

CASE STUDY

Gamification techniques in Maritime English online courses: Motivating learners in virtual environments

Olena Diahyleva¹ Alona Yurzhenko^{1*} Olena Kononova²¹ English Language Department for Maritime Officers, Kherson State Maritime Academy, Kherson 73001, Ukraine² Ship Engineering Department, Maritime Applied College of Kherson State Maritime Academy, Kherson 73003, Ukraine

Correspondence to: Alona Yurzhenko, English Language Department for Maritime Officers, Kherson State Maritime Academy, Kherson 73001, Ukraine; Email: mz@ksma.ks.ua

Received: January 6, 2024;**Accepted:** March 28, 2024;**Published:** April 2, 2024.

Citation: Diahyleva, O., Yurzhenko, A., & Kononova, O. (2024). Gamification techniques in Maritime English online courses: Motivating learners in virtual environments. *Advances in Mobile Learning Educational Research*, 4(1), 965-972. <https://doi.org/10.25082/AMLER.2024.01.008>

Copyright: © 2024 Olena Diahyleva et al. This is an open access article distributed under the terms of the [Creative Commons Attribution-Noncommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/), which permits all noncommercial use, distribution, and reproduction in any medium, provided the original author and source are credited.



Abstract: The research is conducted to solve the problem of students' motivation while m-learning, namely while Maritime English online courses on LMS MOODLE. Gamification techniques are listed in the paper. The advantages of m-learning with gamification are described. The following activities are listed to motivate and engage students in Maritime English m-learning: leaderboards, badges, points, levels, missions, maps, and scenarios. The research was conducted in higher maritime education institutions in Ukraine. The research results show the positive impact of gamification while m-learning on the formation of communicative competence of future ship engineers. The prospects of further research can be seen in analysing other m-learning techniques to raise the quality of Maritime English online courses (e.g. game-based learning, problem-based learning).

Keywords: digitalisation, gamification, Maritime English, m-learning, MOODLE, online courses

1 Introduction

Mobile phones and games have become increasingly intertwined in recent years, with smartphones evolving into powerful gaming devices (Papadakis, 2023). The convenience of having a device that can be used for communication, entertainment, and gaming on the go has made mobile gaming a vast industry. Popular games have captured the attention of millions of people worldwide (Lavidas et al., 2023). In addition, mobile game developers are constantly pushing the boundaries of what is possible on a phone, with stunning graphics and immersive gameplay experiences (Jurayev, 2023). Mobile phones have revolutionised how people play games, offering endless entertainment options at our fingertips (Athanasopoulos et al., 2023). Certain games can help students develop cognitive skills, problem-solving abilities, and strategic thinking. There are educational games designed to enhance specific skills relevant to academic subjects (Armakolas et al., 2023).

Mobile phones provide access to a wide range of educational apps. These apps can help students learn new subjects, reinforce concepts, and provide interactive learning experiences for organisation, time management, and note-taking (Sarwari & Adnan, 2024). These tools can enhance productivity and help students prioritise their assignments. Students can use mobile phones to access the Internet for research purposes (Dahal & Manandhar, 2024). This allows them to gather information quickly and stay updated on current events. Mobile phones facilitate communication and help share important information, coordinate group projects, or stay in touch with other students (Ala & Najah, 2024).

By structuring the Maritime English course on Moodle with a focus on mobile accessibility and interactive content, learners in the maritime industry can effectively enhance their English language skills, contributing to improved communication and safety in their professional roles.

2 Materials and methods

A higher maritime education institution, Kherson State Maritime Academy in Odesa (a temporarily relocated university), was chosen to experiment with Ukraine. Learning is conducted online because of relocation, war conditions in the South Region, and other external conditions. LMS MOODLE was chosen as a system that supports mobile mode (Main page | KSMA ONLINE, n.d.).

