




# “Evaluating pedagogical approaches to enhance students’ comprehension in maritime English: The Norwegian case”

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# EVALUATING PEDAGOGICAL APPROACHES TO ENHANCE STUDENTS' COMPREHENSION IN MARITIME ENGLISH: THE NORWEGIAN CASE

## Abstract

This study aims to test and evaluate various pedagogical strategies that can improve students' comprehension of Maritime English course materials and help them confidently participate in English-based assessments. A comparative research methodology was employed, focusing on integrating specific strategies and tools into the curricula of maritime programs. The study focused on the Norwegian case at NTNU in Ålesund, featuring a 3-year Shipping Management program (Bachelor's degree) with 45-60 students.

The findings from the Norwegian case demonstrate a significant improvement in students' willingness and ability to engage in English-language assessments, highlighting the effectiveness of the pedagogical approaches implemented. The study results align with existing literature, highlighting the need for continuous innovation in pedagogical approaches to Maritime English education. By the end of the course, 72.2% of students felt comfortable taking the exam in English, compared to only 25.8% at the beginning of the semester. Weekly lectures in English with presentations were identified as the most helpful tool, followed by group work, homework, and vocabulary lists. The use of digital interaction and software tools received a high score – 8.0 out of 10.0. The significant improvement in students' confidence in English, along with their strong overall ratings of teaching tools, demonstrates the effectiveness of these methods in overcoming initial language barriers. Further recommendations include combining traditional teaching methods with modern digital tools to enhance learning outcomes. By focusing on student-centered approaches and integrating both traditional techniques and technological tools, institutions can foster the development of a more proficient maritime workforce.

**Keywords** global education, academic proficiency, maritime industry, maritime education and training

**JEL Classification** I21, I23, F60, O33

## INTRODUCTION

Globalization has profoundly influenced societies and communities worldwide, serving as a key driver of societal change. With the expansion of global trade, international regulations have fostered the mobility of services, capital, and labor. Driven by advancements in technology and transportation, globalization has not only reshaped economies but also interconnected the world more than ever before.

In particular, globalization has had a substantial impact on the maritime industry, transforming it into the backbone of the global economy. This shift has also greatly influenced European maritime education and training (EU MET) institutions. One of the most notable outcomes of globalization is the significant rise in both domestic and international mobility, especially within EU countries. Consequently, EU MET institutions have broadened their horizons, recruiting stu-



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dents from international and even global markets, extending beyond their traditional focus. The most successful institutions have emerged as global leaders, attracting students from across the world and offering programs in various countries. The EU Erasmus mobility program has further accelerated this process, providing institutional support for students, teachers, and institutions alike. As a result, the number of institutions offering English-language programs continues to grow, creating a competitive environment. It is clear that this trend will persist, favoring institutions that develop robust programs while penalizing those that fall behind. Throughout history, English maritime terminology has been a key global competency for ensuring sustainable mobility.

In global maritime education, the increasing integration of AI and digital platforms has become a key trend, reshaping the way students learn and interact with course materials. These advanced technologies play a pivotal role in enhancing the overall learning experience by offering interactive and engaging tools that foster deeper understanding. However, while technology is revolutionizing the educational landscape, proficiency in English and a strong command of maritime-specific vocabulary remain equally critical. English, as the lingua franca of the maritime industry, ensures that students can communicate effectively in a professional environment. Mastery of these linguistic skills is essential for students aspiring to become specialists in the field.

As the maritime sector becomes more interconnected and complex, the need for both technological and linguistic competencies is growing. Maritime educational institutions, therefore, have a dual responsibility: to equip students with the digital tools that enhance learning and to provide them with the language proficiency needed for global engagement. In particular, Norway's emphasis on maritime academic professionalization has become a cornerstone of lifelong learning, preparing students not only for the demands of the maritime industry but also for broader professional roles that extend beyond it.

Thus, this study aims to evaluate the effectiveness of various pedagogical approaches employed by Norwegian maritime education institutions in enhancing students' proficiency in English maritime terminology. It will focus on student-centered approaches and integrate traditional techniques and technological tools.

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## 1. LITERATURE REVIEW

Despite the rich cultural and historical heritage of maritime terminology, its practical applications remain critical today. As Dissanayake (2017) points out, English has become the lingua franca of maritime communication. The correct use of maritime terms in English is essential, particularly for radio communications, safety, shipping management, and education. However, as noted across multiple studies, there is a significant gap in research on pedagogical approaches to professionalize Maritime English (ME) teaching and improve communication skills in the industry.

