




The Use of Miro While Formation of Communicative Competence of Future Ship Engineers

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Abstract: The paper is devoted to the analysis of the use of collaborative whiteboard platform Miro in maritime education and training. It is highlighted that with the help of the board teacher can create and upload content, communicate with others, share or export his/her work. It is mentioned that the board can be used while distance learning for explaining the new material, also, students can use it for drawing, add files, share comments, working on the same project remotely from each other. The benefits of the platform are mentioned in the article. The drawbacks of Miro use while maritime education and training are also listed. The results of the study showed that the use of Miro enabled cadets of maritime institution to improve their ability to communicate effectively, share ideas, and work collaboratively in a virtual environment. The study also found that the use of Miro allowed for increased engagement and motivation among the cadets, which positively impacted their overall learning experience. This work highlights the potential of using Miro as a tool for enhancing communicative competence and suggests further research to explore its effectiveness in other educational contexts.

1 INTRODUCTION

Nowadays informational technologies serve as not only means of communication between states, companies or as form of trade but also as means of education. The idea of introduction of such technologies in educational process involves the achievement of the target of high-quality education where at the end of education we will have a competitive, creative and self-affirmative person in various spheres.


First of all, the internal readiness of the teacher to transform herself/himself (for mastering and training new technologies) is quite important too. Online lessons became a new reality to all education participants. The creation of a single instruction to utilize e-learning technology in the organization of the educational process relies on teachers. They can base on their own experience and the experience of their colleagues, explore materials on didactic possibilities of online resources, determines feasibility and develop the methods of applications.


Distance learning should be organized with the


use of a board where teacher and student can work. Many educational institutions choose one platform (e.g. Google Meet, Zoom, Moodle (BigBlueButton), Webex, Skype). But to make lessons more interesting and different tutors always try to find new apps that would be free and easy to use (Diahyleva et al., 2021). Platform Miro was chosen by us because this is a real-time workplace as a “white sheet” of paper on which a teacher and students can write or type something, watch video, fill out mind map, table, etc.

It was founded in 2011 by Andrei Husin and Oleg Chardin, the headquarters is situated in San Francisco. Whiteboard Miro allows to work together on one infinite canvas – boards including remote work of individual employees to create collaborative project (Spivakovsky et al., 2020; Hockly and Dudeney, 2017).

The service interface is in English only, during its utilization the pop-up windows with hints will help to work quick. Miro is one of the best ways to make learning interactive. The principle of this platform is in using boards, that is one project includes the use of several boards in one board. The main board has the organizer of the meeting, the teacher, where he can give the task (text, different activities) with useful links for the video or another resource. The teacher sends notification to inform the students

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about a new task or information. Another, coordinator board is used for various organizational moments like schedule, recommendations, management issues can be found here. Each participant also has its own board with his/her name, photo and personal information. The students can share here links to the social nets or other platforms and add the tasks they've done (Bezlutska et al., 2021).

Via whiteboard platform Miro is easy to arrange brainstorm (give a task to your group and monitor their work, adjust with the help, give comments, mark the user), set up the team project work (teach your students to work in team, share responsibilities, set objectives, monitor the student's activities and interactions, integrate different tools to boost team efficiency and free team imagination, add comments), conduct consultations.

It can be used also as a textbook where you can add learning material, navigate via the pages with schemes, mind maps, etc. with your group. As for other benefits online board Miro promotes the development of students' creative abilities within the framework of implementation of problem-oriented and project-based training. Project works and interactive interaction of students in distance learning determine the productivity of knowledge acquisition, development of different types of thinking and stimulation of cognitive processes.

The virtual whiteboard service is an effective tool for organizing training process in both synchronous and asynchronous learning formats. The Miro online board is a means of ensuring the efficiency and effectiveness of blended learning in higher educational establishments, which allows productive organization and active interaction of students and teachers in the educational process, the results of which are stored in the cloud environment and can be used at a convenient time. The whiteboard Miro allows to improve interactive activities between students, encourage them to creative cooperation, contribute to the development of project activities, planning and analysis skills in students' activity, provide feedback.

A lot of consumers all over the world deal with the usage of whiteboard Miro, share their ideas and results in closed and open groups about benefits from the implementation of it.

2 METHODS

The research used a complex of interrelated methods: empirical (observation, survey), theoretical (analysis, generalization, comparison). A pedagogical experiment was conducted on the use of the online board

Miro in the educational process. The total number of cadets (about 193 males, from 1-3 courses) from Maritime College and Kherson State Maritime Academy took part in this research. Students were divided into two groups: 95 (experimental group) and 98 (control group, in groups with which this method was not used). The observation method was used for control. With the help of theoretical analysis, a review of scientific sources was carried out regarding relevance and perspective with the application of the Miro platform in various spheres of modern activity, including for students of various types of institutions; methodological developments of English language classes for ship engineers have been prepared.

