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# Exploring the use of AI Tools in Teaching English for Specific Purposes (ESP)

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**Abstract.** English for Specific Purposes (ESP) courses are designed to meet the language needs of learners in specific professional contexts. In recent years, the possibility to integrate Artificial Intelligence (AI) tools into ESP teaching has attracted the attention of researchers and practitioners in the field of language teaching who have investigated their potential to enhance learning outcomes and address the diverse needs of learners. This paper provides an overview of the potential benefits and challenges associated with the integration of AI tools in ESP pedagogy and explores some AI tools with the purpose of offering practical examples of how AI technology might be exploited in the ESP practice and to what results.

**Keywords:** AI, ESP, digitalization, language learning and teaching

## 1. Introduction

Artificial Intelligence might seem like the buzz word of the moment, however, it has been around for more than half a century. In 1955 John McCarthy, a computer scientist coined the term "Artificial Intelligence" (AI) in a conference proposal. It is generally agreed that the 1956 Dartmouth Conference, for which the proposal had been put forth, could be seen as the birth of AI as an academic discipline. In that historic proposal, John McCarthy defined Artificial Intelligence (AI) as "the science and engineering of making intelligent machines." McCarthy and his colleagues prophetically stated that "every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it. An attempt will be made to find how to make machines use language, form abstractions and concepts, solve kinds of problems now reserved for humans, and improve themselves." [1] This definition emphasizes the goal of creating machines that can perform tasks that would normally require human intelligence, including understanding natural language, learning and self-improving in the process and ultimately reasoning. Fast-forwarding to 2024, Artificial Intelligence has permeated every aspect of modern society, the educational field continuously harnessing more and more of its multifold potential affordances, with language learning and teaching making no exception.

## 2. AI tools in ELT. A literature review

In the last decade, AI has significantly transformed the entire field of English language teaching (ELT) through various innovative applications and tools useful both for the learners and the teachers. AI tools are now pervasively employed in language teaching and learning and, as such, have attracted the attention of numerous researchers in the field, who have sought to illuminate the pedagogical implications of the integration of AI in the language classroom. Liu et al (2021) investigated how AI

supported the development of students' writing skills. The findings of their research indicated that the used AI-based tool "not only significantly improved the experimental group students' English writing performance, but also improved their self-efficacy and self-regulated learning, and significantly reduced their cognitive load." [2] Another study (Shin 2018) looked at the efficiency of AI used through the Flipped Learning approach in blended classes and found that the students in the experiment group, who had been exposed to AI technology, had significantly better results in speaking, listening and reading than their peers in the control group. [3] Research has also acknowledged the significant impact that AI-based authoring platforms have had on guiding teachers towards new creative opportunities and encouraging them to create personalized teaching activities, thus better addressing their learners' individual needs. Prompt complex and completely personalized feedback is also an important benefit of AI tools in ELT. [4]

Here is a brief overview of some AI tools and their affordances:

1. *Language Learning Apps.* Apps such as Duolingo, Babbel, and Rosetta Stone use AI technology, gamification features, spaced repetition, and adaptive learning techniques to create interactive, engaging and effective language learning experiences, which boost learner motivation and improve content retention.
2. *Pronunciation and Speaking Practice.* AI tools such as *FLOW Speak*, *Speechace* and *ELSA Speak* offer learners the possibility to practice their pronunciation, improve their speaking skills and boost their confidence [5] by analyzing spoken language and highlighting mispronunciations, thus, offering remedial feedback.
3. *Support in the writing process.* AI tools such as *Grammarly* and *Criterion* offer comprehensive feedback on learners' writing, helping them identify their mistakes (grammatical, lexical, register, spelling, etc.) and supporting them in rectifying those mistakes which has a positive impact on the learning process.
4. *Translation tools.* AI-driven translation tools such as *DeepL* have improved significantly in the last years, aiding learners in understanding and translating texts and grasping complex concepts more easily. They can also be used to expand the learners' knowledge of vocabulary by offering a number of alternative word choices in their translations.
5. *Virtual Reality (VR) and Augmented Reality (AR).* AI-powered VR and AR apps offer immersive language learning settings. These tools enable students to practice English in authentic contexts, developing their communication skills and overcoming their anxiety and increasing their motivation. [6]
6. *Real-time assistance and interactive practice.* AI-powered tutoring systems, such as Chatbots and virtual tutors, offer learners the possibility to interact with them at any given time or place [7], simulating conversations, involving learners in custom-made role-plays, providing immediate feedback on grammar, vocabulary, and pronunciation, etc. Thus, they extend the learning experience outside the classroom and provide additional, unfettered, limitless practice.
7. *Personalized learning experiences.* AI-driven platforms can adapt the learning experience they create to the individual needs of any learner. They are adept at analyzing learners' performance and learning patterns in order to produce tailor-made activities and extend feedback. This level of customization allows learners to set their own learning objectives and decide the form and pace of their learning process while selecting the areas where they need to improve the most.