In line with this, Türkistanli (2024) emphasizes that while the foundational requirements for MET (Maritime Education and Training) were set by the Standards of Training and Watchkeeping for Seafarers (STCW) Convention (IMO, 1978), mod-

ern advancements in education technologies and Industry 4.0 have surpassed the current regulatory framework. Türkistanli's study highlights the importance of modernizing MET regulations to better align with these advancements, particularly after disruptions caused by the COVID-19 pandemic. This notion supports the broader consensus that integrating both traditional and digital methods is essential for effective Maritime English education today. Similarly, Ismail et al. (2020) conducted a study focusing on improving Maritime English performance through content analysis of final exams and expert interviews. The study suggests that educational strategies should be tailored to meet diverse learning styles, aligning with the view that modern teaching approaches must accommodate different student needs.

The studies reviewed consistently emphasize the growing importance of proficiency in ME as a

critical skill. As Sia and Said (2019) argue, ME proficiency is crucial for students in marine-related undergraduate programs, especially for those in disciplines such as Marine Technology and Maritime Informatics Technology. They call for the integration of ME into curricula to better prepare students for both academic writing and professional maritime communication.

Enhancing students' reading comprehension is a key focus in Maritime English courses, as it directly contributes to their professional growth. Reading and understanding English texts is a multifaceted process that requires students to develop specific strategies. According to Block and Duffy (2008), comprehension involves an active, strategic process in which readers use text cues and their prior knowledge to generate and refine predictions, ultimately constructing the author's intended meaning. This strategic approach to reading is essential for maritime students as they navigate complex technical and professional texts. Incorporating maritime-specific vocabulary into learning activities tailored to students' professional needs is critical for success in the shipping industry. As Romanova (2011) emphasizes, these activities should align with the learners' proficiency levels and industry requirements. Equally important is the development of students' speaking abilities. Communicative competence refers to the ability to use language appropriately in various contexts, both academically and socially. Maritime English, as defined by Firth (1951), is a specialized form of English for Specific Purposes (ESP), which is tailored to the immediate, practical needs of learners in marine-related fields. It is built on authentic materials and encourages an active, process-oriented learning environment where students play a central role. Developing these communication skills is essential for maritime students to succeed both in their studies and in their future professional roles.

The same idea is supported by Alibakhshia et al. (2021), who emphasize the need for task-based language learning in marine engineering education, particularly through English for Specific Purposes (ESP). According to Brunton's overview, English for Specific Purposes (ESP) emerged as a distinct approach to language teaching in the 1960s, when it became evident that general English courses

often failed to address the specific needs and expectations of learners and employers. ESP was developed to meet these demands by focusing on the practical language skills required in particular professional or academic contexts. This shift emphasized the importance of tailoring language instruction to the unique requirements of specific industries or fields, such as Maritime English for the shipping sector, ensuring that learners could effectively communicate within their specialized environments. Alibakhshia et al. (2021) highlight the need for marine students to develop both receptive (listening, reading) and productive (speaking, writing) communication skills. In addition, collaboration between students and specialists in curriculum development is seen as essential for integrating real-world scenarios and intercultural communication, preparing students for the practical demands of the maritime industry. Similarly, Saridaki (2023) highlights the crucial role of Maritime English, particularly within the framework of English for Specific Purposes (ESP), which caters to the distinct needs of maritime professionals. Saridaki's study identifies four essential skills that should be included in a comprehensive ME course: reading comprehension, writing proficiency, oral communication, and cultural competence. By adopting a student-centered methodology, instructors can better meet the expectations of ME students and enhance their overall language proficiency. The focus on distance education during the pandemic further supports the relevance of incorporating flexible and adaptive teaching strategies in maritime education.

Further supporting the need for specialized training, James et al. (2018) focus on the role of Maritime English in ensuring safety at sea. Their research advocates for improved ME curriculum design and authentic teaching methods that meet internationally recognized standards. They emphasize that insufficient ME training can lead to communication failures, with serious safety implications in maritime operations.

Kulikova (2023) expands on this by discussing the importance of mastering maritime-specific vocabulary, noting that a lack of proficiency can jeopardize both safety and operational efficiency. The need for systematic approaches to teaching vocabulary tailored to professional needs aligns with

international standards, reinforcing the importance of continuous improvements in maritime education.

Wang (2023) highlights the current state of Maritime English education in vocational institutions and suggests reforms to improve student proficiency. His recommendations for overhauling curricula and adopting flexible teaching methods echo Yurzhenko et al. (2023), who advocate for the integration of digital tools such as videoconferencing and gamification to enhance the maritime education experience. These tools enhance the learning experience, foster independent learning, and prepare cadets for the dynamic maritime industry. Future research is encouraged to further explore the potential of virtual and augmented reality for maritime training.

Similarly, Şihmantepe et al. (2021) examine the impact of online role-playing on maritime students' communication skills in ship-based scenarios. The study highlights both the challenges and the advantages of teaching maritime communication online, ultimately concluding that minimum technological and methodological requirements are necessary for successful training.