The students of ship engineering department were asked to work online and offline using platform Miro. The interaction between the participants is carried out in comments via tags. Each participant has a personal nick. To send a comment to a student about his work, the teacher put @ and student's name and he will receive the teacher's comment or notification.

Before and after the experiment, a survey was conducted to determine the productivity of using the board. A survey on the LMS Moodle was used. Generalization and comparison methods were used for quantitative and qualitative analysis of the obtained results. The results are processed using responses on LMS Moodle (Kovalchuk et al., 2023; Yurzenko, 2019).

3 LITERATURE REVIEW

The integration of technology into education has ushered in a new era of teaching and learning, transcending the boundaries of traditional classroom settings. In this context, the collaborative whiteboard platform Miro has emerged as a valuable tool in the domain of maritime education and training.

There are modern educators, instructional designers and researchers in the field of education and technology who have conducted studies or assessments on the effectiveness of Miro as an educational tool. Chan et al. (2023) have decided to promote collaboration between students and teacher/students through online whiteboard interaction. They find Miro an instrument that allows students to easily share ideas and exchange information using a range of different media. The authors listed Miro's advantages, the one of which is its ability to allow real-time sharing and creation of ideas. Among Miro's disadvantages scientists mention its numerous tools and options which does come with a learning curve. By the end of their research authors find Miro a useful option for

encouraging collaboration between students, giving them a workspace to freely generate ideas and share resources (Chan et al., 2023). Freitag et al. (2022) made data analytics on Miro's use to support the evaluation of student activity. They propose Miro as easy-to-use tool to quickly collect group activity data using important key parameters and present it easily (Freitag et al., 2022).

The researches were devoted to find out the effectiveness of using the board in educational process and also pros and cons of whiteboard utilizing at different stages of the lesson (Mickienė and Valionienė, 2021).

Despite found data there we not enough research results devoted to the use of Miro while formation of communicative competence of future ship engineers.

4 RESULTS

One of the effective multimedia resources is represented by the Miro online board, which is used for collaborative learning, and enables teachers and students to work with visual educational content, to effectively establish communication.

Nowadays educational process of some education establishments due to war in Ukraine is conducted in fully distance mode so the role of teacher and student should be changed. The teacher became a consultant who coordinates the educational process; and the student should become an independent and responsible subject of the educational activities. The principle of individualization of students in distance learning is basic in a system of didactic principles for organizing the process of cognition of students. According to this principle it is necessary to organize cognitive activity not at all and in a specific specialty in accordance with its individual characteristics.

It's not necessary to make a fresh start, one of the proposed templates can be used. To start doing it click on the icon "choose template" in the menu on the left, where you can see the option of any form to choose (Sandorova and Betak, 2021; Semerikov et al., 2000). With the help of interactive whiteboard Miro any teacher will have an opportunity to conduct the lessons online and have no difficulty while delivering the material to the class (figure 1).

The teacher can fill in the board with the materials of the lesson with the text books (download it), video or audio. Also, the teacher can manage the attention of his/her students and limit the time to complete the task (Barzii et al., 2020; Bevzenko et al., 2020; Poultsakis et al., 2021). You can offer all students to work on the projects in pairs or groups, filling in templates. The teacher can track those who are most ac-

tive. If it's necessary, monitor and make corrections or comments using stickers (Lytvynova et al., 2021; Tarasenko et al., 2021; Nechypurenko et al., 2022). Miro has excellent technical equipment, which allows many people to work together on the same board in a real-life time (figure 2).

The teacher can control the board directly from your browser (better to work from PC or tablet). To start with the work on the platform you can choose the Education plan which offers boards and up to 100 participants to work together.

While the lesson it is possible put a timer on students' work to limit the time (Tkachuk et al., 2021; Semerikov et al., 2021; Chan et al., 2023).

In free version of this platform the user has an access to several functions: to write or type on the board; to add stickers, pictures or files with different formats; to create smart cards yourself or use templates; to work as one team on the same board online (figure 3).

There are some restrictions while using free version of Miro platform: to use not more than three boards for editing; next boards are to view only (Piccirillo et al., 2022; Vidhiasi and Syihabuddin, 2022; Hrnić, 2022); all boards are seen by all the Miro platform participants (you can't make them private); there is no access to variety of useful functions (Nosov et al., 2020; Fedorenko et al., 2022; Vakaliuk et al., 2021; Osadcha and Osadchyi, 2021; Freitag et al., 2022; Styles and Polvi, 2022).