AI tools have proven to be of enormous help to the teachers as well:

8. *Creation of Educational Content.* AI helps teachers by generating diverse and personalized educational content. For example, authoring platforms such as *Wordwall*, *Quillionz*, *LerningApps* use AI to create quizzes and comprehension questions based on text inputs, saving teachers time and offering a greater variety of exercises formats while boosting the learners' interest through elements such as gamification.

Ultimately, the incorporation of AI in the English language teaching and learning process has resulted in a more efficient and personalized studying experience. It has encouraged language practitioners to be more creative and produce more attractive, engaging and interactive activities while being able to offer

individual help and targeted practice, so as to support their learners on their way to mastering the English language.

### 3. Using AI tools to support teacher-created content. Practical examples

We are now going to look at one AI-powered authoring platform for teachers, namely *Diffit for teachers*. *Diffit* is an artificial intelligence tool designed to support teachers in creating individualized materials to address their students' particular language needs. Teachers can produce teaching materials suitable for each of their students' proficiency levels as they can be adapted and leveled based on individual students' linguistic profile. *Diffit* seeks to promote better comprehension and higher engagement on the part of the students who are encouraged to develop their critical thinking skills by discussing AI-suggested open-ended prompts. *Diffit* offers a variety of question formats and allows for scaffolding by providing adapted reading passages that build on students' background knowledge. Word banks can be included to enhance lexical retention. The possibility to incorporate visuals and graphics responds to the learners' diverse learning styles thus promoting an inclusive learning environment.

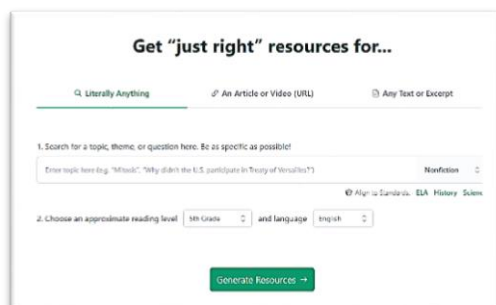


Figure 1 Diffit opening page

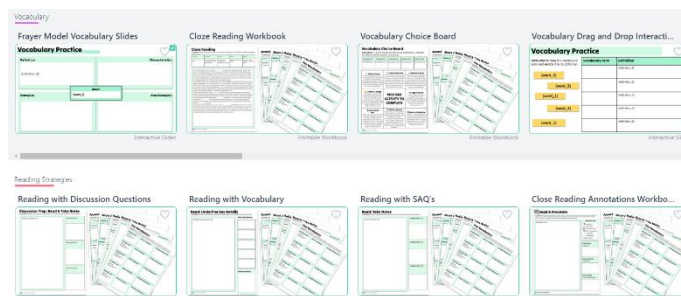


Figure 2 A selection of activities to be generated

The following activity was created by the author to teach the topic “Troubleshooting Electrical Faults Onboard Merchant Ships” to Marine Electrical and Electronic Engineering students at “Mircea cel Bătrân” Naval Academy. The students follow a four-year undergraduate program in marine engineering and study Maritime English for 2 hours per week for six semesters out of the four years of study.