In line with this, Limbong et al. (2022) investigate the effect of synchronous learning on ME proficiency through the Marlins platform. Their findings underscore the potential of online learning to improve fluency and technical communication skills in a seafaring context. Both studies suggest that continuous improvement in ME teaching is necessary to meet the industry's demands.

Moreover, the maritime sector is on the brink of a technological revolution, with many industries and companies undergoing significant digital transformations. Industry 4.0 is disrupting conventional approaches to living, learning, and working, prompting a reevaluation of teaching methods, skills, curricula, methodologies, techniques, and research in academic institutions (Kaka, 2022). The integration of emerging ICTs, advanced tools, and innovative facilities is essential for cultivating competencies that inspire students to devise solutions for present and future challenges (Chkoniya, 2021). Strengthening the relationship between academia and the corporate sector is increasingly critical for preparing maritime students for the labor market.

This is strongly in line with the thesis of the President of Kongsberg Maritime; he emphasizes that humans will always remain at the center when developing new technologies like autonomous ships. He highlights the importance of understanding the evolving roles and skills required in the future, such as multilingual communication, information security – including the protection of ships, negotiation skills – across different cultures and legal systems, and data analytics – extracting knowledge from various data sources (Oksavik et al., 2020).

Moreover, due to digitalization, providing education and training for future marine engineers has become more accessible through various e-learning platforms. Peng and Yu (2022) emphasize the critical importance of enhancing both basic digital skills and the ability to comprehend and utilize online content effectively. C. Audrin and B. Audrin (2022) offer a comprehensive overview of digital literacy in education, presenting potential research directions and a framework for integrating digital literacy into educational settings. Cabero-Almenara et al. (2023) suggest that digital competence among higher education students is a key predictor of academic success, noting that it significantly influences students' learning outcomes and their progression in subsequent classes.

Hence, by integrating linguistic and technological perspectives, maritime educational institutions can better prepare students for the demands of the global maritime industry. As the above-mentioned highlights, while ME is increasingly recognized as a crucial component of maritime education, there remains a need for continued research and innovation in teaching methods.

## 2. BACKGROUND AND PROBLEM STATEMENT

Shipping Management at NTNU in Ålesund is a full-time 6-semester Bachelor program that offers a broad range of courses in the fields of maritime economics, management, logistics, chartering, etc. In fact, the program has an international orientation. Thus, it prepares students for a career in the fast-growing global economy that requires greater attention to English language knowledge. In addi-

tion, the program is renowned for its strong ties with the industry, featuring guest lectures from industry experts, problem-solving cases co-developed with maritime professionals, and bachelor theses in the final year completed at various companies. Each year, 25-30 companies host shipping students for their thesis projects.

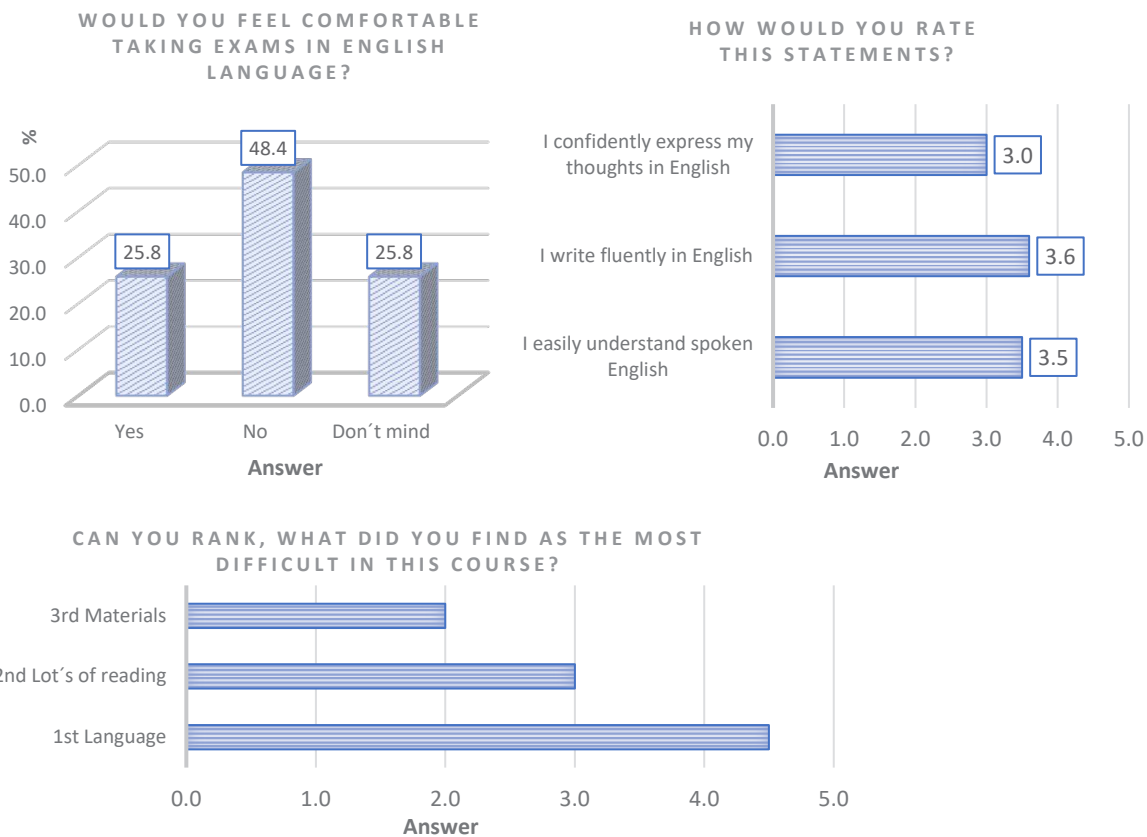
A Periodic Evaluation, as a part of the 5-year assessment of the BSc Shipping Management conducted in November 2020 at NTNU in Ålesund revealed that one of the main challenges students faced after graduation was effective communication in English with international partners, particularly in cases of procurement agreements and supplier negotiations. Consequently, from 2021 onward, it was decided to offer both the TS200214 Maritime Procurement and Supplier Relationship, and TS200314 Supply Chain and Transport Logistics courses in English to help students better grasp the specific terminology required in these fields.

