

THE CHALLENGES OF TEACHING ENGLISH TO THE MARINE ELECTRICAL ENGINEERING STUDENTS

Milena Dževerdanović-Pejović, Tatijana Dlabac

University of Montenegro (Montenegro)

Abstract. Teaching requirements for Maritime English teachers have been adapting to changes in social and work setting. The changing nature of the learning environment and the growing demand for the ETO (Electro-Technical Officer) at the seafaring market called for the need to adapt the English language learning plans to the language requirements of the amended STCW (International Convention on Standards of Training, Certification and Watchkeeping for Seafarers) code. Likewise, the students' needs related to language competencies are also changing. The goal of this paper is to present the possibilities of teaching the English language to ETO students according to the requirements laid down by the IMO (International Maritime Organization), IMO Model Course 3.17, IMO Model Course 7.08 and the specificities of the ETO ranking. The choice of the language exercises presented in this paper rests on the blended teaching practices carried out at the Faculty of Maritime Studies Kotor with the Marine Electrical Engineering students. The article starts with theoretical insight about teaching the English language in the recent literature. In addition, the need for integration and cooperation between language and specific-subject teachers, the so-called "twinning" is also highlighted in the paper. Conclusions reached in this paper might motivate technical-related or specialized English practitioners to collaborate with their colleagues teaching professional subjects.

Keywords: Electro-technical officer; blended learning; twinning; marine electrical engineering

Introduction

This article presents the challenges of creating, updating and adapting language activities for the students of Marine Electrical Engineering at the Faculty of Maritime Studies Kotor. The role of the Electro-Technical officer has been defined by the changes in the STCW Convention, 1978 as amended in 2010¹⁾. Since then, subject teachers and language teachers have been searching for the best methods to implement the new requirements in the training and education

process, respectively. There is no doubt that the new courses for the future ETO officer cover a comprehensive scope of activities. Due to the dynamic nature of the seafaring profession and growing demands regarding sophisticated technological equipment on ships and the knowledge necessary to operate and maintain electronic systems, the ETO ranks must have a vast scope of knowledge and expertise when sailing aboard different merchant and cruise vessels. Their competencies include various tasks related to monitoring all the electronic and electrical equipment, main and auxiliary machinery, proper functioning of automatic systems, control and maintenance of information and communication systems, the control of safety systems onboard, etc. Additional competencies of the ETO include communicative skills necessary to carry out all operational tasks appropriately and perform tasks relating to exercising control over fire-fighting, life-saving equipment, and drills onboard (Mindykowski 2014). The importance of English for cherishing good interpersonal relations, building up teamwork and interpersonal skills aboard ship as a multicultural environment is vital. The qualifications and competencies are set forward in the IMO Model Course on Electro-Technical Officer (IMO Model 7.08).

Background

Communicative Competencies of the ETO Rank

The basic premise in the article related to teaching specialized English to the ETO officer is that there is no universal method or “recipe”. Moreover, the language requirements laid down in the IMO Model Course 3.17 are optional rather than mandatory. In addition, the ETO officer is expected to carry out daily tasks as prescribed by the STCW (Table A-III/6 of STCW Code) in English²⁾ and to be able to use English in verbal and written form³⁾.

The literature on English for Marine Electrical Engineering is scarce. In our opinion, the reason lies in the fact that this specialized language falls under Maritime English. It is also labelled as English for Maritime/Marine Engineering and Electronics or English for Marine Technical Engineering. The term “engineering” is an umbrella term concerning communication used in a wide range of technical-related activities, technical drawings and layouts, discussing size, taking precautionary measures, performing risk assessment and suggesting technical solutions. The adjective “electrical” implies acquiring electrical engineering knowledge and basic terms such as switch, electrical circuit, AC or DC (Sirbu 2013). The adjective “marine” narrows down the scope of the engineering activities to those activities carried out on ships.

In order to explore relevant references dealing with the research papers on the rising rank of the Electro-Technical Officer, the search confirmed our assumption that the term Electro-Technical Officer is associated with marine engineering and marine electrical engineering courses. The internet offers a variety of tailor-made commercial courses for the future Electro-Technical Officers. Still, the academic

research in this domain of English has not followed the practical achievements. The communicative competence of the future Electro-Technical Officer is seen as an amalgam of the communicative competencies of the operative tasks that the ETO officer serves. It must be admitted that, unlike deck or engine personnel, the ETO covers all ship departments. Given that, we may assume that the communicative competence of the ETO includes many communicative tasks that may occur in various routine and emergency situations. Thus, although in the on-board hierarchy, the ETO is responsible for the engine department and maintenance of the electrical equipment onboardship, the role of the ETO from the linguistic perspective is much more demanding.

