



The Roles of Artificial Intelligence (AI) towards Students' Communication Strategy in ESP Maritime English

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ABSTRACT

Globalization has boosted economic growth, making shipping the most vital mode of transportation and highlighting the need for competent, English-speaking seafarers. So, maritime academy students must be proficient in oral Maritime English (ME) to ensure clear communication and prevent mishaps. This study explored the roles of Artificial Intelligence (AI) towards the communication strategies used by students. Using a mixed-methods design, data were collected through speaking activity observations and semi-structured interviews. Before using AI, students relied on strategies like topic avoidance, message abandonment, approximation, code-switching, and stalling. After AI integration, more effective strategies emerged, such as approximation, clarification-seeking, stalling, and self-correction. The roles of AI towards students' communication strategy were helping them to avoid literal translation, rely less on others, eliminate message abandonment, and reduce stalling, leading to improved fluency, independence, and professional communication in maritime contexts.

INTRODUCTION

Since the ships can move a wide variety of products in great quantities for less money than other modes of transportation, marine shipping companies are forced to expand as trade grows. As a result, several manufacturing sectors select the cargo that is transported by various kinds of ships. According to the International Maritime Organization (IMO), this circumstance makes shipping the most efficient mode of transportation in the world because current data shows that it accounts for up to 90% of all global trade (IMO, 2009). It implies that reliance on this mode of transportation is crucial for international trade. Also, this industry needs competent seafarers who speak English fluently, especially maritime English, as they are expected to be able to communicate clearly and prevent miscommunications between crew members and ships in accordance with the general standards set forth by the International Maritime Organization (IMO) in the Standard Training, Certification, and Watchkeeping (STCW) Convention. English is utilized for maritime communication since this kind of transportation promotes global trade. In keeping with this, UNCTAD (2024) stated that the English language, which is a means of worldwide communication, is also used in the international maritime community as marine English to promote seaborne trade facilitation and navigation safety. Furthermore, since people from all around the world can now relocate to other nations to live, work, or study because to the effects of globalization. Being able to communicate in the local language is crucial while moving to and entering another nation. The similar things happened with the professionals who worked in international contexts (Damanik, 2022). One example of professional is an officer on board, need not be the highest ranking, holds the position of Command of Navigation (CoN) and is in charge of all choices and actions made during each watch. Bridge team members interact face-to-face and by UHF radio with other crew members across the ship, including those in the engine room, on deck, and elsewhere, to assess situations and make decisions. This makes the bridge team a distributed group. The bridge team becomes a dispersed team as a result of their interactions via VHF radio with other crew members who are distributed around the ship, including the engine room, deck, and other areas. In order to create a virtual team environment, VHF radio is also used to deliver spoken interaction with the tugs, other boats, shipping company, charterer's agents, and other individuals ashore via satellite or cell phone (Balthazard et al., 2002). Crew members are required by the International Maritime Organization (IMO) to speak English when interacting at sea. According to a different study by Ziarati (2006) most communication breakdowns led to catastrophic maritime mishaps that included pollution, ship damage, and fatalities. For instance, a communication breakdown during ship movement could lead to a collision and endanger the environment, the crew, and the ship itself.

Additionally, in order to improve the communication skills of students in maritime education and training institutes, English for Specific Purposes, which includes nautical English, must be investigated. According to a prior study by Haryani et al., (2022) good communication is essential for mariners

since they must deal with social and language rules. Therefore, students require effective communication strategies to enhance their oral communication, particularly when explaining complex ideas clearly and persuasively. In line with it, since the fast-growing technology, the using of AI in maritime English learning is unavoidable. Related to this, the relationship between communication strategy and the use of Artificial Intelligence (AI) is deeply interconnected, as AI enhances, refines, and personalizes communication strategies in various ways (Gomathi et al., 2023). AI influences how individuals and organizations craft, deliver, and optimize their communication approaches. So, this study is thus underpinned by the research question: What are the types of communication strategies used before and after the using of Artificial Intelligence (AI) in Maritime English learning and what are the roles of Artificial Intelligence (AI) in students' communication strategy choices in ESP maritime English?