However, the switch to English teaching was met with some hesitation, as many students preferred to take their exams in Norwegian, re-

flecting their usual practice of group communication in their native language. As a result, the project aimed to explore tools and methods to engage students in learning TS200214 Maritime Procurement and Supplier Relationship in English, with potential for skill transfer to TS200314 Supply Chain and Transport Logistics. The study objectives include evaluating different methods to enhance students' understanding of course content and motivating them to complete their exams in English.

### 3. METHODOLOGY

The TS200214 Maritime Procurement course is part of a 3-year Shipping Management bachelor program. The course has been taught in Norwegian since 2015, but since the 2021/2022 academic year, it is conducted in English. The course spans 14 weeks, each consisting of 3 teaching hours (45 minutes per session). The evaluation comprises two mandatory group assignments (40% of the total grade) and a 3-hour individual written exam (60%).



**Figure 1.** Mentimeter survey, status identification at the beginning of the course (2021)

The course content is divided into four main blocks:

- 1) introduction to procurement;
- 2) organization of procurement work;
- 3) strategy; and
- 4) analysis.

The cohort comprises 45-55 students, of whom 30+ regularly attend lectures. Most students have just graduated from the Norwegian upper secondary school or are exchange students. Classes are held in a room equipped with digital screens and traditional writing boards, designed to accommodate 55 students.

In early course evaluations, several students expressed concerns over the language barrier and requested exams in Norwegian. Additionally, the course had students of varying ages (ranging from 18 to 35 years), leading to significant differences in work experience and foreign language proficiency. A survey conducted during the first lectures revealed that students found the language switch the most challenging aspect of the course (Figure 1).

Four perspectives were considered to address these challenges (Table 1).

Considering the above mentioned work on four perspectives, several methods were selected for testing during the course:

1. Weekly lectures and Guest lectures from industry in English (aim: to improve listening skills).
2. Vocabulary work throughout the semester (aim: to improve understanding of the terminology).
3. PowerPoint presentations (aim: to improve reading skills).

4. Essay in English (aim: to improve writing skills).
5. Reflection on each other's essay in Padlet (aim: to improve critical thinking skills).
6. Digital interaction tools: Kahoot after each finished block (aim: to improve students' engagement).
7. Group assignments in the class (aim: to improve students' oral ability to actively participate in academic discussions).
8. Excel assignment (aim: practical implication of theoretical knowledge and simple software technics learning)
9. Semester group work submissions in English (aim: competence development to write reports).
10. Reference group meetings (aim: collecting student feedback during the course).