The COVID-19 pandemic and the decades-long usage of Moodle in teaching the English language to the Marine Electrical Engineering department students at the Faculty of Maritime Studies Kotor contributed to the twinning of knowledge between language and subject teachers.

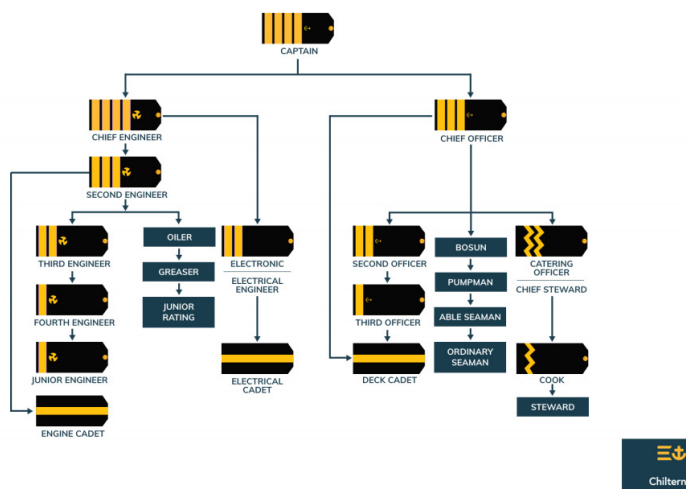


Figure 1. Ship hierarchy and ship crew roles⁴⁾

The Learning Specificities at the Faculty of Maritime Studies Kotor

As said earlier, English for Marine Electrical Engineering is regarded as a part of Maritime English. In a broader context, it falls under the study of English for Specific Purposes (ESP). The specificity of ESP is that the ESP practitioners must get familiar with the target subject in order to teach the target language. The knowledge of each specialised domain and pragmatic setting helps the ESP practitioners create and implement courses that will correspond with the learners' communicative needs in the subject domain.

Bearing in mind the specificity of English for Marine Electrical Engineering and the necessity for English language competence for the future work of the Electro-Technical Officer, the recommendations in this article rely on developing product-oriented knowledge or approach. This approach used in English for specific purposes assumes that teachers should focus on linguistic and pragmatic features of the target text. It can be said that the ESP teachers are on their own regarding the choice of materials and the implementation of specialized courses in professional disciplines (Laurence 2011). In that light, we believe that the English Language curriculum should match the competencies relating to specialized subjects. Teaching should include more video and audio exercises carried out on simulators and in laboratories (Mindykowski 2017). We should also underline that the percentage of practical learning at the University of Montenegro has increased up to twenty-five percent⁵⁾. This has imposed the need for using state-of-the-art methods and technologies that enable developing knowledge about professional and real-life situations on ships. It must be noted that sociolinguistic and pragmatic competencies should be developed, too (Rymanova et al. 2015).

The Faculty of Maritime Studies Kotor has been using distant learning and the Moodle platform for over ten years. Teachers have become familiar with various options available on the Moodle platform such as “Quiz”, “Glossary”, “Forum”, “Workshop”, “Wiki”, “Big Blue Button”. The applicability of the Moodle platform came to the surface at the time of the Covid-19 pandemic when the teaching process was performed online. In particular, the students who were trapped aboard ships at the time of the pandemic could participate in the learning process and take obligatory tests. The same applies to the students who work or prefer to study at their own pace.

Our opinion is that both subject teachers and language teachers should use online platforms and a digital environment combined with traditional teaching. In this paper, we argue that the ESP practitioners should combine blended approach, content-based and interactive activities with the professionals from other disciplines teaching at the same study programme.

A mingle activity is another concept of interactive learning used in teaching English as a foreign language (EFL) that enhances learners’ interaction in the classroom. It is a strategy in which learners circulate and socialize in the classroom, talk with each other and discuss the given topic in pairs or groups. The mingle model includes the teacher’s previous preparation for the activity, presentation and assessment. It aims to encourage students to speak up as they often hardly express themselves or have nothing to say on a particular subject (Darmaenti et al. 2015). The movement and interaction that the teachers of the mentioned subjects conducted were obtained so that the English language teachers participated in the subject classes in the communicative segment. The models, as mentioned earlier, present a blended learning approach that has proved to be an inevitable and appealing method in the online learning environment (Dževerdanović-Pejović 2020). We shall present

some examples of the blended approach in the following sections of the paper.

