enhance environmental awareness and communication skills among maritime cadets, the following recommendations are proposed:

- **Integrated Environmental Education:** Maritime institutions should focus on a more comprehensive integration of environmental education within the curriculum. This entails addressing specific maritime-related environmental topics and ensuring a structured approach to teaching environmental awareness.
- **Interdisciplinary Teaching:** Instructors should continue to adopt interdisciplinary teaching methods that embed environmental concepts into various subjects. This holistic approach fosters a deeper understanding of environmental issues among cadets.

- **Review and Enhancement of SCCP Materials:** The SCCP programme's materials should be reviewed and enhanced to ensure more comprehensive coverage of environmental perspectives. A structured approach to integrating environmental content within the materials should be adopted.
- **Continuous Improvement:** Maritime institutions should engage in continuous assessment and improvement of environmental education initiatives. Feedback from cadets should be solicited to refine and adapt educational approaches.
- **Fostering Environmental Consciousness:** Efforts should be made to sustain and enhance the emerging environmental consciousness among maritime cadets. Environmental stewardship and sustainability principles should be embedded within the maritime culture.

This research has offered invaluable insights into the integration of environmental perspectives and sustainable communication skills in maritime education. The findings highlight the importance of addressing specific knowledge gaps, the effectiveness of the SCCP programme in enhancing communication skills, and the significance of interdisciplinary teaching methods. These findings are instrumental in shaping a more environmentally conscious and communicatively proficient cadre of maritime professionals. The research underscores the pivotal role of education in preparing maritime cadets to navigate the environmental complexities of the global maritime industry while promoting sustainability and effective communication.

## **5 Discussion and Implication**

The findings of this research, which examined the integration of environmental perspectives and sustainable communication skills in maritime education, carry significant implications for maritime institutions, industry stakeholders, and policymakers. This discussion delves into the implications of the research findings and their broader relevance in addressing the pressing environmental challenges faced by the maritime industry.

### **5.1 Implications for Maritime Education**

The study's findings underscore the need for maritime education to adapt and evolve in response to the environmental imperatives of the industry. Maritime institutions must recognise their pivotal role in shaping the future of the sector by preparing cadets to be environmentally conscious and proficient communicators. To this end, several implications for maritime education emerge:

- **Enhanced Environmental Education:** Maritime institutions should prioritise environmental education within their curricula, ensuring that cadets receive comprehensive training on maritime-related environmental issues. Bridging knowledge gaps related to ballast water management, marine pollution regulations, and greenhouse gas emissions is essential.
- **Structured Integration of Environmental Content:** The research indicates that environmental content within the Standard Campus Communication Phrase (SCCP) programme is sometimes dispersed throughout various modules. A structured approach to integrating environmental content within the curriculum should be adopted. This ensures that cadets receive a systematic and cohesive education on environmental issues.
- **Interdisciplinary Teaching:** The qualitative insights from classroom observations emphasise the value of interdisciplinary teaching methods. Instructors should continue to embed environmental concepts into various subjects, enabling cadets to understand the interconnectedness of environmental issues with other aspects of maritime knowledge.
- **Review and Enhancement of SCCP Materials:** The SCCP programme's materials should be reviewed and enhanced to ensure they provide more comprehensive coverage of environmental perspectives. The development of specific materials dedicated to environmental communication and sustainable practices can be instrumental in achieving this objective.
- **Continuous Improvement and Feedback:** Maritime institutions should engage in ongoing assessment and improvement of their environmental education initiatives. Cadet feedback should be actively solicited to identify areas for refinement and adaptation. This feedback loop ensures that educational approaches remain relevant and effective.

### **5.2 Implications for the Maritime Industry**

The maritime industry itself stands to benefit from the research findings. The emergence of environmentally conscious and communicatively proficient professionals can have far-reaching implications for the industry's sustainability and competitiveness:

- **Environmental Stewardship:** Maritime companies should recognise the potential of their workforce in becoming environmental stewards. The findings reveal an emerging environmental consciousness among cadets, and this consciousness can be harnessed to drive sustainable practices within the industry.

- **Effective Environmental Communication:** Effective communication is critical in addressing environmental issues. The enhanced communication skills, particularly in the context of environmental communication, can enable maritime professionals to convey environmental concerns, comply with regulations, and respond to incidents more effectively.
- **Global Competitiveness:** The research underscores the pivotal role of English language education in preparing cadets for the international maritime arena. Proficiency in English is not only essential for communication but also for understanding and participating in global environmental discussions and compliance with international regulations.