The experiment has involved a group of cadets enrolled in a Maritime English course (193 people) of ship engineering department, who would be randomly assigned to either a control group (98 cadets) or an experimental group (95 cadets).

The control group has received traditional Maritime English instruction, while the experimental group would received the same instruction, but with the addition of Miro as a tool to support their learning online. The Maritime English instruction was focused on developing the cadets' communicative competence, which includes skills such as listening, speaking, reading, and writing in English (Sukomardojo and Ratnaningsih, 2022). The results of LMS Moodle quiz done by experimental group is shown below (figure 4). The experimental group has shown greater improvement in the targeted learning outcomes compared to the control group.

After that the experimental group has received training on how to use Miro effectively, including how to create and share digital whiteboards, collaborate with peers, and use visual aids to support their learning. The tutors guided their cadets in using Miro to complete various tasks, such as creating di-



Figure 1: Mind map created on Miro for “Engine room Rules” topic of online lesson.

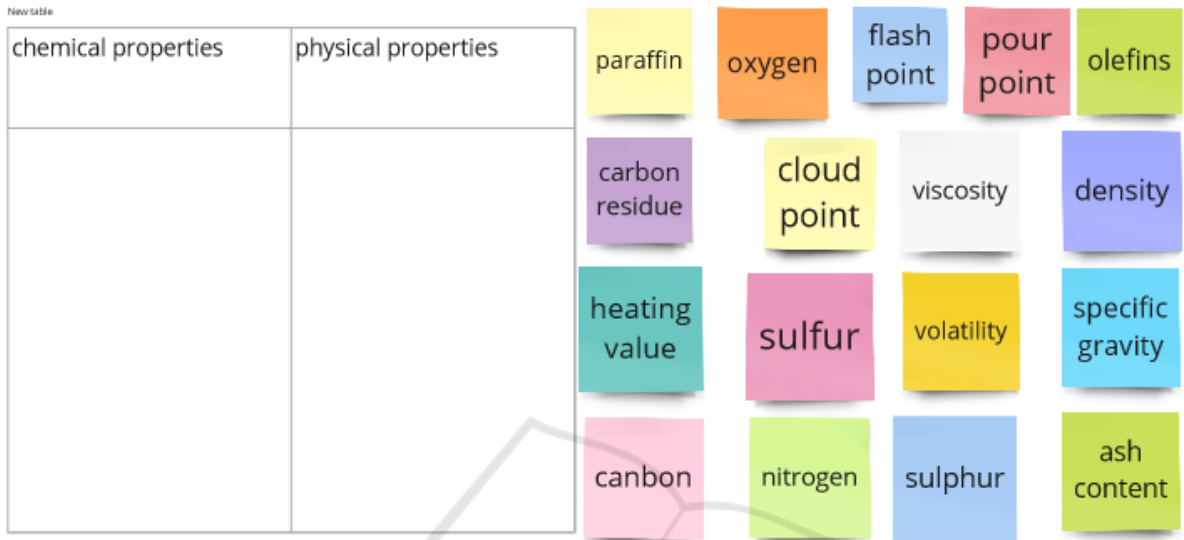


Figure 2: Activity created on Miro platform where cadets need to group the properties of heavy fuel oil.

