TEACHING AT MET HEI DURING THE COVID-19 PANDEMIC – CASE STUDY REPUBLIC OF CROATIA

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Abstract

Prior to the COVID-19 pandemic, e-learning at Maritime Higher Education Institutions (hereinafter: MET HEI) was almost not present at all, especially at the STCW courses. The situation was similar at other higher education institutions. There are numerous obstacles for the implementation of e-learning and information-communication technologies at Higher Education Institutions (hereinafter: HEI). One of them is the teachers' willingness to use the afore-mentioned technologies. However, the organisational changes that happened due to the COVID-19 pandemic had the impact on almost all crucial aspects of higher education primarily on the process of gaining competences and their evaluation. The teachers were facing the challenges of digital skills usage, whereas questions of acquiring competences via e-learning, especially at STCW courses, were rising as well. In a very short period of time, the teachers had to adapt contents of their courses and their teaching methods in order to enable e-learning. However, all teachers today, those teaching general courses as well as the STCW courses have the e-learning experience, face-to-face teaching experience and blended teaching experience. The teachers' experience and feedback can contribute significantly to making the guidelines for e-learning and the usage of information-communication technologies at MET HEI. Furthermore, even the students' experiences and views can have significant contribution.
The results of the research referring to the teachers and students' attitudes and views on teaching during the COVID-19 at MET HEI in the Republic of Croatia were shown in this paper. Survey method was used in the research. The results of the research comprise the analysis of the students and teachers' attitudes referring to the challenges they were facing with, as well as to the e-learning platforms they were using, and advantages, and disadvantages of e-learning at MET HEI.

1 INTRODUCTION

On March 11, 2020, the World Health Organisation declared COVID-19 a global pandemic, disrupting social and economic activities worldwide [1]. The closure of schools and universities was a measure taken to reduce the spread of the virus [2] during the COVID-19 pandemic, as they represented one of the most vulnerable areas in terms of security [3]. After a brief adjustment period, the classes transitioned to an online format. Distance learning was almost non-existent at MET HEI before the COVID-19 pandemic, with a comparable situation observed in other HEI. The need for more planning and preparation for online classes resulted in many issues, notably the lack of internet access, technological tools at home, and inadequate technical support. An additional obstacle was the unwillingness of teachers in higher education systems to conduct online classes and to use information and communication technologies. The evidence supporting this claim stems from a survey conducted by the Organisation for Economic Co-operation and Development (OECD) in 2018, which discovered that less than 40% of teaching staff in the European Union demonstrate preparedness to utilise digital learning technologies. [4]

However, it is important to note that the COVID-19 pandemic has highlighted the need for e-learning in developed contexts, with research findings further supporting its benefits [5]. This primarily refers to temporal and spatial flexibility [6] and the possibility of accessing different resources and learning materials.

It is essential to point out that the European Commission recommended the introduction of e-learning and distance learning, emphasising the need to improve the quality and relevance of education in Europe and using new technologies for more effective research and flexible, personalised teaching. The Europe 2020 Strategy [7] emphasises the importance of adopting flexible and innovative learning methods. Additionally, the Digital Education Action Plan 2021-2027 [4] corresponds with this by promoting inclusive and functional distance learning and e-learning. It is consistent with the Digital Agenda for Europe [8], which underscores the need to leverage ICT and other innovative technologies to enhance the educational process and promote more comprehensive access to education through distance learning. The 2014 Strategy of Education, Science, and Technology of the Republic of Croatia [9] stipulates various initiatives to promote the advancement and wider application of e-learning, integrating expert teaching systems, and adopting modern teaching approaches based on information and communication technology.

Given modern workplaces' dynamic and technology-oriented nature, online learning has become a crucial resource for seafarers. It offers a flexible and efficient way to gain and share knowledge [5].

Ever since the declaration of the pandemic, there has been growing attention towards researching the organisation and implementation of courses in tertiary maritime education institutions. In general, the previously mentioned research focused on either a single higher education institution or multiple institutions within one country.

One example of this is in the Philippines, where a study showed that many students were unprepared for the sudden switch from in-person to online learning at the beginning of the 2020-2021 academic year. According to the study, the key problems were attributed to students not having computers and internet access at home. The same study revealed that most students, specifically 3 out of 5, expressed a preference for face-to-face classes [10].