To conduct the research, a group of cadets was chosen from the Marine Engineering faculty (1st year of studying, abridged program). According to their surnames (alphabetic order), groups were divided into controlled and experimental subgroups (73 cadets 18-19 years old, primarily A2-B1 level of English). Experimental participants used mobile phones with the Moodle app; their online course on Maritime English included various gamification elements (e.g. leaderboards, badges, points, levels, missions, maps, and scenarios). At the same time, the control group used online Student books and Zoom sessions according to their schedule (Serhan, 2020). The total amount of cadets is 75 people. Control groups included 37 cadets, while the experimental one included 36 cadets. The survey and tests were conducted before and after the experiment on LMS MOODLE and Google Drive. All research participants provided informed consent and voluntarily agreed to participate.

3 Results

Studying Maritime English via the phone is comfortable, too, because students can download the Moodle app (mobile-friendly for easy access and navigation) to enhance language skills, do the tasks (implement vocabulary-building exercises, reading materials such as articles, reports, or documents, writing tasks that reflect real-world maritime situations, such as composing emails, reports, or incident descriptions), encouraged in collaborative writing projects where students can provide feedback to each other, watch the video, listen to the audio, or take tests online (Yurzenko et al, 2022). Teachers create a dedicated Moodle course and divide it into modules (usually 4 or 5) based on specific language skills such as listening, speaking, reading, and writing. Maritime English course on LMS MOODLE, the mobile version of a course using Google Chrome, is given in Figure 1.

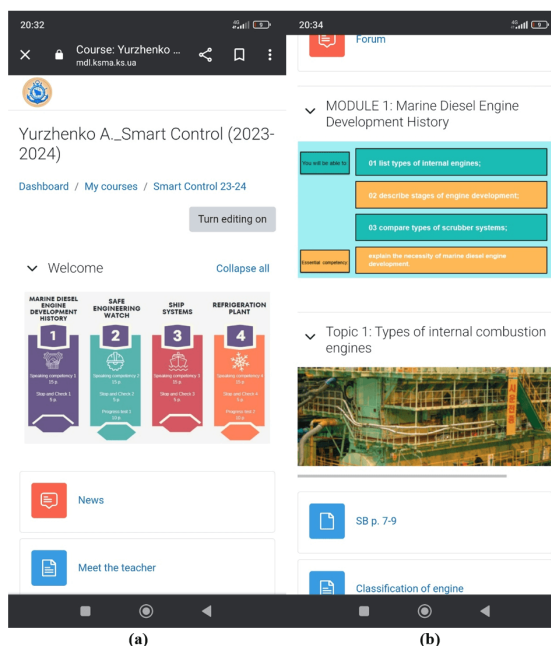


Figure 1 Maritime English course on LMS MOODLE: (a) course beginning with News forum and Meet the Teacher page; (b) first Module of the course.

It includes interactive content, quizzes, and assignments that involve discussing maritime topics, practising communication in various situations, and using voice recording features available on the Moodle app. It is easy for teachers to track individual progress within the Moodle course, provide feedback, implement regular assessments to evaluate language proficiency, and push notifications for announcements (Wibawa et al., 2020; Al-Momani et al., 2022).

The trend toward using games in e-learning is partly due to the growing popularity of games for mobile devices. Even with the most superficial observation, it becomes evident that there is a connection between the game, the learning process and memorisation. The researchers compared the results of game-based learning and learning based on regular text. Immediately after the end of the training process, the experiment participants showed almost the same results. However, after a few days, those who studied playfully retained more information in their memory. Interactivity is one of the critical elements of a successful game. The level of student

engagement depends on many factors: their interest and motivation (Oliveira et al., 2023).

In optimal conditions, the tasks assigned to students enable them to attain particular objectives within the educational context. When devising tasks, varying complexity, duration, and timing are necessary for their resolution. Reward participants upon reaching the designated objectives, ensuring these incentives hold intrinsic value. Within the task-based learning framework, educators may impose time constraints akin to real-life deadlines. From a broader perspective, participants should advance incrementally, progressing from one level to another until goals are attained or skills are honed. Implementing a scoring system quantifies a student's proficiency in meeting learning objectives.