It is essential to clarify the practice of reference groups. At NTNU, it is a key method for collecting student feedback on course quality (NTNU, n/a). These groups, typically consisting of at least three students, represent the entire class and actively engage with fellow students to gather opinions about the course. The reference group collaborates with the course coordinator, holding meetings at the beginning, middle, and end of the semester to discuss learning activities, the environment, and course structure. At the end of the course, the group produces a report summarizing feedback and suggesting improvements, which becomes part of the course coordinator's final report. This process helps ensure ongoing course development and quality assurance; the evolution of these

**Table 1.** Four perspectives

Own experience	Students	Colleagues	Literature
Previous experience of teaching	Conversations with students on the situation and students' evaluation	Conversations and interviews with colleagues	Research literature exploring similar issues or methods
<i>Main idea:</i> to use previous experience on teaching in English that was done before at other universities	<i>Main idea:</i> to receive real-time feedback in the class and from the reference group	<i>Main idea:</i> to get some insights from colleagues who have experience of teaching in second language for Bachelor students	<i>Main idea:</i> to find some ideas/reflections on teaching in a second language ( <i>some theories are mentioned in the Literature Review</i> )

groups' representatives is also considered in this paper.

The effectiveness of these methods is further analyzed in the "Results and Discussion" section.

## 4. RESULT AND DISCUSSION

At the end of the TS200214 Maritime Procurement course, students were asked to evaluate the effectiveness of various teaching tools implemented throughout the semester, in particular:

- 1) vocabulary in English;
- 2) group and homework with presentations;

3) industrial and academic lectures in English; and

4) digital interaction tools.

Figure 2 shows how these tools helped students overcome language barriers.

A notable shift in confidence was observed by the end of the semester, when the majority of students felt comfortable taking the exam in English. This contrasts with the early weeks of the course, when many students had expressed concerns about their ability to complete exams in English (Figure 3). Importantly, the same tendency was traced during all teaching years (2021–2023).

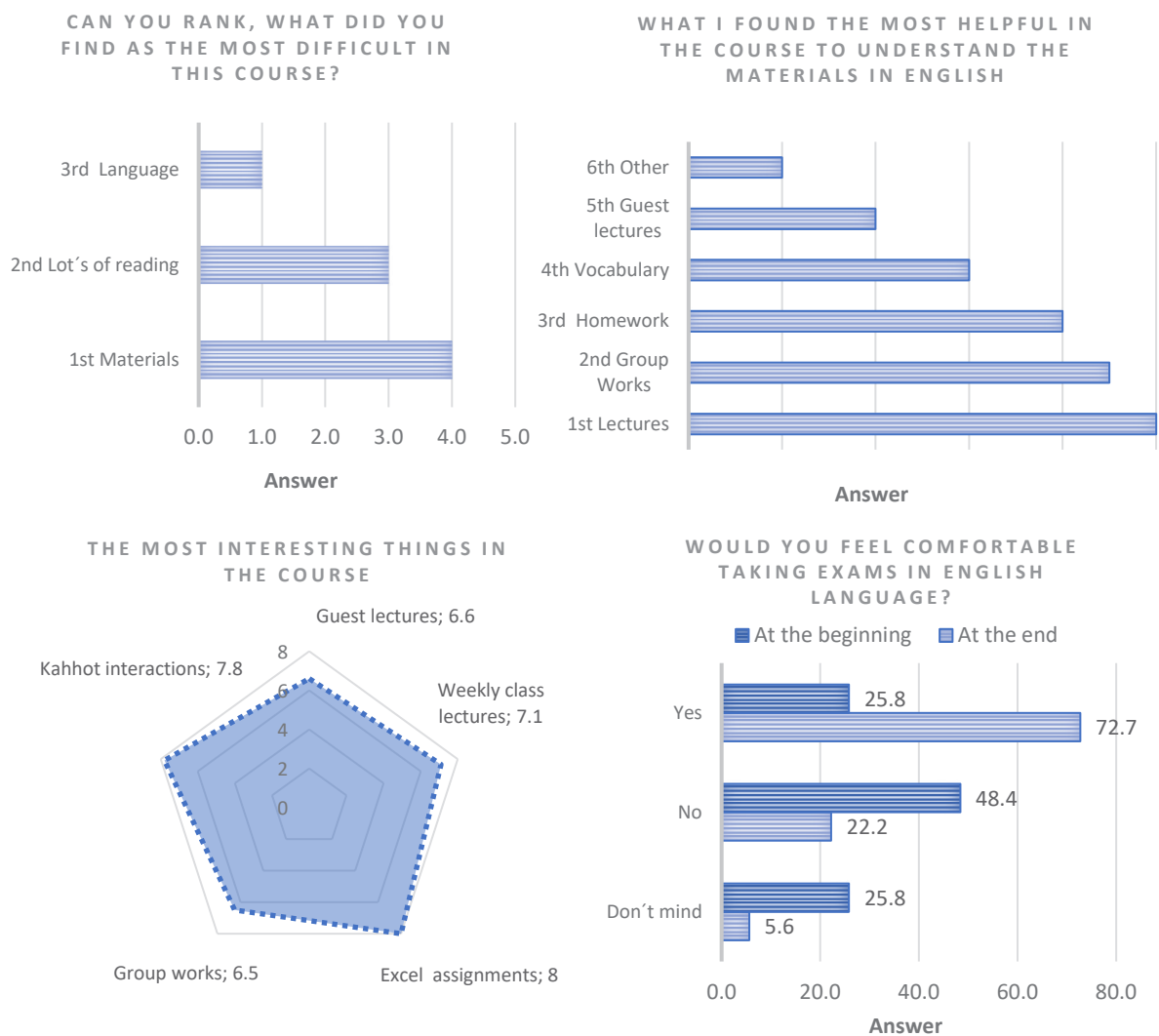
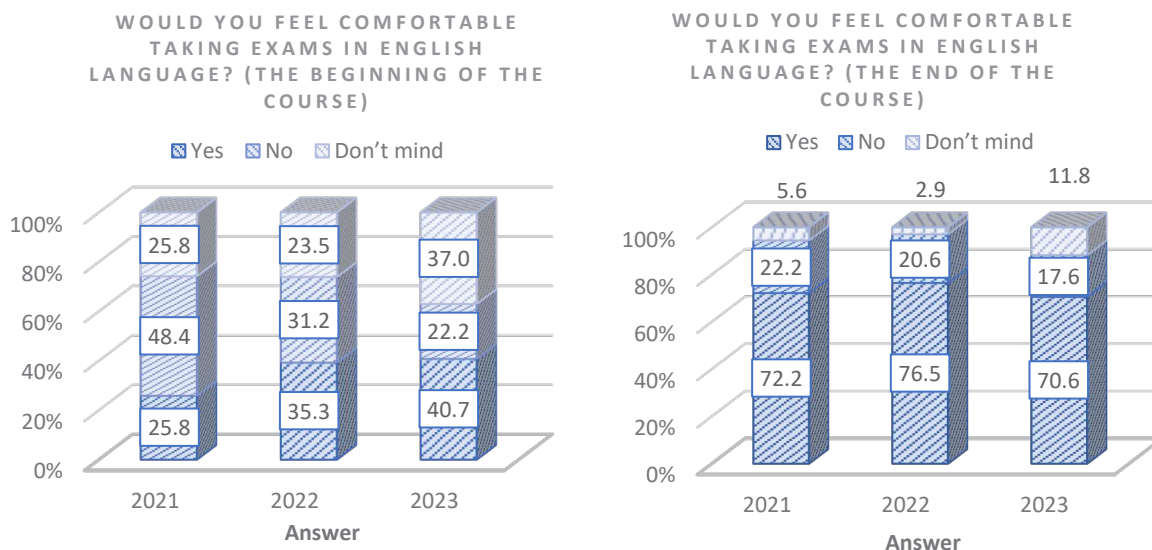