Some examples of the implementation of the learning activities

During the academic year 2019/2020, the combined, mingle, or blended model was carried out with the first-year students of the Marine Electrical Engineering department. The learning tasks which were conducted using blended activities included one subject teacher and an English language teacher. The teaching process comprised face-to-face and online learning (due to the outbreak of the COVID-19 pandemic in March 2020). The students could access the course material, practical work, tests results, and teachers' feedback on the platform after registration and logging with their credentials.

Blended teaching at the Faculty of Maritime Studies

As already stated, the ESP approach enables teachers to adapt language materials to the communicative needs of the target course. In our twinned approach, an English language teacher participated in "Fundamentals of Marine Electrical Engineering and Electronics II". The lesson plans had been previously agreed upon between the subject teacher and an English language teacher. It must be underlined that the ECTS catalogues of both subjects comprised correlated learning outcomes. In a concrete example, as shown in Table 1, the activities were focused on understanding basic concepts of the measurement process, writing down the typical grammar patterns, the use of English-English dictionary and creating a subject-specific glossary.

Table 1. An example of a lesson plan in blended learning

Department	Marine Electrical Engineering
Subject	Fundamentals of Marine Electrical Engineering and Electronics II, English Language II
Week	V
Method	Functional, blended learning, interactive, content-based
Room	simulator, classroom
Participants	subject teacher, English language teacher, students
Lesson aim I	To get familiar with the basics of measurements on the multimeter; learn basic terms related to basic electrical measurement
Lesson aim II	To get familiar with the target vocabulary and phrases, to write down brief notes; the use of English-English dictionaries

The general aim of the class was to encourage students to gain knowledge in the subject lesson and achieve fluency in the target vocabulary. In some instances, the subject teacher played the video or demonstrated how to use the gadget (Figure 2). Also, the students were asked to translate the segments of the video or verbal presentation from Montenegrin to English. Then, they elicited as many questions

regarding the practical work with the multimeter and its basic operations. They were encouraged to repeat useful phrases about taking measurements and explain how this specific instrument worked.

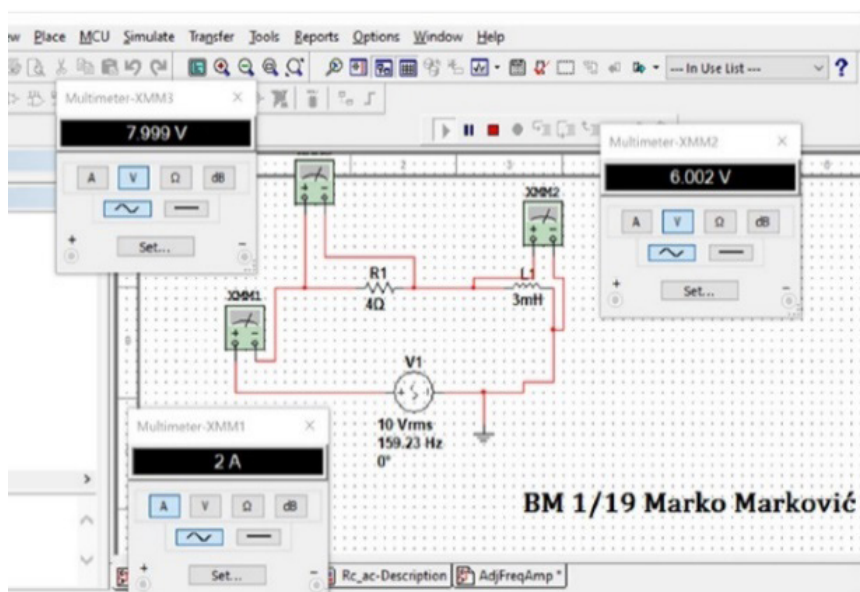


Figure 2. Simulation exercises

After the speaking part of the activity was completed, the students were told to write down the most significant sentences from the simulation or subject teacher's presentation, such as:

- *The first thing that happens is that...*
- *The first thing that you should check...*
- *This application enables/allows + ing...*
- *The key advantages of this gadget are...*
- *The most important feature of this device/gadget is...*
- *You will see/notice that...*
- *It consists of the following components...*
- *Not, let us pay attention to the...*
- *We will see how...*
- *The multimeter display shows that...*
- *The main features of the multimeter are ...*

Creating a glossary

Creating a glossary has proven to be a very inspiring activity for the Marine Electrical Engineering Department students as a technical vocabulary used in the target classes presents the basis for upgrading the learners' communicative competence (Dževerdanović-Pejović 2020).

The students were allowed to add an entry with an English explanation for the target term. The availability of online English-English dictionaries enables students to refer to a dictionary and develop their definition. The teachers in the twinned task suggested which terms to add or delete or which semantic fields might be added to the glossary. In general, students were fond of classifying words into semantic clusters and naming these clusters or fields. Some semantic fields were called: Electricity vocabulary, Measurement related verbs, Current vocabulary, Match patterning. Table 2 shows an example of Match patterning, an activity in which students generated matches composed of the verb and the noun.