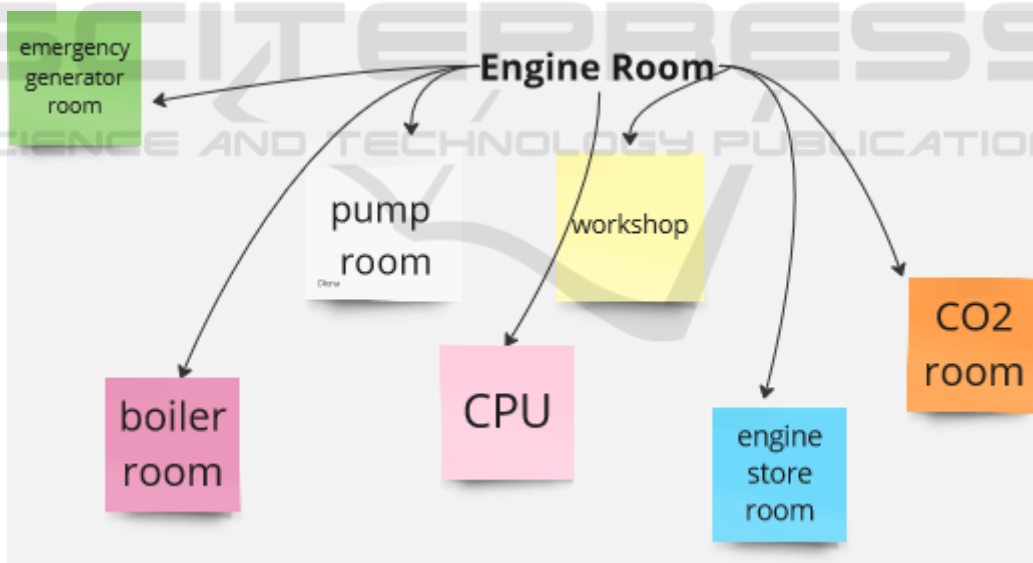


Figure 3: Example of team work on one board created on Miro platform.

agrams, flowcharts, and mind maps, which were related to Maritime English topics for ship engineers (e.g. Engine Room Construction, Marine Boilers, Pumps, Auxiliaries, Main Engine Construction and Types).

Both the control and experimental groups were assessed using a pre-test and post-test on LMS Moo-

dle (Quiz activity) to measure their communicative competence, including listening, speaking, reading, and writing skills. The tests on LMS Moodle were based on a validated scale and had included both objective and subjective measures.

At the end of experiment the data collected from the pre-test and post-test had been analyzed using

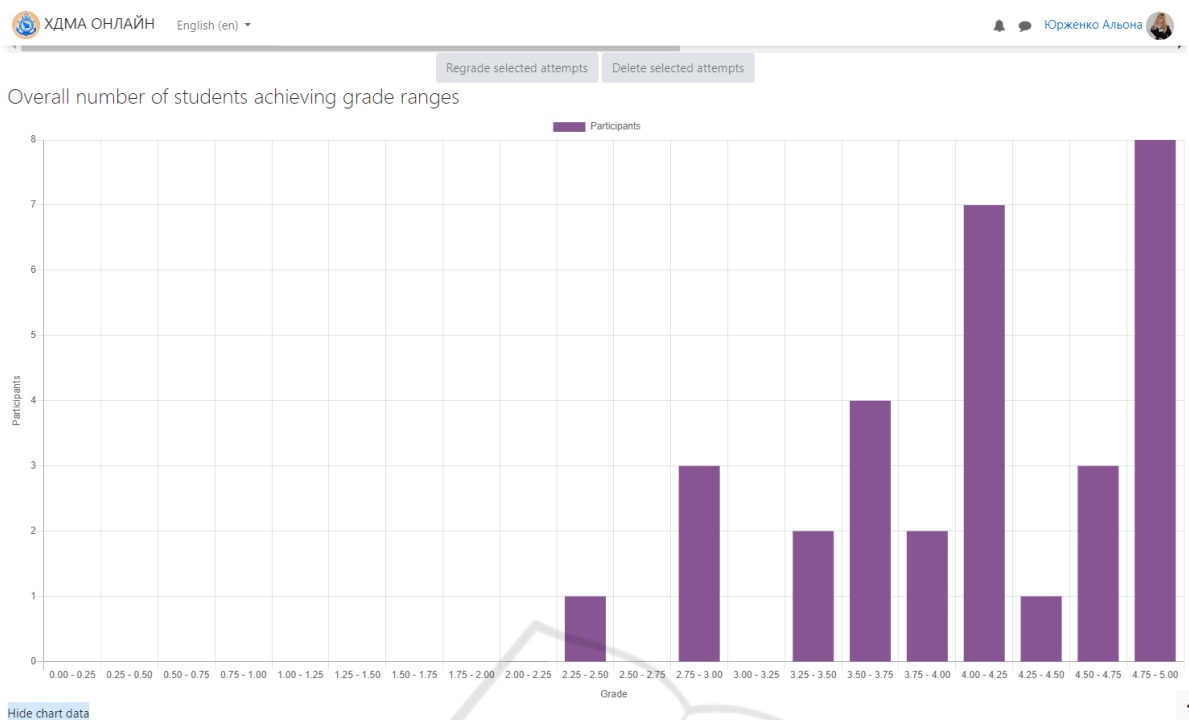


Figure 4: Example of team work on one board created on Miro platform.

statistical methods to determine the effectiveness of Miro in enhancing the cadets’ communicative competence. The results were compared between the control and experimental groups to assess the impact of Miro on the cadets’ learning.