### **5.3 Implications for Policymakers**

The research findings have policy implications at both regional and international levels. Policymakers play a crucial role in shaping the regulatory environment and standards that govern the maritime industry's environmental practices:

- **Regulatory Enhancements:** Policymakers should consider the research findings when formulating and enhancing regulations related to environmental practices in the maritime sector. The emerging environmental awareness and communicative proficiency among maritime professionals may align with, and even exceed, future regulatory requirements.
- **International Collaboration:** The global nature of the maritime industry necessitates international collaboration on environmental regulations. Policymakers can leverage the research findings to emphasise the importance of language proficiency in international negotiations and discussions on environmental standards.
- **Support for Educational Initiatives:** Policymakers can support and incentivise educational initiatives aimed at enhancing environmental awareness and communication skills within maritime education. Recognising the role of education in creating environmentally conscious maritime professionals can lead to policies that promote sustainable practices.

### **5.4 Addressing Environmental Challenges**

The maritime industry is at a crossroads, facing escalating environmental challenges while continuing to serve as a linchpin of global trade. The research findings underscore the potential for maritime education to be a catalyst for positive change. By preparing cadets with a comprehensive understanding of environmental issues, strong communication skills, and linguistic proficiency, maritime institutions can contribute to a more sustainable and responsible industry. This preparation is particularly relevant in the context of global efforts to mitigate climate change and reduce the environmental footprint of the sector.

### **5.5 Preparation for the Future**

As the maritime industry continues to evolve, it must be prepared for a future in which environmental considerations are paramount. Maritime professionals, including cadets, play a vital role in shaping this future. The research findings point to the capacity of the SCCP programme and maritime education, in general, to foster environmentally conscious individuals who can actively contribute to sustainability within the industry. Maritime graduates who excel academically and professionally while emphasising effective communication and environmental stewardship are poised to become the leaders and influencers who will navigate the environmental complexities of the global maritime arena.

This research offers a comprehensive exploration of the integration of environmental perspectives and sustainable communication skills in maritime education. The implications of the research findings resonate with maritime education institutions, industry stakeholders, and policymakers. The emergence of environmentally conscious cadets with improved communication skills can contribute to a more sustainable and competitive maritime sector. The research highlights the need for targeted education on maritime-related environmental issues, structured integration of environmental content, interdisciplinary teaching, and continuous improvement. These implications underscore the pivotal role of education in preparing maritime professionals to address the environmental complexities of the global maritime industry while promoting sustainability and effective communication. The research's outcomes provide a solid foundation for advancing the environmental perspectives in maritime education, ensuring that the industry is well-equipped to face its environmental challenges in the years to come.

## **6 Recommendation**

The research conducted on the integration of environmental perspectives and sustainable communication skills in maritime education has yielded valuable insights that have far-reaching implications. To ensure the practical implementation of these insights, a set of recommendations is outlined here. These recommendations are designed to guide maritime education institutions, industry stakeholders, and policymakers in their efforts to enhance environmental awareness and sustainable communication skills within the maritime sector.

## **6.1 Recommendations for Maritime Education Institutions**

- **Enhance Environmental Curriculum:** Maritime education institutions should review and strengthen their environmental curricula to encompass a comprehensive understanding of maritime-related environmental issues. This includes topics such as ballast water management, marine pollution regulations, and the maritime industry's contribution to greenhouse gas emissions. The goal is to bridge knowledge gaps and ensure that cadets graduate with a well-rounded understanding of the sector's environmental challenges.
- **Structured Integration of Environmental Content:** The integration of environmental perspectives within the curriculum should be structured and systematic. Instead of dispersing environmental content throughout various modules, institutions should adopt a coordinated approach. This approach should include dedicated modules or courses specifically focused on environmental issues in the maritime context.
- **Interdisciplinary Teaching:** Instructors should continue to employ interdisciplinary teaching methods that interweave environmental concepts into various subjects. The emphasis should be on demonstrating the interconnectedness of environmental issues with other aspects of maritime knowledge. This approach nurtures a holistic understanding of environmental awareness among cadets.
- **Review and Enhancement of SCCP Materials:** Institutions offering the Standard Campus Communication Phrase (SCCP) programme should review and enhance their materials. These materials should include specific sections dedicated to environmental communication and sustainable practices. In this way, the SCCP programme can serve as a platform for enhancing sustainable communication skills within maritime education.
- **Continuous Improvement and Feedback Loop:** Institutions should engage in continuous assessment and improvement of their environmental education initiatives. Feedback from cadets should be actively sought to identify areas for refinement and adaptation. This iterative process ensures that educational approaches remain relevant and effective.