Teaching ESP is defined by its focus on catering to the students' specific linguistic needs which means that a significant portion of the teaching content is either teacher-developed or adapted, posing a definite strain on the teacher to find and adapt current and relevant input which addresses both the lexical particularities of the students and their general language proficiency requirements. To increase time efficiency and diversify one's portfolio of teaching activities, the author used Diffit in order to generate a complete set of materials on the chosen topic.

**Procedure:** Access Diffit website at <https://beta.diffit.me/#topic> and log in with your free account. Type the topic of your choice in the search field. See Figure 1 above. Here is the resulted text generated by *Diffit* on the topic chosen by the author:

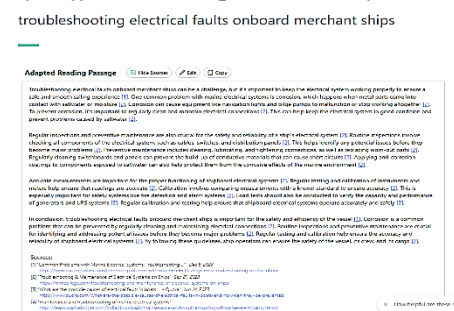


Figure 3 Generated Text

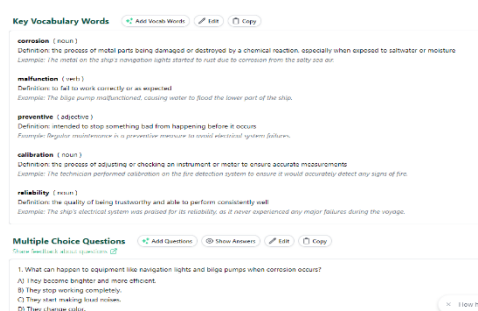


Figure 4 Resources and Quizzes generated by Diffit

The program has generated an adapted text for which it has also provided the bibliography, a very useful feature, adding to the authenticity of the lesson input and avoiding issues with misappropriation of online content and lack of correct referencing. The program has also generated a summary, a list of key vocabulary with definitions and example sentences, several multiple-choice questions which could be expanded, short-answer questions and open-ended prompts. You are then directed to choose a set of activities from the pre-defined ones and export your newly generated materials in the formats allowed by the program such as word, pptx, pdf, google classroom, etc. The generated set includes a teacher lesson plan with teaching guidelines, thus assisting in obtaining a more efficient planning process. Your generated materials can be saved in your account and can be revisited as desired.

**TEACHER INSTRUCTION PAGE (delete this slide)**

### Cloze Reading Workbook

**Student Activity:** read a passage and complete a Cloze Reading Activity with the passage.

**How to share with students:** These pages are sized for printing or can be assigned digitally using an LMS (like Google Classroom), where students can work on their own slide decks via "Make a Copy for Each Student." Each slide is set up with text boxes for students to type in.

**Please Note:** Because Diffit resources can vary in length, be sure to check the formatting on each slide.

**Suggested Lesson Flow:**

1. [Preview Vocabulary](#) with students prior to reading.
2. Have students [read and complete the Cloze Reading Activity](#).
3. Have students go through the [Multiple Choice Questions](#). Students will answer each question and explain their thinking.
4. Have students complete the [Short Answer Questions](#).
5. Have students [complete the Open Ended Questions](#) and discuss with partners or groups their responses.

Feel free to edit, remix, and use this resource however works best for you and your students! [Find editing tips here!](#)

**Learn More:** [Please reach out](#) with any questions or feedback. You can also learn more on our [FAQ page](#), or get more resources at [Diffit.me!](#)

### Cloze Reading

**Instructions:** Read the passage and then as you read it a second time, fill in the blanks with the appropriate word or term.

corrosion	maintenance	preventive	calibration	reliability
the process of metal parts being damaged or destroyed by a chemical reaction, especially when exposed to saltwater or moisture	to fail to work correctly or as expected	intended to stop something bad from happening before it occurs	the process of adjusting or fixing an instrument or meter to ensure accurate measurements	the quality of being trustworthy and able to perform consistently well

Troubleshooting electrical faults onboard merchant ships can be a challenge, but it's important to keep the electrical system working properly to ensure a safe and smooth sailing experience. One common problem with marine electrical systems is \_\_\_\_\_, which happens when metal parts come into contact with saltwater or moisture. Corrosion can cause equipment like navigation lights and bilge pumps to \_\_\_\_\_ or stop working altogether. To prevent corrosion, it's important to regularly clean and maintain electrical connections. This can help keep the electrical system in good condition and prevent problems caused by saltwater.