Figure 2. Mentimeter survey, result identification at the end the course (2021)





**Figure 3.** Mentimeter survey, status identification at the beginning (left) and the end (right) of the course (2021–2023)

### 4.1. Evaluation of the course

Moreover, based on the reports of student reference groups, the following conclusions can be drawn about the course evaluation (Table 2).

To sum up, the reference group reports from 2021 to 2023 consistently highlight positive teacher-student communication, with the teacher being responsive to feedback and making effective adjustments during the course. Each year, students praised interactive learning activities like group discussions, Kahoot quizzes, and practical assignments, which enhanced their understanding of the subject and increased comfort with English. However, some areas for improvement were noted, such as introducing calculations earlier, simplifying

complex group tasks, and enhancing clarity in instructions. Overall, the innovative and engaging teaching methods were well-received, contributing to students’ progress and overall course satisfaction.

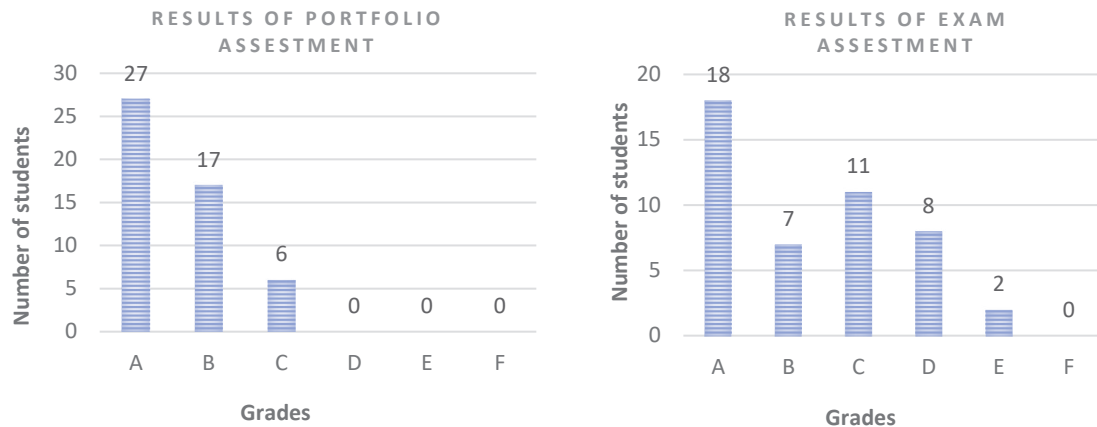
### 4.2. Evaluation of students’ achievements

The course assessment consisted of a 3-hour individual exam (60%) and two group tasks collected in a folder or portfolio (40%). The students’ final results are summarized in Figure 4.