LITERATURE REVIEW

Artificial Intelligence (AI) in Language Learning

Computers are set up to handle tasks that usually need human intelligence, and this falls under the field of computer science known as artificial intelligence (AI). Some of these tasks include speech recognition, understanding natural language, interpreting visual information, making decisions, and learning from experience. This idea aligned with Wang et al., (2024), who described AI as the ability of robots or computers to carry out tasks that typically require human smarts. It means that AI systems replicate cognitive functions like learning, reasoning, problem-solving, and using language. For instance, real-time interactions between students and AI-driven educational tools provide personalized feedback and learning experiences tailored to each student's unique needs. Numerous research indicate that artificial intelligence (AI) has the potential to fundamentally alter the way that English is taught and understood. AI can help students learn languages more efficiently (Cantos et al., 2023). Then, numerous challenges in teaching and learning English can be addressed by artificial intelligence (AI). These include the use of information retrieval techniques to improve comprehension of reading passages, machine translation to improve students' translation abilities, automatic speech recognition techniques to teach correct pronunciation, text-to-speech techniques for blind and visually impaired students, open digital language dictionaries to expand students' vocabulary, intelligent programs to improve speaking abilities for English learners, and suggestions for a writing evaluation technique to teach paragraph and essay writing (Viktorivna et al., 2022). Therefore, the teacher must adopt a teaching style that keeps students asking for more technology (Nasar et al., 2023).

Communication Strategy

Communication techniques, according to Duck & McMahan (2011) are "potentially aware plans for overcoming what appears to a person to be an obstacle in achieving a specific communicative aim. " In the field of

communication and globalization, learning a foreign language, especially speaking skills, is a prerequisite. "English is learned by a large proportion of the world's language learners to develop their speaking skills," (Richards, J. C., & Renandya, 2002). To accommodate the twenty-first century, the broader definition of communication strategy taxonomy was established. Table 2.1 below demonstrates the taxonomies of spoken contact strategies recommended by experts Tarone, Dornyei, and Celce-Murcia (Masithoh et al., 2018).

Table 1. Taxonomy of Communication Strategies (Masithoh et al., 2018)

Tarone (1981)	Dornyei (1995)	Celce-Murcia (1995)
Topic avoidance	Avoidance	Avoidance
Message Abandonment	Compensatory	Achievement
Coinage		Stalling or Time gaining
Native Language Switching		Self-monitoring strategies
Miming		Interactional
Appeal for Assistance		Strategies

Then, the word "communication techniques" refers to when talking, a speaker uses both linguistic and non-linguistic techniques to compensate for knowledge gaps. "A deliberate attempt by speakers or learners to deliver or provide a precise interpretation that is out of proportion with the procedures of the language objectives," (Trofimovich, 2005).

ESP Maritime English

Meanwhile, English, as it is used in the sea transportation business, has evolved into a terminology designed to meet particular requirements, according to the meanings of the English for Specific Purposes (ESP) division of language teaching. ESP is defined as English instruction with a "clearly utilitarian purpose" because of the demands of the students, which may be academic, professional, or scientific define the goal they are referring to, then the ESP's content is therefore determined by these needs as the curriculum be taught and required (Mohamed & Alani, 2022). Furthermore, the seafarers from all over the world need and are required to support effective communication on board especially for the safety at sea. Therefore, the definition from Franceschi (2014) said that Maritime English is the entirety of all those means of the English language which, being used as a device for communication within the international maritime community, contribute to the safety of navigation and the facilitation of the seaborne trade. Then, Maritime English is the English language which has essential function in the maritime field. According to Bocanegra-Valle (2012) Maritime English is necessary in the maritime industry with its widely diverse activities such as transporting raw materials, for example: iron ore, copper, gypsum, crude and refined oils, bulk foods - sugar, wh (Sale, J. E. M., & Thielke, 2018)eat, rice, edible oils, or containers stuffed with

a myriad of manufactured and packaged products. Some cruise vessels carry over 2000 passengers, so that English is necessary for communication with passengers, and vital when an emergency occurs. English is further used to operate vessels within the technical spheres of navigation and engineering.

