CORPUS-BASED LEARNING OF MARITIME ENGLISH IN THE DIGITAL ERA

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The rapid digitalization of the maritime industry, driven by the integration of artificial intelligence (AI), automation, and advanced navigation technologies, has substantially altered the linguistic requirements for deck officers. Contemporary ship operation increasingly involves interaction not only with multilingual crews but also with complex human-machine interfaces, automated alerts, and operational reports that demand precise and timely interpretation. In this context, Maritime English is no longer limited to the reproduction of standardized communicative patterns; it functions as an instrument of situational awareness, operational decision-making, and safety management.

Nevertheless, training practices in many maritime academies remain predominantly oriented toward the memorization of Standard Marine Communication Phrases (SMCP) and the translation of technical texts. Although such approaches provide cadets with a basic terminological framework, they are insufficient for developing the analytical, adaptive, and context-sensitive skills required in digitalized operational environments. This pedagogical imbalance creates a competence gap whereby learners possess declarative knowledge of phrases but lack the ability to apply them flexibly in dynamic and safety-critical scenarios. Consequently, linguistic misinterpretations persist as a significant contributing factor to communication failures and navigational incidents at sea (International Maritime Organization, 2020).

The study set out to design and evaluate a corpus-based linguistic adaptation model for Maritime English training*, aiming to* strengthen cadets' operational readiness, improve communication accuracy, and align language education with the realities of AI-driven and automated navigation systems.

The development of Maritime English in the digital era should be situated within the broader paradigm of English for Specific Purposes (ESP), where language is conceptualized as a tool for executing precise professional actions rather than as a purely communicative medium. In maritime operations, linguistic accuracy has direct safety implications, as commands and reports function as triggers for technical procedures and navigational maneuvers. This perspective aligns with the "language for action" framework, which interprets linguistic units as catalysts of operational decision-making and coordinators of professional activity.

The cognitive-functional approach further emphasizes the role of language as a means of processing information, identifying patterns, and making timely operational decisions in high-stress environments. Within this framework, professional texts such as interface messages, simulator dialogues, and incident reports are not merely instructional materials but authentic communicative acts that demand interpretation, evaluation, and action.

Contemporary research in corpus linguistics (McEnery & Hardie, 2012) provides methodological tools for addressing these challenges. Corpus-based instruction enables learners to analyze authentic language data, identify frequent collocations, and acquire domain-specific terminology in realistic contexts. When integrated into Content and Language Integrated Learning (CLIL) environments, corpus analysis has been shown to enhance vocabulary retention, grammatical accuracy, and professional language awareness more effectively than traditional approaches (Annury, Fridolini, & Sutrisno, 2025). This theoretical convergence suggests that corpus-driven methods are well positioned to address the linguistic demands of automation and AI-mediated ship operations.

The research involved 30 cadets of the Kherson State Maritime Academy (aged 19–22, proficiency level B1–B2 CEFR), divided into two groups: a control group receiving traditional

instruction and an experimental group engaged in corpus-based training. The Maritime English corpus was compiled from authentic sources such as electronic chart display and information systems (ECDIS), automatic identification systems (AIS), radar messages, simulator dialogues, and official incident reports. Instruction in the experimental group integrated corpus data into functional tasks, including concordance searches, collocation analysis, and scenario-based role plays.

The findings demonstrated substantial linguistic and operational gains in the experimental group. Vocabulary size increased by 76.8%, grammatical accuracy improved by 78.5%, and comprehension of technical terminology grew by 114.7%, with all results statistically significant ($p < 0.05$). In addition to quantitative outcomes, qualitative data highlighted higher levels of learner motivation and engagement: 88% of cadets reported strong professional relevance of the materials, and 81% confirmed improved usability of corpus tools after training. Simulator-based observations further revealed that cadets trained with corpus methods responded to navigational alerts approximately 40% faster than the control group and committed three times fewer communication errors during operational drills.

The results of the study provide compelling evidence that corpus-based training substantially enhances both linguistic competence and operational readiness among cadets. Beyond measurable improvements in vocabulary, grammar, and terminology, corpus-driven instruction cultivates situational awareness and the ability to process authentic communicative input under time pressure. This outcome directly supports the "language for action" paradigm, according to which linguistic units function not merely as neutral conveyors of information but as operational triggers that initiate and regulate professional decisions in safety-critical contexts.

The integration of authentic maritime corpora into instruction bridges the gap between theoretical language knowledge and real-world operational performance. By exposing cadets to interface messages, simulator dialogues, and incident reports, corpus-based learning ensures that language acquisition is embedded in realistic communicative environments, thereby reducing the risk of misinterpretation and communication failure during ship operations. This approach also addresses the limitations of traditional methods that emphasize memorization of SMCP without fostering adaptive or analytical language skills.

Based on these findings, several recommendations can be formulated for maritime education:

1. Curricular integration. Maritime academies should adopt corpus-based methods systematically, aligning instructional materials with IMO SMCP and STCW standards to guarantee both linguistic precision and regulatory compliance.

2. Instructor professional development. Targeted training must be provided to equip instructors with the technical and pedagogical skills necessary for corpus compilation, annotation, and effective classroom implementation.

3. Pedagogical scaffolding. Concordance and collocation tasks should be introduced gradually, moving from guided activities to autonomous exploration in order to balance authenticity with cognitive load, especially for learners at lower proficiency levels.

4. Simulation synergy. Corpus-based tasks should be closely integrated with simulator training and emergency drills, ensuring that the linguistic gains directly translate into enhanced operational performance.

5. Long-term evaluation. Further research is required to assess the durability of linguistic and operational improvements over extended periods of sea service and to explore the scalability of the model across different maritime academies.

Taken together, these conclusions highlight that corpus-based instruction is not only a methodological innovation but also a pedagogical necessity in the context of digitalized and automated shipping. Its adoption can contribute to higher standards of communication reliability, navigational safety, and professional competence in the global maritime sector.

REFERENCES

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