Regular inspections and \_\_\_\_\_ maintenance are also crucial for the safety and \_\_\_\_\_ of a ship's electrical system. Routine inspections involve checking all components of the electrical system, such as cables, switches, and distribution panels. This helps identify any potential issues before they become major problems. Preventive maintenance includes cleaning, lubricating, and tightening connections, as well as replacing worn-out parts. Regularly cleaning switchboards and panels can prevent the build-up of conductive materials that can cause short circuits. Applying anti-corrosion coatings to components exposed to saltwater can also help protect them from the corrosive effects of the marine environment.

Accurate measurements are important for the proper functioning of shipboard electrical systems. Regular testing and \_\_\_\_\_ of instruments and meters help ensure that readings are accurate.

### Key Vocabulary

**Instructions:** For each term, use the word in a sentence that shows you understand it's definition. Then create an image to represent the term. Be ready to explain the image.

Vocabulary Term	Use It in A Sentence:	An Image to Represent It:
corrosion <small>the process of metal parts being damaged or destroyed by a chemical reaction, especially when exposed to saltwater or moisture</small>		

### Reflect and Discuss

**Instructions:** Respond to the following question using the reading and your own knowledge and experiences. Be as thorough as possible.

1. How can you apply the concept of regular maintenance to your own life?

**Write Your Response Here.** Be sure to use what you learned in the reading and your own knowledge and experiences to answer the question thoroughly.

Figure 5 Teacher Guidelines, generated activities

The second AI tool to be discussed herein is one which is directly addressed to learners, namely the chatbot. Chatbots are computer programs which are designed to reproduce human communication in text or voice with the help of artificial intelligence. The chat function starts with the message from the user. Then The NLP (Natural Language Processing) capability and the chatbot interpret the message by referring to the current database. Chatbots are programmed to perpetually learn from previous conversations, thus expanding their knowledge and perceptions and being able to facilitate a more natural interaction with humans. [8] Moreover, Chatbots boast error correction features, making suggestions for lexical or grammatical improvement. The learners' progress might be tracked with the help of the daily log feature.

Chatbots such as ChatGPT have been acknowledged to positively impact the teaching of ESP. [9] Kovačević (2023) discusses the areas in which ChatGPT can be leveraged to promote learning in the ESP context: the generation of specialized texts, the subsequent creation of appropriate vocabulary, grammar and comprehension activities, the employment of ChatGPT as a chatbot virtual tutor and the provision of real-time feedback and assessment.

The chatbot entitled "The Maritime and Naval English Guide-Maritime English Enhancement" found at <https://www.yeschat.ai/gpts-9t557DPcFWv-The-Maritime-and-Naval-English-Guide> and hosted by YesChat.ai is dedicated to the learning and practice of Maritime English. According to the information posted on the website, "YesChat.ai is an AI-driven platform that provides access to a vast array of AI technologies for various needs, including ChatGPT, GPT-4o for text generation and image understanding. YesChat.ai offers nearly 200,000 GPT models for a wide variety of applications in work, study, and everyday life. You can freely use these GPTs without the need for a ChatGPT Plus subscription." [10]

This chatbot aims to enhance the learners' professional communication skills through interactive role-plays using voice recognition for VHF radio conversations, and providing feedback. It is meant to assist maritime professionals in acquiring specialized vocabulary and expanding their procedural knowledge. One very helpful way in which learners can use this chatbot is by participating in simulated

VHF radio communication scenarios. These could support learners in exercising routine ship-to-ship communication or making distress calls thus significantly improving communication capabilities.