Table 2. Match patterning

Verb	Noun
Increase/decrease	Voltage, current, demand
Conduct	Current, experiment, test
Detect	Signal, experiment, failure
Make	Signal, electricity
Carry out	Experiment, simulation
Generate	Electricity, current, electric power

The glossary was created on DL (distance learning platform), as can be seen in Figure 3. Students added entries belonging to the semantic field Ship's measurement within the Marine Electrical Engineering glossary.

Evaluation and assessment

In addition to traditional examination, there are many options allowing test-taking in the online environment. Online tests on the Moodle platform offer various options. The teacher sets the type of test, timing and the type of questions (quiz, test, essay, matching, gap filling, drag and drop). The results conducted at the Faculty of Maritime Studies during the years 2018 and 2019 within the Fundamentals of Marine Electrical Engineering and Electronics I show that students prefer True/False questions. In contrast, they are not fond of numerical questions. In addition, the quality of tests is achieved by generating a large bank of questions. It is also preferable that the questions relate to authentic situations in the electrical engineering setting (Dlabač et al. 2020; Dlabač et al. 2019).

Regarding the strategies aimed to ensure independent online work during tests,

Site: dl.ucg.ac.me
 Course: **Ship's Measurement (Ship's Measurement)**
 Glossary: **Marine Electrical Engineering - Glossary 1.3**









 Amperemeter by  - Saturday, 15 May 2021, 8:15 PM amperemeter ammeter	A
 Current by  - Saturday, 15 May 2021, 10:32 AM Current	C
 DC current by  - Saturday, 15 May 2021, 10:33 AM DC current	D
 Multimeter by  - Saturday, 15 May 2021, 10:35 AM Multimeter	M

Figure 3. Example of the glossary activity

one solution is to have the students connected via zoom or Big Blue Button or any other conference application with their cameras turned on. However, the safest option is to have students in the computer centre or simulator with the attendance of subject teacher and video surveillance (Gluchmanova 2015).

The tests carried out within the English language subject with the same students contained language tasks such as matching exercises (Figure 4), multiple-choice questions (Figure 5) and translation exercises.

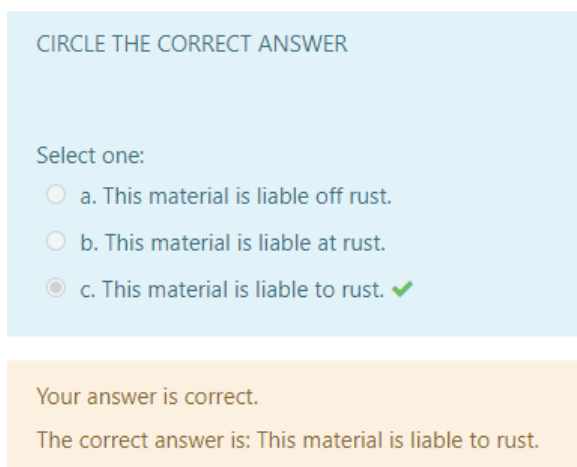
Match the beginning of the sentence on the left with their ending

Obviously, the temperature gauge	was faulty.	✓
There is a considerable	a preliminary set of drawings.	✗
What makes waterjets	popular for this kind of cutting?	✓
Smoke and fires	are pouring out of the engine.	✓
Please find attached	discrepancy between figures.	✗

Your answer is partially correct.
 You have correctly selected 3.
 The correct answer is: Obviously, the temperature gauge → was faulty., There is a considerable → discrepancy between figures., What makes waterjets → popular for this kind of cutting?, Smoke and fires → are pouring out of the engine., Please find attached → a preliminary set of drawings.

Figure 4. Matching exercises on the Moodle platform with feedback

Upon completing the tests, the students could see the highest mark and obtain the correct answer with red color feedback. Feedback is a desirable option in progress midterm tests and final tests as students can identify and understand the mistakes and avoid them in future work.



CIRCLE THE CORRECT ANSWER

Select one:

- ☐ a. This material is liable off rust.
- ☐ b. This material is liable at rust.
- ☒ c. This material is liable to rust. ✓

Your answer is correct.

The correct answer is: This material is liable to rust.

Figure 5. Multiple choice questions with feedback

Regarding the translation exercises, the English language teacher can check the knowledge of individual specialized words or lexemes (Figure 6), phrases or whole sentences. However, in all cases, the teacher must clarify whether students should put articles (a/an, the), singular or plural noun, capital letters and make necessary adjustments while making the test.