METHODOLOGY

The research method employed was mixed method by combining quantitative and qualitative research design to obtain detailed information. The explanatory design was used to collect and analyze quantitative data. This data was the types and frequency of the students' communication strategies used during observation in speaking activities. Meanwhile, the qualitative research is an essential method in science (Sale, J. E. M., & Thielke, 2018). This phase involved the observations and semi-structured interview to get better understanding of the students' communication strategies choices when they had ESP Maritime English-speaking activities.

This study involved twenty freshman students. They were in Ship Operation Engineering Technology (*Teknologi Rekayasa Operasional Kapal*) Department in a maritime polytechnic in Indonesia which had maritime English as one of the subjects. They have the similar background in English proficiency level which in low-intermediate level or B1 which categorized the person's English proficiency level have the understanding in grabbing key points in standard language. The data were taken from the observation and semi-structured interview to reveal the communication strategies they used when the students had ESP Maritime English-speaking activities. Quantitative observation was used as the method of observation in this study. Meanwhile, the observation instrument measured the occurrences of communication strategies in the ESP Maritime English activities. Then, the ChatGPT as one application of AI, was used during the activities.

Additionally, the steps involved in conducting the interview and observation were described by successive. Firstly, the interview is the phase when the researcher performed the research was in the form of questions connected with students' opinions related to the communication strategy and the roles of ChatGPT that were used. The interview was in the form of an open-ended inquiry. During the interview, the researcher would ask the students how they deal with communication issues and what kinds of communication techniques they employ when performing English speaking activities. All of the students who participated in that class were interviewed by the researcher using these various procedures. Previously, the researcher conducted interviews with the pupils in the classroom. One by one, the students are then asked to respond to those interviews by the researcher. The researcher's final step is to compile all of the students' responses into a single file. Second, in addition to conducting interviews, the researcher employed observation as a method of gathering data. In this study, the observation serves as a support series. Videotape and field notes were the kind of observations that were employed.

The speaking activities consisted of two types of activities. They were the job interview practice with the lecturer and the topic discussed in maritime English such as the IMO SMCP (International Maritime Organization - Standard Marine Communication Phrases), VHF communication, meteorological communication, and multicultural Crew Communication on Board. Those topics also demonstrated in groups consist of two or three students. The observations of the speaking activities were conducted in 3 (three) meetings. After the speaking activities finished in the third meeting, the semi structured interview was conducted to investigate more about the communication strategies they used and also to reveal the factors affecting the strategy chosen. Furthermore, to investigate the students' communication strategies in the speaking activities and the variables influencing them, descriptive statistics were used. Additionally, students' responses to the semi-structured interview were subjected to a qualitative content analysis. To put it another way, the most common patterns in their answers were identified, examined, and shared.

RESULTS AND DISCUSSION

Communication Strategies Before Using AI

Twenty students participated in Maritime English-speaking activities, and out of those utterances, more than 250 were made. Of those, 110 communication methods were employed during the maritime English lesson. Based on the observation data, the types of communication strategies used by the students were found and summarized in table 1 below.

Table 2. Types of Communication Strategies used by the students before using AI

Communication Strategies	Frequency	Percentage
Topic avoidance	5	4.5%
Message Abandonment	17	15.3%
Code-switching	19	17.1%
Approximation	7	6.3%
Stalling or Time gaining	28	25.2%
Literal Translation	22	20.9%
Appeal for Assistance	12	10.7%
Total	110	100%

Table 2 showed that there were seven communication strategies. They were topic avoidance, message abandonment, code-switching, approximation, stalling or time-gaining, literal translation, and appeal for assistance. These strategies were found during the observation in speaking or communicative activities in maritime English such as in asking and questioning activity about

Standard Marine Communication Phrases (SMCP), discussion, role-play and retell task in daily activities on board, duties and responsibility of deck officers, and so on. The records by audio and video were done to collect the data then the classification of communication strategies was conducted based on the taxonomies chosen by the researcher.