A study conducted in South Africa presented comparable findings, aiming to discover the perspectives of lecturers and students regarding the benefits and challenges of e-learning in higher education institutions in the country [5]. Most of the research centred on examining the benefits and drawbacks of online education and assessing the influence of the COVID-19 pandemic on maritime higher education.

Besides exploring the possibilities of distance learning and incorporating online tools and technologies into maritime tertiary education institutions, conducting research on assessing STCW competences in study programs offered through distance learning, traditional classroom teaching (face-to-face), and a combination of both is crucial.

2 ONLINE EDUCATION IN MARITIME INDUSTRY

The International Convention on Standards of Training, Certification, and Watchkeeping of Seafarers, 1978, sets the regulations for seafarers' education. Any institution carrying out the seafarers' formal education has to include minimum standards and competences defined by the STCW Convention in the study programmes they refer to. The institution should customise these programs to fit its specific curriculum. Alongside competences, the STCW Convention also mandates methods for assessing the acquisition of these competences, with particular competences being evaluated using specialised equipment.

All maritime educational institutions in Croatia offer nautical study programs that comply with the STCW Convention and Ordinance on Ranks and Certification of Seafarers. Nautical undergraduate study programs must be approved by the Ministry of Science and Education and the Ministry of the Sea, Transport, and Infrastructure. Ministry is responsible for assessing the conformity of these programs with the provisions outlined in the STCW Convention.

Nautical study programs in the Republic of Croatia aim to acquire management-level competences for the deck department, specifically for Masters and Chief Mates on Ships of 3000 Gross Tonnage or More. Part A-II/2 of the STCW Convention defines the competences required for the mentioned positions. The nautical study programs include the prescribed competences in the so-called STCW courses. Apart from the mentioned courses, the study programs also include general courses that give students a broader understanding of the maritime industry. We should note that nautical study programs offer a unique blend of theory and practice with a strong practical focus. This means that, besides theoretical knowledge, students must master numerous practical skills using specialised equipment such as a nautical simulator, training ship, firefighting equipment, boats, life rafts, etc.

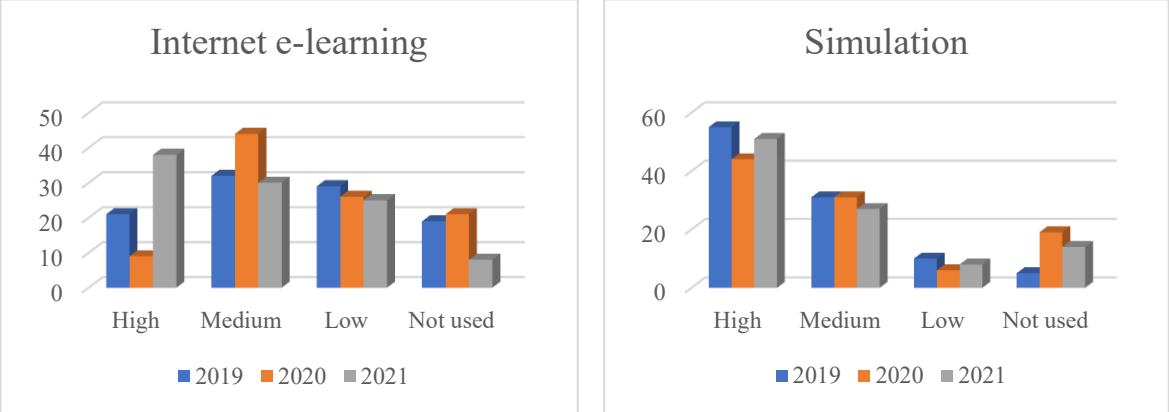
Technological development has a significant impact on seafarers' education and on methods of acquiring and evaluation competences by using simulators and other specialised equipment. The 2010 amendments to the STCW Convention now include e-learning and distance learning provisions.