TRANSLATE. DO NOT USE ARTICLES, A, AN, THE

utičnica

Odgovor: socket ✓

Figure 6. Translation exercises on Moodle

In some cases, a synonym or a plural form can be accepted as the correct solution, too. One of the options is to predict these situations while forming the test questions and providing acceptable solutions. For instance, a “plug” stands for the synonym of the term “socket”. We also suggest that teachers conduct a manual assessment of the translation exercises rather than an automatic evaluation.

Conclusions

The learning process that included a blended learning approach in teaching English for the Marine Electrical Engineering students shows that pedagogic concepts should be adapted to learners. There is no doubt that there is an undeniable need for modern technologies. The concepts of twinning, combined, blended or integrated learning revolve around combining traditional and innovative teaching. In that light, we believe that challenges in teaching English for the Marine Electrical Engineering students, most likely the future ETO officers, are in the domain of planning efficient communication between subject teachers and English language teachers. We aim to initiate and test the new strategies and not adhere to the same methods in the teaching process. Our goal is to find out the model that will best adapt to the complex communicative needs of this specific ranking and ensure the highest teaching standards. However, the changes in the institutional requirements and regulations concerning the Electro-Technical Officer will dictate communicative needs and competencies in the teaching process.

NOTES

1. International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW 1978) as amended.
2. IMO Model Course 3.17 Maritime English. International Maritime Organization. London, 2015, pp. 91 – 99.
3. IMO Model Course 7.08 Electro-Technical Officer. International Maritime Organization. London, 2014, pp. 61 – 63.
4. <https://www.chilternmaritime.com/becoming-an-eto/>
5. Law on Higher Education. *Official Gazette of Montenegro*. Nos. 44/2014, 52/2014, 47/2015, 40/2016, 42/2017, 71/2017, 55/2018, 3/2019, 17/2019, 47/2019 and 72/2019.

REFERENCES

- Mindykowski, J., 2014. MET Standards for Electro-Technical Officers. *TransNav*. 8(4), 587 – 590.
- Sirbu, A., 2013. An insight into Maritime English for engineering students. In: *The International Scientific Conference dedicated to the European*

- Maritime* - session "Applied Linguistics in Foreign Language", 1 – 6 [May 2013].
- Laurence, A., 2011. Products, processes and practitioners: A critical look at the importance of specificity in ESP. *Taiwan International ESP Journal* **3**(2), 1–18.
- Mindykowski, J., 2017. Towards safety improvement: implementation and assessment of new standards of competence for Electro-Technical Officers on ships. *Maritime Policy & Management* **44**(3), 336 – 357.
- Rymanova I., Baryshnikov N., Grishaeva A., 2015. E-course Based on the LMS Moodle for English Language Teaching: Development and Implementation of Results. *Procedia – Social and Behavioral Sciences*. 206, pp. 236–240.
- Darmaenti, D., Nofiadri N., 2015. Mingle Model for Teaching English Speaking Skill for College Students. *Al-Ta lim Journal* **22**(1), 1 – 9.
- Dževerdanović-Peجویić, M., 2020. Application of textual analysis in the context of vocabulary teaching for the marine electrotechnics students. In: *8th International Scientific Conference Technics and Informatics in Education* [Serbia, 18-20 September].
- Dževerdanović-Peجویić, M., 2020. Learning technical genres – a blended learning approach. *Pomorstvo* **34**(2), 12 – 222.
- Dlabač T., Milovanović A., 2020. Using Moodle Platform in Evaluating the Electrical Engineering Practices. In: *8th International Scientific Conference Technics and Informatics in Education, 2020* [Serbia, 18 – 20 September].
- Dlabač, T., Milovanović, A., Koprivica, B., Čalasan, M., Janjić, M., 2019. Evaluation of internet-based practical teaching in higher education. In: *Proceedings of the International Scientific Conference*, 209 – 213 [15th-16th, Nov., Gabrovo, Serbia].
- Gluchmanova, M., 2015. Application of e-learning in foreign language teaching at the technical university. *Procedia - Social and Behavioral Sciences* **174**, 3144 – 3149.

✉ **Milena Dževerdanović-Peجویić**
ORCID iD: 0000-0001-5819-6868
Faculty of Maritime Studies Kotor
University of Montenegro
Kotor, Montenegro
E-mail: milenadz@ucg.ac.me

✉ **Tatijana Dlabač**
ORCID iD: 0000-0001-9473-5558
Faculty of Maritime Studies Kotor
University of Montenegro
Kotor, Montenegro
E-mail: tanjav@ucg.ac.me