The research findings derived from observations and interviews collectively showed a variety of communication strategies to cope with difficulties in expressing themselves in English, also demonstrated the functions of artificial intelligence (AI) in the communication strategy choices of ESP maritime English students, particularly in the speaking exercises. There were two periods of maritime English-speaking activities, first without instruction using the AI and second with the instruction using AI for the preparation before performing the conversations. The communication strategies found before using the AI were topic avoidance, message abandonment, approximation, code-switching, and stalling or time-gaining strategies. The first strategy which had found was topic avoidance. This happened when students purposefully avoided talking about some subjects that they seemed difficult to understand. For example, in conversation 1, when Student 1 asked, "*Please tell about your activities today!*", Student 2 responded with a partially formed sentence, concluding with "*eh..ok, you know lah.*" Below was the example of the conversation between student 1 and student 2.

Student 1 : "*Hi bosun, how is your day?*"

Student 2 : "*Ok..*"

Student 1 : "*Please tell about your activities today!*"

Student 2 : "*Well, I..clean the deck with brush. After that paint the railing, and eh..ok, you know lah.*"

This vague and unfinished response indicated an intentional avoidance of the topic. The accompanying interview confirmed that this behavior stemmed from a lack of confidence and vocabulary knowledge, as the student admitted they would often "*cut [their] sentences*" (locally termed *ngeles*) when struggling to articulate their thoughts. This aligned with previous research that identified topic avoidance as a common strategy used by language learners to maintain face and avoid communication breakdowns. Closely related to topic avoidance was the use of message abandonment, where a speaker began an utterance but failed to complete it. In the same interaction, student 2's abrupt pause and shift in expression served as evidence of this strategy. Rather than pushing through the language barrier, the student opted to abandon the message altogether. This again was confirmed in interviews where students acknowledged their tendency to stop mid-sentence when they couldn't find the right words. Such behavior highlighted the need for greater lexical support and fluency-building exercises in language instruction. Another strategy frequently employed was approximation. This was clearly illustrated in conversation 2, where student 3, unable to recall the term "*screwdriver*," referred to it as "*the tool for turning... ehmm baut.*" Although the student used a less accurate description, the intended meaning was successfully conveyed, showing the effectiveness of this strategy in maintaining communication. It reflected the learner's ability to

creatively work around lexical gaps and still convey meaning. Code-switching was also a prevalent strategy, particularly in situations where students shared the same first language (L1). For instance, Student 3's use of the word *baut* (screw) in Indonesian served to bridge a vocabulary gap, allowing the conversation to continue smoothly. While not ideal in formal language settings, code-switching in peer interactions can serve as a pragmatic tool for avoiding breakdowns and maintaining fluency. Stalling or time-gaining strategies were the most frequently used, accounting for 25.2% of the total strategies observed. This included the use of hesitation markers such as "mmm...", "ehmm...", or pauses to gain time while formulating responses. In Conversation 3, the student's line "Mmm.....ehmm.....Mayday mayday I have trouble with mother engine," exemplified this strategy. Such fillers were valuable tools for learners, as they allowed continued participation in conversation even when under lexical or grammatical pressure. Another observed strategy was literal translation, where students directly translated terms from their L1 into English without adapting them to target language norms. For instance, "mother engine" for "main engine" and "outside country" for "foreign country" were the examples of awkward yet comprehensible expressions. While this might result in non-native-sounding English, it is a clear indicator of the learner's attempt to bridge gaps using known linguistic resources. Finally, appeal for assistance was evident in Conversation 4, where Student 10 asked the lecturer for help translating the Indonesian term "kadaluarsa" into English. This strategy reflects both a willingness to learn and an awareness of linguistic gaps, offering valuable opportunities for real-time vocabulary development.

Communication Strategies After Using AI

Meanwhile, the types of communication strategies used after the using of Artificial Intelligence (AI) in Maritime English learning were approximation, stalling or time gaining, asking for clarification, and own-accuracy check. A number of communication strategies, including topic avoidance, message abandonment, literal translation, and appeal for assistance in the first speaking activity were not exist in the second activity. But, for some other strategies such as approximation and stalling or time-gaining strategy were still in use in the less frequent number.

Table 2. Types of Communication Strategies used by the students after using AI

Communication Strategies	Frequency	Percentage
Approximation	8	13.3%
Stalling or Time gaining	10	16.7%
Asking for clarification	25	42%
Own-accuracy check	17	28%
Total	60	100%

The data in table 2 further illuminated the diverse communication strategies employed by maritime students to overcome language difficulties and enhance clarity in professional interactions. These findings reinforced the role of strategic communication in facilitating understanding, especially in high-stakes or technical environments like maritime operations. Below was the example of conversation 5.