- Folder/Portfolio assessment: 57% of students received an “A,” 29% received a “B,” and the remainder received a “C.”

**Table 2.** Summary of reference group reports for TS200214

Year	Teacher-Student Communication	Learning Activities	Suggestions for Improvement	Overall Feedback
2021	Great dialogue; the teacher slowed down speech and addressed feedback promptly	Practical calculations valued, but suggested introducing them earlier	Introduce calculations earlier; use an English textbook and better connect topics	Positive feedback; practical learning methods appreciated; adjustments made during the course
2022	Excellent communication; teacher quickly addressed feedback; students became comfortable with English	Group discussions, assignments, and Kahoot helped students understand the material and improve their English skills	Ensure a safe environment for student discussions; continue practical assignments	Beneficial learning environment; practical approach helped students understand and feel more comfortable with English
2023	Very good cooperation; feedback was well-received and acted upon	Interactive activities like Kahoot and group projects were appreciated and effective	Simplify group task questions; more clarity is needed in task instructions	Teaching style was unconventional but engaging; students eventually understood the subject



**Figure 4.** Average grades for TS200214 Maritime Procurement Course, Autumn 2021 (left – portfolio examination, right – exam)

- Individual exam: 39% of students achieved an “A,” 15% a “B,” 24% a “C,” 17% a “D,” and only two students received an “E.”
- Overall course results: 37% of students earned an “A,” 30% received a “B,” 28% a “C,” and only 2 students were graded “D,” with no students receiving an “E.”

This marks a significant improvement compared to the 2020–2021 academic year results, even though the course was taught in English for the first time in 2021. Notably, the 2020 exam was conducted as a home exam, whereas the 2021 exam was a school exam, making the improvements even more substantial.

Exam Participation. Of the 43 students enrolled in the course, 91% opted to take the exam in English, with only four students submitting their answers in Norwegian. This outcome is particularly striking given that, at the start of the academic year, many students hesitated to take the English exam.

### 4.3. Long-term impact

The positive results from this course led to the continued use of these teaching tools in subsequent years. As shown in Figure 3, student confidence at the beginning of the course was notably lower compared to the end of the semester after using the proposed tools. This pattern was consistent in the years that followed (2021–2023).

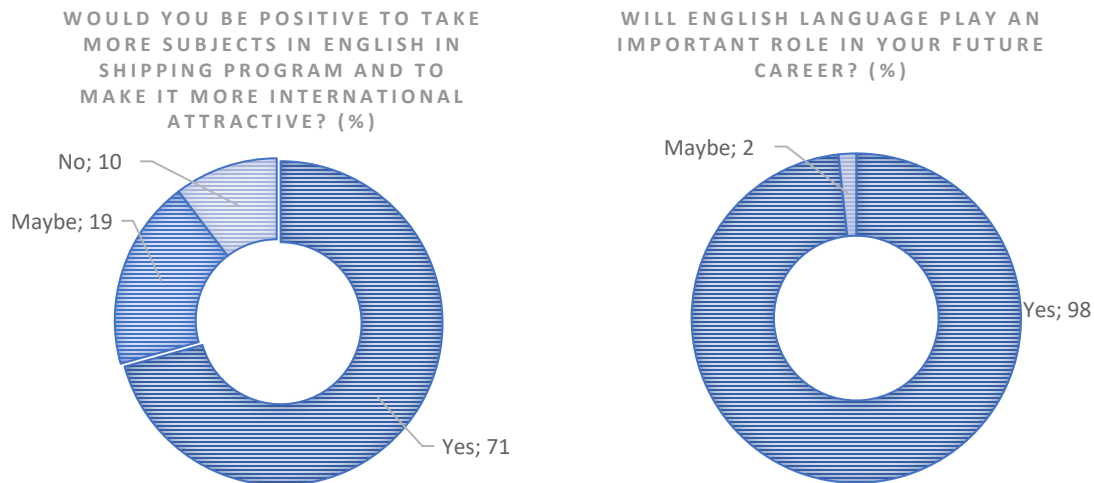
Moreover, the project not only benefited students but also received positive feedback from colleagues.