The STCW Convention also acknowledges the guidelines, specifically in the STCW section, part B-I/6, which permit the option of e-learning and distance learning. Parties can utilise distance learning and e-learning for the training of seafarers as long as they comply with the training and assessment standards stated in section A-I/6 and the Guidance for training through distance learning and e-learning [11]. This section of the STCW Code defines what each party should ensure regarding any distance and e-learning programs and which guidance for assessing a trainee's progress and achievements by training should be followed.

However, detailed information on competences that can be partially or entirely acquired through the mentioned learning models is lacking. Additionally, there needs to be more extensive information regarding the implementation of online learning in maritime higher education institutions. The process of acquiring certain STCW competences is almost impossible through distance learning (especially those concerning survival at sea in scenarios involving abandoning ship). Furthermore, there are certain competences that cannot be acquired without the usage of information and communication technologies.

Besides formal education, seafarers benefit from additional courses, which can be classified as STCW and non-STCW courses. Non-STCW courses are often a result of industry and shipping companies' needs. Due to the fast-paced technological advancements in ships and the limited ability of the STCW Convention and maritime higher education institutions to keep up with these changes, shipping companies are allocating substantial resources to offer additional education to their seafarers through non-STCW short courses. It is common for some of these courses to be held online as they reduce the cost of education. Figure 1 illustrates online courses, highlighting their fundamental characteristics such as course type, course area, requirements, deck officers, and refreshments.

Fig 1. The usage of various learning methods by the vessel operator and METI during the COVID-19 pandemic



Source: Authors according [12, 13, 14]

The Fig. 1 present a comprehensive overview of the usage of various learning methods by the vessel operator and METI during the COVID-19 pandemic. These methods include face-to-face, Video e-learning, Internet e-learning, and simulation.

3 E-NAUT PROJECT AND METHODOLOGY DESCRIPTION

After the beginning of the COVID-19 pandemic, maritime higher education institutions transitioned to online classes, raising concerns about the effectiveness of acquiring competences, i.e. what competences in nautical study programs can be acquired through e-learning. This specifically relates to the competences gained through STCW courses. The lack of comprehensive response and guidance resulted from objective factors. At present, all educators, regardless of whether they provide general courses or teach STCW courses, possess certain experience in conducting online, in-person, and blended classes. The teachers' insights gained from their experiences during the COVID-19 pandemic can play a crucial role in creating guidelines for distance learning and the effective use of information and communication technologies in maritime higher education institutions. Moreover, the insights and personal experiences of students educated using all three methods (online, face-to-face, and blended) can also play a significant role. The project "E-NAUT" activities focus on analysing the mentioned attitudes in nautical study programs, specifically targeting the acquisition of STCW competences through e-learning and distance learning. The project aims to map STCW competences in nautical study programs that students can acquire through online learning. It aims to create guidelines on the possibilities of distance learning, the use of online tools, and other technologies in teaching nautical study programs. The research carried out in this project aims to enhance inclusive and efficient distance learning and e-learning, in line with the objectives of the Digital Education Action Plan (2021-2027). The project considers the unique characteristics and requirements of seafarers' education. It ensures compliance with the standards set by the STCW Convention and the Regulations on Ranks and Certification of Seafarers.
The goals of the project are:

- Creating a theoretical framework for online teaching and e-learning at maritime higher education institutions in the Republic of Croatia;
- Mapping the STCW competences in nautical study programs that can be acquired through distance learning, face-to-face and blended teaching;
- Defining the advantages and disadvantages of holding online classes in nautical study programs;
- Developing guidelines exploring the potential of distance learning, online tools, and other technologies in teaching nautical study programs.

It is possible to develop a theoretical framework for online teaching and e-learning in maritime higher education institutions in the Republic of Croatia by gathering and analysing data from previous research conducted in the existing projects, studies, and scientific papers. The previously stated activity denotes the first step in the project, serving as the foundation for subsequent activities focused on mapping STCW competences. These activities require conducting field research at different maritime higher education institutions in the Republic of Croatia. The activities include:

- Analysing the policy and curriculum of maritime higher education institutions that carrying out undergraduate nautical studies;

- Collecting and analysing the views of lectures carrying out so-called STCW courses and general courses;
- Surveying to gather insights and feedback from key stakeholders regarding the utilisation of e-learning and distance learning in the teaching of nautical study programs;
- Gathering and evaluating the perspectives of students who underwent distance, face-to-face, and blended learning during the COVID-19 pandemic.