- Student 9 : *"Look out the weather, it will be storm soon"*
Student 10 : *"You're right sir. The wind is very fast"*
Student 9 : *"You mean strong wind?"*
Student 10 : *"Yes, sir. I mean strong wind?"*
Student 9 : *"Please check the lashing."*
Student 10 : *"Yes, sir. The lashing is good."*
Student 9 : *"What do you mean by good? Please make it clear."*
Student 10 : *"The lashing is tight"*
Student 9 : *"Ok, good."*

In Conversation 5, approximation was prominently used by student 10. When attempting to describe a weather condition, he said, *"The wind is very fast,"* as an approximation for the term *strong wind*. Although imprecise, this expression successfully conveyed the intended meaning, prompting student 9 to offer the correct maritime terminology: *"You mean strong wind?"* This interaction highlighted the pedagogical value of approximation, as it often leads to negotiation of meaning – a vital component of language learning. The learner was able to convey a concept despite lacking the exact vocabulary, and through peer interaction, refined their linguistic accuracy. Later in the same conversation, student 10 again used a vague expression, *"The lashing is good"* which lacked the specificity required in a maritime context. Student 9's prompt for clarification (*"What do you mean by good? Please make it clear"*) encouraged Student 10 to revise the expression to *"The lashing is tight."* This progression from a general approximation to a precise term was a clear instance of how peer feedback and communicative negotiation contributed to vocabulary development and linguistic precision. In safety-sensitive fields like maritime work, such specificity was not only helpful but critical. Conversation 6 showcased the stalling or time-gaining strategy used by student 14. Interestingly, compared to previous tasks, both the frequency and the form of stalling had changed. Whereas earlier utterances used basic hesitation fillers like *"hmm..."*, the later response, *"let's see...that this winch"* indicated a shift toward more structured and intentional stalling. This type of verbal buffer gave the speaker time to plan while still engaging with the interlocutor, demonstrating more advanced discourse awareness. The evolution in the student's strategy suggested growing confidence and improved control over interaction flow. In conversation 7, clarification-seeking strategies were central to the interaction between student 7 (as bosun) and student 8 (as ordinary

seaman). Student 8 used expressions like *“just to clarify”* and *“just confirming”* after receiving instructions. These phrases were examples of professional and polite language forms that help ensure mutual understanding, a key part of effective maritime communication. Furthermore, student 8’s follow-up question, *“Do you want the anchor let go freely or pay it out under control?”* showed not only attentiveness but also a proactive verification of procedures. This reflected both linguistic and professional competence, as clarification requests were integral to avoiding miscommunication in operational contexts. Conversation 8 featured a different strategy: self-accuracy checking through repetition and elaboration. Student 18, reporting to student 17 about the gangway area, initially stated, *“The gangway area is clear.”* This was followed by further elaboration: *“Yes, it is clear from many things,”* and then reinforced by, *“No obstructions.”* This pattern reflected a tiered reporting structure where the speaker repeatedly refines and reaffirms the message. This reflective and confirmatory strategy ensured that the message was accurate and understood. Such repetition was used not only to build confidence in the speaker but also to reassure the listener, especially when the information pertained to operational readiness and safety.

The Roles of AI towards Students’ Communication Strategies

Finally, the data gained from the semi-structured interview revealed that the roles of AI in the students’ communication strategies choices were avoiding literal translation strategy, minimizing appeal from others’ assistance, eliminate the message abandonment strategy, and reducing stalling or time gaining strategy. Below was the example of interview transcription between the interviewer and student 2.