A practical example is the following chatbot-generated role-play, practicing VHF communications:

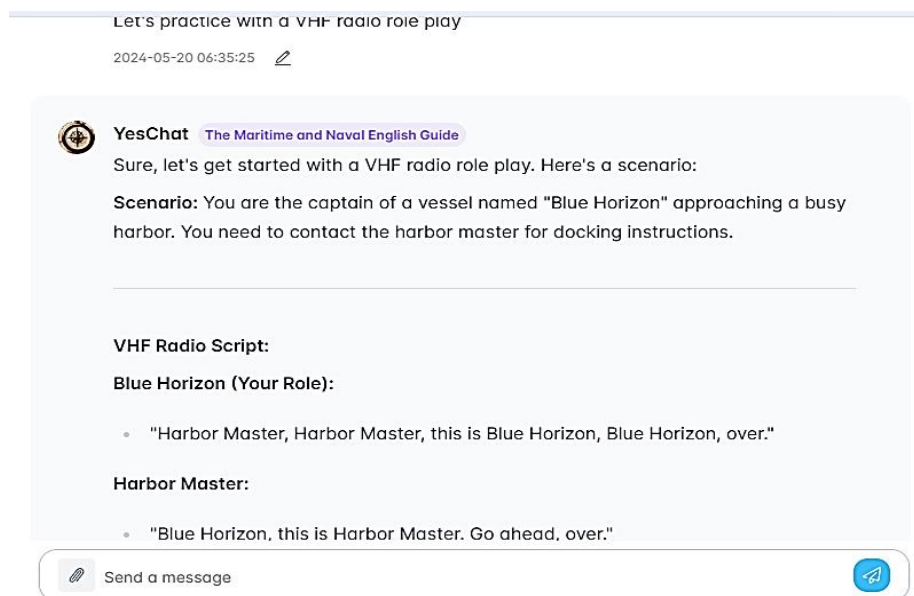


Figure 6 Chatbot VHF Role-play

In order to obtain authentic samples of professional correspondence onboard merchant ships, one could send the chatbot the following prompt:

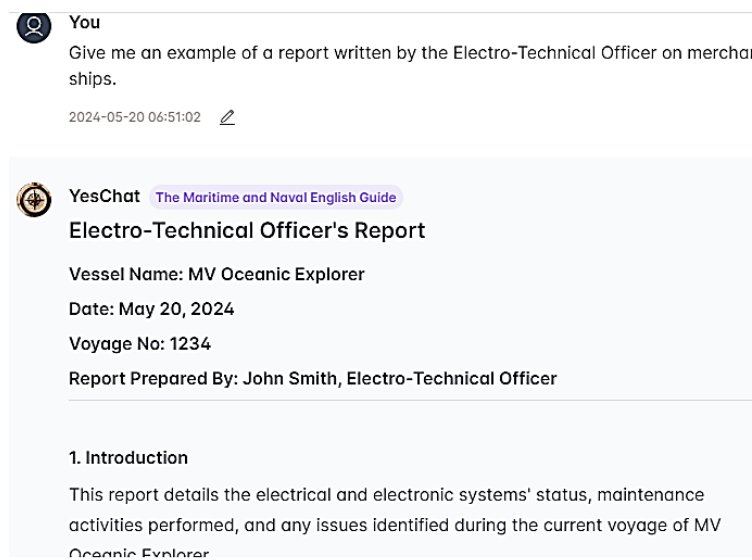


Figure 7 Chatbot-generated ETO report

Such a text can then be further exploited as a reading comprehension text, by asking ChatGPT to write a variety of comprehension questions on it, or for vocabulary practice with the help of fill-in-the-gaps exercises, or even for writing practice by asking students to use it as a model and produce a similar report on an imaginary situation onboard the ship.

## Conclusions

AI tools have already significantly impacted and refashioned the processes, the means, the pedagogies and dynamics of teaching and learning of English, providing novel solutions to present day challenges. These tools offer personalized learning experiences, adapting to individual students' needs and proficiency levels. AI-driven applications, such as language learning apps and chatbots, facilitate interactive and engaging practice, enabling learners to improve their vocabulary, grammar, and conversational skills. By offering immediate feedback, AI writing assistants and grammar checkers help students perfect their writing and understand their mistakes. Overall, the integration of AI in the teaching of English promotes a more inclusive, dynamic and exciting learning experience, preparing students for an increasingly digital world.

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