Many believed the project could significantly contribute to the academic environment. It also encouraged international collaboration and academic exchange, making the Shipping Management program at NTNU more attractive to international students. For example, in 2020, no English courses were offered, but by 2021, six (6) courses were available, and this number increased to nine (9) by 2023.

Hence, in 2023, graduating students from the class of 2021 were asked to respond to several questions regarding the importance of the English language at the conclusion of their study program. This evaluation followed their completion of several courses taught in English, internships at companies (shipping, shipbrokers, logistics, etc.), and the finalization of their bachelor’s thesis during their final year. The survey results are presented in Figure 5.

Based on Figure 5, most students (71%) favor introducing more English subjects to make the Shipping Program more internationally attractive. A small portion (19%) were unsure, while 10% of students opposed the idea. This shows strong support for expanding the use of English in the program to enhance its international appeal. Moreover, almost all students agree on the importance of the language English in their future maritime careers.

Thus, the study’s results offer significant insights into the role of English proficiency within maritime education, particularly in improving students’ mastery of maritime terminology and their ability to engage with global industry practices. This study focuses on the Norwegian context, highlighting pedagogical ap-



**Figure 5.** Importance of English in the Shipping Management Program, 2023

proaches tailored to overcome challenges in English language instruction and maritime education.

The findings from the Norwegian context demonstrate a marked improvement in students' confidence and proficiency in English, which is essential for communicating within the global maritime sector. The success of the various tools implemented, such as vocabulary lists, digital engagement platforms, and guest lectures in English, indicates that combining traditional methods with modern digital solutions can significantly enhance student outcomes.

Similar research by Sia and Said (2019) emphasizes the importance of Maritime English (ME) in achieving global standards for communication at sea. In alignment with the findings of Alibakhshia et al. (2021), task-based methods, such as writing essays and group exercises, allowed students to practice productive skills essential for their professional development. This is consistent with Kulikova (2023), who highlights the necessity of mastering maritime-specific terminology to ensure both operational efficiency and safety.

The integration of AI tools into the learning process has shown promising results in enhancing learning outcomes. Yurzhenko et al. (2023) and Şihmantepe

et al. (2021) demonstrate that digital tools can engage students with interactive and immersive content, providing self-paced learning opportunities and fostering peer collaboration. This approach aligns with Hrnić (2022), who argues that integrating technology in teaching ME is critical for preparing future maritime professionals.

The Norwegian case illustrates the necessity of adapting teaching methods to meet the evolving needs of the maritime industry. The institution focused on enhancing student engagement and professional communication skills by fostering a collaborative learning environment, overcoming linguistic barriers through group work, and providing real-time feedback. This reflects broader trends in global maritime education, where the integration of AI and digital platforms is becoming increasingly important, as noted by Peng and Yu (2022).

The results of this study align with existing literature, highlighting the need for continuous innovation in pedagogical approaches to Maritime English education. By focusing on student-centered learning and using both traditional and modern tools, the Norwegian institution has contributed to developing a more globally competent maritime workforce.

## CONCLUSION

The study intended to explore and compare teaching techniques that foster better student engagement and comprehension of English maritime terminology, ultimately improving their academic perfor-

mance in English-language exams. By integrating traditional and digital tools, such as vocabulary lists, work in groups, guest lectures, and digital engagement platforms, students significantly improved their English-language competency, especially in maritime terminology. This proficiency is essential for communication and operational efficiency in the global maritime sector.

The results from NTNU Ålesund's Shipping Management program provide evidence that student-centered learning, combined with the strategic use of technology, can overcome language barriers and prepare students more effectively for the professional demands of the maritime industry. The findings underscore the need for continuous innovation in teaching methodologies, with a focus on fostering both academic excellence and practical communication skills.

By incorporating modern tools, including AI technologies and interactive platforms, educational institutions can further enhance student engagement and learning outcomes. The study suggests that these advancements not only improve academic performance but also contribute to the broader goal of producing globally competent maritime professionals.

Future research should continue exploring the impact of digital tools and AI-driven methodologies to further refine pedagogical strategies, ensuring that maritime education remains aligned with the evolving needs of the industry.

## AUTHOR CONTRIBUTIONS

Conceptualization: Viktoriia Koilo.

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Investigation: Viktoriia Koilo, Maksym Zaitsev.

Methodology: Viktoriia Koilo.

Project administration: Viktoriia Koilo.

Resources: Viktoriia Koilo.

Validation: Maksym Zaitsev.

Visualization: Maksym Zaitsev.

Writing – original draft: Viktoriia Koilo, Maksym Zaitsev.

Writing – review & editing: Viktoriia Koilo, Maksym Zaitsev.

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