- Interviewer : *“Hai, do you think it’s easy to have English communication?”*
- Student 2 : *“Off course not, mam”*
- Interviewer : *“Why?”*
- Student 2 : *“Because difficult to get the vocabulary, and the grammar is confusing”*
- Interviewer : *“Oh, ok. So, what did you do when you have difficulties?”*
- Student 2 : *“I ask the question to the lecturer or other friends about difficult vocabularies and other problems.”*
- Interviewer : *“I see, so that was your strategy? Asking for help?”*
- Student 2 : *“Yes, mam”*
- Interviewer : *“Did you ask for help in the first speaking activity or the second one?”*
- Student 2 : *“The first, mam.”*
- Interviewer : *“How about the second maritime English-speaking activity?”*
- Student 2 : *“No mam, after the lecturer suggest us to study using ChatGPT. It is very complete mam.”*
- Interviewer : *“So, what do you think about the using of ChatGPT?”*
- Student 2 : *“Very useful mam. I know many vocabularies.”*

- Interviewer : *"Only that?"*
Student 2 : *"No mam, Ehmm, the vocabulary in sentence also. I can have more vocabulary and minimize the translation in Indonesian language, I can speak well. I also can imagine the situation on the ship because the example of dialog in ChatGPT gives real situations."*
Interviewer : *"So, ChatGPT helps you a lot."*
Student 2 : *"Sure mam, I don't ask help to the lecturer or my friends anymore. I can speak faster than before."*

The examples of interview transcriptions 1 gave the evidences that the AI had role in communication strategies used by avoiding literal translation strategy. In real situations, this strategy would create confusing situations because the interlocutors did not understand each other words. These would lead into misunderstanding or might be worse would rising the conflict. These were shown in transcription 1 when the student 2 said *"No mam, Ehmm, the vocabulary in sentence also. I can have more vocabulary and minimize the translation in Indonesian language, I can speak well."*

So, the first role about avoiding literal translation strategy was very useful to the students. Because if students used this many times, it would lead to perplexing circumstances in real life since the interlocutors would not comprehend one another's words (Aresta, 2018). Second role on the minimizing appeal for assistance made the students to be more independent when performing the communication. As Tarabelsi et al. (2024) stated that students were able to communicate more independently if they gave effort to avoid asking for other assistance when producing the communication. The third role was eliminating message abandonment strategy. The students did not use this strategy anymore because they already had sufficient knowledge when producing the communication after had the preparation using AI. This elimination had the advantage to the students since the message abandonment strategy was inappropriate to use in the formal or professional context (Nani I. Tiono & Agatha Sylvia, 2004). Finally, the last role was reducing the stalling or time gaining strategy when performing the communications. It gave more advance skill to the students because if students kept using this strategy it would give indication that we were incompetence person when we had difficulties and performing very low fluency in speaking (McGowan & Sekaja, 2022).

CONCLUSION AND RECOMMENDATION

The findings clearly demonstrated that students frequently rely on a range of communication strategies to navigate conversations in English. The strategies such as stalling, topic avoidance, and message abandonment highlighted the learners' struggle with vocabulary and fluency before using the Artificial Intelligence (AI). However, their strategies used were also showed adaptability and a desire to maintain communication, even in challenging circumstances. The prominence of stalling or time-gaining strategies suggests a strong need for pedagogical interventions that build spontaneous speaking

skills and vocabulary acquisition. Moreover, raising students' awareness of these strategies may empower them to manage communication breakdowns more effectively and become more confident L2 speakers. Furthermore, the analysis of communication strategies used by maritime students in English-language learning contexts after the introduction of Artificial Intelligence (AI) tools revealed a notable evolution in their linguistic and interactional competencies. While certain strategies such as topic avoidance, message abandonment, literal translation, and appeals for assistance diminished or disappeared in later speaking activities, more constructive strategies—particularly approximation, stalling or time-gaining, clarification-seeking, and self-accuracy checking. Then, the findings from the semi-structured interviews highlighted the significant role of Artificial Intelligence (AI) in shaping and refining students' communication strategy choices in Maritime English learning. AI-supported preparation contributed to the reduction or elimination of less effective or inappropriate strategies, thereby enhancing overall communicative competence. In sum, the integration of AI into Maritime English learning not only enriched students' vocabulary and accuracy but also influenced their strategic choices, leading to more effective, fluent, and context-appropriate communication in high-stakes maritime environments. Significant improvements in teaching and learning have resulted from incorporating AI technology into language education, especially in the areas of improving pedagogical techniques, translation skills, and language proficiency.

ADVANCED RESEARCH

Further research that could be suggested that the using of AI not only for the students but also for the teachers or the educators to expand and explore the teaching method especially in language learning scope to achieve the successful communication.

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