LEVERAGING ARTIFICIAL INTELLIGENCE IN MARITIME ENGLISH TEACHING

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Amid the ongoing global shift, artificial intelligence (AI) is revolutionizing approaches to language education by addressing challenges in skill development, particularly in specialized fields such as Maritime English. AI-driven tools support teacher-led instruction by fostering speaking fluency through personalized, adaptive, and interactive practice. When applied strategically, they turn learners into confident communicators in a wide range of professional situations. By leveraging AI, Maritime English teachers can enhance learner engagement, provide immediate performance insights, and align instruction to individual student needs, thereby strengthening professional competencies of future seafarers.

Recent studies highlight the value of AI in supporting real-time learning, as well as the opportunities and challenges of integrating AI into the educational process. Chen, Pang, and Pang (2024) emphasize that while the extensive use of AI enhances operational efficiency in the modern shipping industry, there is a lack of AI-focused content in the curricula. They suggest strategies for maritime institutions to effectively utilize available resources to prepare cadets for an AI-driven maritime environment better. Demirel (2024) mentions that maritime education has to benefit from AI in terms of both improving education and training. According to him, AI offers personalized learning, task automation, smart content creation, adaptable access, and closing the industry skill gap. In the view of Noble, Decancq, and Lisaité (2024), the integration of AI into Maritime English teaching is inevitable. They point out that awareness of the benefits and limitations of AI technology is instrumental to language teachers as they are trying to reconsider and reflect on their teaching practices. Taken together, the above studies advocate for the strategic incorporation of AI into the curricula to ensure students obtain the skills demanded by the maritime industry.

A notable contribution to this field is Pokrivčáková's study, which examines the impact of AI on foreign language education. She categorizes and summarizes the numerous AI tools applied in language instruction. Furthermore, the author emphasizes the need for a revised framework for the effective preparation of foreign language teachers, suggesting ways to integrate AI to enhance teaching efficiency, reduce workload, and improve learning outcomes. In her opinion, AI tools help reduce the time and frustration associated with traditional learning methods by adapting to learner's behaviour, providing immediate feedback on students' strengths and weaknesses, and developing an entirely personalized set of learning materials (Pokrivčáková, 2019).

Among AI-driven technologies, chatbots are becoming increasingly popular in educational contexts, offering interactive, accessible, and personalized learning experiences (Al Ghaithi and Behforouz, 2024; Černý, 2023). Kohnke, Moorhouse and Zou (2023) explore the potential of ChatGPT, one of the most advanced AI-powered chatbots, in supporting language teaching and learning. The authors present initial ideas on how educators and learners can utilize ChatGPT, offering practical examples of language learning tasks.

The aim of the current study is to examine the application of AI in Maritime English teaching by exploring the various ways AI can be effectively integrated to enhance learning outcomes.

Based on practical experience, AI can be leveraged in Maritime English teaching as follows:

Enhancing Speaking Fluency and Accuracy. AI-powered tools, such as automated speech recognition (ASR), provide instant, individualized feedback on pronunciation and fluency. These tools enable learners to self-correct and develop more accurate spoken professional language, which is essential for facilitating interaction within the international maritime community.

AI chatbots simulate authentic conversational scenarios, allowing learners to practice speaking in profession-specific situations, for example, rehearsing commands, distress calls and radio communications. In addition, Standard Marine Communication Phrases (SMCP) can be effectively practiced and trained through this approach. Speaking fluency can be increased through repetition and the use of automation tools, such as *Google Speech-to-Text* and *ELSA Speak*, as these technologies help promote automaticity in language production.

Advancing Writing Skills. AI assistants (e.g. *Grammarly*, *LanguageTool*, *ProWritingAid*) guide students throughout the writing process. These systems correct spelling and grammatical mistakes by conducting deep error analysis, providing suggestions for improvements, and offering additional resources for further practice. These tools promote self-correction and independent learning. AI writing assistants can be particularly beneficial for maritime students. Due to the international nature of the shipping industry, clear and precise written communication is essential for the crew's safety. AI-powered tools help students enhance their writing skills in various contexts, including ship's logbooks, reports (e.g., repair reports, incident reports), emails (e.g., correspondence with agents, charterers, port authorities), safety and cargo documentation (e.g., risk assessment forms, cargo inspection reports). Utilizing AI writing assistants in Maritime English, students can strengthen writing techniques and improve accuracy in the ship's correspondence.

Designing Personalized Learning Materials. AI systems adjust learning content based on students' responses, ensuring it is tailored to individual needs. AI enables scenario-based learning by developing lessons that reflect authentic workplace procedures, including watchkeeping, cargo handling, and internal/external communications. AI can be purposefully used to improve electronic textbooks and descriptive texts by adapting reading materials or providing explanations of professional terminology according to the students' industry roles (navigation officer, marine engineer, electro-technical officer, or ratings). Additionally, AI provides feedback by recommending targeted practice activities when learners study specialized vocabulary (e.g., nautical terms, safety terms, meteorological terms) or grammar patterns (e.g., VHF radio exchanges, ship's documentation), ensuring a more effective and personalized learning experience. AI tools used for this purpose include *ChatGPT, Quizlet, Squirrel AI*, and *EdApp*.

Facilitating Collaborative Learning. AI can considerably promote monitoring of cooperative learning in Maritime English by tracking students' progress in group tasks. AI ensures effective interaction and language use by analyzing student engagements during group activities. It identifies which students are participating actively and which students are not involved. In addition, it allows teachers to address issues such as unequal work distribution or difficulties in cooperation, ensuring all students contribute equally to activities like discussions, debates, projects, and role-plays (e.g., safety briefings, toolbox meetings). AI also tracks individual written and/or spoken contributions to ensure all group members are involved. If any student is not contributing enough, AI highlights this and provides insights to teachers. AI tools such as *ChatGPT*, *Dialogflow, and Teamflow* support those functions.

AI-driven tools are becoming an integral part of language education, necessitating teachers to develop advanced digital competencies. AI proposes ways to improve communication fluency and better adhere to maritime standards, helping students develop language skills. AI advises additional tools, resources, or activities to enhance collaboration. Ultimately, this facilitates a dynamic and interactive learning environment, essential for mastering Maritime English. However, it is important to recognize that AI serves as a valuable supplement to the learning process. Only by maintaining an appropriate balance between AI technology and traditional teacher-led instruction can students successfully achieve the intended learning outcomes.

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