## **6.2 Recommendations for the Maritime Industry**

- **Leverage Environmental Consciousness:** Maritime companies should recognise the potential of their workforce in becoming environmental stewards. The research findings highlight an emerging environmental consciousness among cadets. This consciousness can be harnessed to drive sustainable practices within the industry. Companies should create an environment that encourages and rewards environmentally responsible behaviour.
- **Invest in Environmental Communication Training:** Effective communication is essential in addressing environmental issues. Companies should invest in training that focuses on environmental communication. This training should equip maritime professionals with the skills to convey environmental concerns, comply with regulations, and respond to incidents effectively.
- **Foster a Culture of Sustainability:** The maritime industry should foster a culture of sustainability. This includes incorporating sustainability principles into daily operations, establishing clear sustainability goals, and holding stakeholders accountable for environmental performance. The emergence of environmentally conscious professionals should be leveraged to support and drive sustainability initiatives.
- **Support Education Initiatives:** Industry stakeholders should actively support educational initiatives aimed at enhancing environmental awareness and communication skills within maritime education. This support can include partnerships with maritime institutions, funding for research and development of sustainable practices, and the provision of resources for educational materials.

## **6.3 Recommendations for Policymakers**

- **Regulatory Enhancements:** Policymakers should consider the research findings when formulating and enhancing regulations related to environmental practices in the maritime sector. The emerging environmental awareness and communicative proficiency among maritime professionals may align with, and even exceed, future regulatory requirements. Policymakers should be proactive in implementing regulations that encourage sustainable practices.
- **International Collaboration:** Given the global nature of the maritime industry, policymakers should encourage and facilitate international collaboration on environmental regulations. The research findings emphasise the importance of language proficiency in international negotiations and discussions on environmental standards. Policymakers should support international agreements and standards that promote environmental sustainability.
- **Incentives for Sustainable Practices:** Policymakers can introduce incentives for maritime companies that demonstrate a commitment to sustainable practices. These incentives may include tax benefits, reduced port fees for environmentally responsible vessels, and preferential treatment for companies that actively engage in reducing their environmental footprint.



- Support for Educational Initiatives: Policymakers should support and incentivise educational initiatives aimed at enhancing environmental awareness and communication skills within maritime education. Recognising the role of education in creating environmentally conscious maritime professionals can lead to policies that promote sustainable practices. Support can be in the form of grants, subsidies, and recognition of institutions that excel in environmental education.

The recommendations presented here are instrumental in transforming the research findings into actionable initiatives. Maritime education institutions, industry stakeholders, and policymakers have a pivotal role in advancing environmental perspectives and sustainable communication skills within the maritime sector. By embracing these recommendations, stakeholders can contribute to a more sustainable, environmentally responsible, and competitive maritime industry. As the maritime sector continues to evolve, education and training become critical instruments in shaping a cadre of maritime professionals who are well-prepared to address the environmental complexities of the global maritime industry while promoting sustainability and effective communication.

## 7 Conclusion

This research has undertaken a comprehensive exploration of the integration of environmental perspectives and sustainable communication skills in maritime education. The findings emanating from this study have shed light on the pivotal role of education in preparing maritime cadets for the multifaceted challenges presented by the contemporary maritime industry. The research revealed that maritime cadets possess a foundational understanding of general environmental concepts, underlining the nascent awareness of environmental issues. However, it also highlighted significant knowledge gaps regarding specific maritime-related environmental challenges, such as ballast water management, marine pollution regulations, and the maritime industry's contribution to greenhouse gas emissions. This calls for a more focused approach to environmental education within the maritime curriculum, addressing these knowledge gaps to equip future professionals with the expertise needed to tackle the sector's environmental challenges effectively.

Moreover, the effectiveness of the Standard Campus Communication Phrase (SCCP) programme in enhancing communication skills was demonstrated. Cadets exhibited improvements in linguistic proficiency and communicative competence, particularly in the context of environmental communication. This emphasises the adaptability of the SCCP programme to address the evolving demands of the maritime industry, where effective communication, especially concerning environmental matters, is paramount. The integration of environmental perspectives within the SCCP curriculum was also a subject of analysis. While environmental content was present in the materials, its coverage was inconsistent and often dispersed throughout various modules. This calls for a more structured approach to integrating environmental content within the curriculum, ensuring a cohesive and systematic education on maritime-related environmental issues.

Qualitative insights from classroom observations offered a deeper understanding of the practical implementation of environmental education. Instructors showcased their dedication to intertwining environmental concepts into various subjects, illustrating the interconnectedness of environmental issues with other aspects of maritime knowledge. This interdisciplinary approach was fundamental in fostering a holistic understanding of environmental awareness among cadets. The research's implications extend to maritime education institutions, industry stakeholders, and policymakers. These findings call for enhancements in the curriculum, structured integration of environmental content, interdisciplinary teaching, continuous improvement, and greater support for education initiatives. The maritime industry is encouraged to leverage the emerging environmental consciousness and enhanced communication skills of its professionals to foster environmental stewardship, effective environmental communication, and global competitiveness.

As the maritime sector continues to evolve, the research findings underscore the role of education in preparing maritime professionals to navigate the environmental complexities of the global maritime industry while promoting sustainability and effective communication. This research contributes to the growing body of knowledge in maritime education and sets the stage for future initiatives aimed at creating environmentally conscious, communicatively proficient, and globally competitive maritime professionals.

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