The pedagogical experiment had been aimed to investigate the potential of Miro as a tool to support Maritime English course and enhance students’ communicative competence. The experiment has provided valuable insights into the effectiveness of digital tools in language learning and had informed the development of future language teaching practices. The feedback from experiment participants has been collected by LMS Moodle Questionnaire and showed positive results of the Miro use while Maritime English course.

5 DISCUSSION

The study on the use of Miro for developing communicative competence among future ship engineers provided valuable insights into the potential of this collaborative platform for enhancing students’ communication skills. The data showed that the use of Miro facilitated effective communication, idea sharing, and collaboration among the students, which positively impacted their learning experience. The study

also revealed that the use of Miro increased students’ engagement and motivation, which suggests that this platform has the potential to enhance the overall effectiveness of educational programs. However, the study had some limitations, such as the small sample size (193 cadets) and the specific context of the maritime engineering program. Therefore, Miro allows cadets to visualize complex concepts and ideas, which can enhance their ability to communicate technical information effectively. The platform provides various tools, such as diagrams, flowcharts, and mind maps, which can help cadets to represent complex ideas in a visual and intuitive way. This approach enhances cadets’ ability to communicate complex technical information to non-technical stakeholders, such as clients or regulators, which is a critical aspect of communicative competence for ship engineers (Sari and Sari, 2022; Limbong et al., 2022).

Finally, the use of Miro can increase engagement and motivation, which is essential for the development of communicative competence. The platform provides a dynamic and interactive learning environment, which enhances cadets’ motivation and encourages them to take an active role in their learning. This approach fosters a positive learning experience, which can enhance confidence and willingness to communicate effectively in different contexts.

Overall, the use of Miro can significantly en-

hance the development of communicative competence among future ship engineers, by providing an effective and engaging online platform for communication, collaboration, and visualization of complex technical information (Moroz, 2022; Abduh et al., 2022; Şihmantepe et al., 2023).

The online board as a means of learning performs not only the function of a visual demonstration of educational materials, but also acts as an effective tool for project work with sources of information in the form of text and multimedia objects. Online board Miro is mostly free (some features are available for an additional fee) as a digital tool for joint interaction of users in real time, while it allows you to use other tools for online learning (such as Zoom and Google services, etc.). You can upload files and documents to the whiteboard workspace, links to sites, audio and video materials, you can draw, take notes, create mind-maps, exchange messages, monitor the progress of students. For work with the Miro online board, you can use ready-made templates from the library or create them independently. Group work on Miro's online whiteboard workspace is accomplished using text, voice, or video chat, as well as real-time collaborative editing and board viewing capabilities. If there is a large number of participants, it is possible turn on the cursor tracking feature, which allows the teacher and students to see each other's actions.

The advantages of using the Miro online board in classes in institutions of general secondary education:

- the possibility of using many media files (images, audio, video materials, text files and documents);
- emphasizing important aspects with multi-colored markers, stickers, geometric shapes, arrows and connections;
- work with the online board as in the mode real time and asynchronously;
- ability to leave comments;
- joint group work on projects;
- the possibility of joint editing in real time;
- text, voice and video chats;
- screen demonstration;
- setting up notifications to track changes in the workplace boards;
- setting up the update section on the board workspace during each new one visiting;
- the ability to download the whiteboard workspace with the results of group work in the format of images or PDF files;
- the possibility of placing vocations on the online board at sites, in social networks;

- availability of a visual library of templates for conducting surveys;
- the ability to add tables and diagrams, business templates, organizing and conducting brainstorming, etc.

6 CONCLUSIONS

Online whiteboard Miro is the medium provision of blended education, which makes it possible an effective organization of active interaction of students and teachers in the educational process, the results of which stored in the cloud environment and can be accessed at a convenient time at the appropriate links. Online whiteboard Miro allows to improve interactive interaction between students and feedback, to encourage them to creative cooperation, contributes to the development of project activities students, the ability to plan and analyze their activities. We see the prospect of further scientific research in the diversification of blended learning by means of information technologies.

The whiteboard platform Miro can be used free of charge via the official website. It is enough to register on it, create a project and share a link to it with students. If you plan to use it regularly for study or work, you should buy one of the paid versions: Team, Business or Enterprise. An online whiteboard is a great tool to mix online and offline learning, leaving only the pros of each format. You don't need to be in the same room with the students, to motivate and to engage them into the process. Whiteboard Miro is an interactive board which is accessible via the internet; you and your students can write, type, draw, add files, videos, etc., and these activities can be visible anywhere in the world. Via the board you can create layouts, use chat, do screen broadcast, work in presentation mode and hold online lessons. Overall, Miro is a good service with convenient interface, a large set of different tools and features.

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