The perspectives of students and teachers teaching STCW and general courses will be gathered and analysed using survey and interview methods. The study will primarily concentrate on the areas specified in the Table 1.

Categories	Variables
General information and experiences	General information
	Experiences with online courses before COVID 19 pandemic
	Digital literacy before COVID 19 pandemic
	Digital skills before COVID 19 pandemic
Learning resources and support	Home learning resources
	Internet infrastructure
	Used devices
	Technical problems
	Institutional support
Curriculum	Course contents and outcomes
	Learning approaches
	Professors learning support
	Curriculum coverage
	STCW competences
	Non-STCW competences
Online Platforms	Online learning platforms used in STCW courses
	Online learning platforms used in non-STCW courses
	Teaching materials
	Technical support
Advantages and disadvantages	Interactive online learning
	Group discussions
	Professors' engagement
	Feedback and evaluation
	Workload
After COVID 19	Satisfaction with online learning
	Digital literacy after COVID 19 pandemic
	Digital skills after COVID 19 pandemic
	Online learning usage after COVID 19 pandemic

Table 1 Categories and variables used in the study

Once the mentioned activities have been completed, an evaluation of the advantaged and disadvantages of integrating online classes into nautical study programs will be presented. To properly evaluate the advantages and disadvantages of online classes, it is necessary to include the input of key stakeholders and subject experts in seafarers' education. This mainly includes the teaching staff, students, representatives from the Ministry of the Sea, Maritime Affairs, and Infrastructure, representatives from the public and private sectors, as well as Chief Mates and ship masters on vessels exceeding 3000 GT.

After completing the mentioned activities, a SWOT analysis will be carried out to assess the feasibility of integrating online teaching into nautical study programs. Accordingly, a comprehensive set of guidelines will be developed to delve into the potential of distance learning and incorporate online tools and other technologies in this specific context. Moreover, a comprehensive assessment will pinpoint the difficulties associated with incorporating distance learning, online tools, and other technologies into the educational framework of nautical study programs.

The research results will serve as a basis for mapping STCW competences in nautical study programs, covering

distance learning, e-learning, and on-site teaching. Competence mapping will be conducted in compliance with the STCW convention, specifically focusing on the key competences addressed in nautical study programs in the Republic of Croatia:

1. Navigation at operational level
2. Navigation at management level
3. Cargo handling and stowage at operational level
4. Cargo handling and stowage at the management level
5. Controlling the operation of the ship and care for the persons on bord at operational level
6. Controlling the operation of the ship and care for the persons on bord at management level
7. Radiocommunications at the operational level
8. Personal survival techniquies
9. Fire prevention and fire fighting
10. Elementary first aid
11. Personal safety and social responsibilities
12. Medical first aid and medical care.

Given that the research adheres to the STCW Convention's international standards, the project's findings, guidelines, and recommendations can be universally implemented by nautical study programs in Europe and worldwide.

4 CONCLUSION

The COVID-19 pandemic has brought about significant organisational changes in higher education, affecting nearly every fundamental aspect, particularly in acquiring and evaluating competences. The digital proficiency of the teaching staff presented a significant set of issues for all higher education institutions, including the maritime ones. Maritime higher education institutions had not extensively used online learning before the beginning of the COVID-19 pandemic, particularly in STCW courses. The situation was similar in other higher education institutions. But everything has changed significantly since March 2020 and the pandemic's start. All educational institutions closed and established online classes.

E-learning provides affordable and flexible educational opportunities but requires resources and support to overcome the challenges of transitioning from traditional, face-to-face learning to online learning. Adapting and enhancing the education system is crucial for maximising the benefits of online learning and maintaining high-quality education. To address any obstacles, investing in infrastructure and technology is necessary to ensure that online learning is accessible to every student. Providing educators with support and training is crucial to improving their skills in online teaching and the effective use of technology. Also, it is essential to adapt teaching methods and materials to maximise the advantages of online education. Regarding the education of seafarers, it is vital to recognise online learning as a supplementary resource that enhances traditional face-to-face education rather than a complete alternative.

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