A compelling positive factor is that students learn in an interactive environment, interact with groupmates and help each other. In this way, the critical competency of "Initiative and entrepreneurship" is formed in students: to show the ability to work in a team, to be proactive, to generate ideas, to take responsibility for decision-making, and to conduct a dialogue to achieve a common goal. During the team game, students solve tasks by answering questions from their own devices. Using the Flipped Classroom method, they can look for the correct answers on the Internet, in textbooks, or in intelligence maps that they create at home (Strelan et al., 2020). At the same time, "Information and digital competence" is formed using modern devices to search for chemical information, its processing, storage, and transmission. Therefore, gamification in the educational process increases students' interest and motivation, promoting emotional involvement and peer interaction. Students take an active part in the work, which activates their cognitive activity in contrast to traditional forms of education.

4 Discussion

Gamification in the context of mobile learning (m-learning) can become an essential tool for stimulating students and improving their knowledge acquisition. Gamification in m-learning can excite learning, encouraging students to be active and involve them in learning. It is essential to ensure a balance so that gamification elements stay focused on the main goal - gaining new knowledge. Elements of gamification that can be successfully used in m-learning:

- (1) creation of interactive tasks that stimulate students to study new material;
- (2) breakdown of educational content by level of complexity;
- (3) providing points that are accumulated for successfully solving tasks;
- (4) creation of rating lists for comparing achievements between students;
- (5) organisation of competitions between students or groups to stimulate healthy competition.

Gamification allows for personalised learning pathways where students can choose activities or challenges based on their preferences or skill levels. The ability to adapt the learning experience to individual needs increases student autonomy and encourages independent learning.

Gamified learning platforms often provide instant feedback on student performance, allowing students to understand their strengths and areas for improvement and adjust their learning strategies in real-time.

Gamification encourages social interaction and collaboration, allowing for student community development and promoting knowledge sharing and teamwork. It often includes real-life scenarios and simulations, where students can apply theoretical knowledge practically, bridging the gap between academic learning and real-life situations. Gamified systems allow teachers to monitor students' progress constantly. Teachers can track individual and collective achievement, identify challenges, and provide targeted support, promoting a more personalised approach to learning.

Gamified tasks often contain challenges and puzzles that require critical thinking and problem-solving skills. Students develop and strengthen these cognitive skills through gamification while enjoying the learning process. Thus, gamification in mobile learning is a powerful motivator that promotes engagement, personalisation, and collaboration. Using game elements, educators can create a dynamic and effective learning environment that resonates with the preferences and behaviours of today's students.

4.1 Leaderboards

Leaderboards are a common gamification element that displays the performance or achievements of participants in a competition or learning environment. They visually represent rankings, showcasing individuals or teams based on specific criteria, such as points earned, task completion, or other measurable accomplishments. Leaderboards aim to foster competition, motivation,

and a sense of achievement among students (Call et al., 2021; Yurzhenko, 2019).

The following key features of leaderboards in gamification include:

- (1) rankings (students are listed in order of their performance, with the top performers appearing at the top of the leaderboard; points, scores, or achievements often determine them);
- (2) points and scores (leaderboards typically use a point or scoring system to quantify participants' accomplishments for completing tasks, answering questions correctly, or achieving specific milestones);
- (3) real-time updates (modern leaderboards often provide real-time updates, reflecting participants' current standings);
- (4) competition (leaderboards introduce an element of competition among participants; the visible rankings create a competitive environment where students strive to improve their positions);
- (5) motivation (the competitive aspect of leaderboards is a powerful motivator to perform better, earn more points, and climb the rankings to achieve a sense of accomplishment).

The examples of leaderboards can be seen after students write Stop & Check after each Module. The names of those who wrote the test for a high score can be seen at the beginning of the list.

4.2 Badges

Badges are a gamification element commonly used to recognise and reward specific achievements or milestones within a learning or gaming environment. They serve as virtual representations of accomplishments and can be awarded for various activities or accomplishments. Badges contribute to a sense of achievement, motivation, and progression, enhancing the overall user experience. They are awarded to students for completing tasks, reaching goals, or demonstrating specific skills and serve as visual symbols of accomplishment.

Also, badges can be created for a wide range of achievements, including completing levels, mastering certain skills, participating in events, or reaching specific milestones. Accumulating badges allows students to track their progress and see a visual representation of their accomplishments over time. This can motivate them to continue engaging with the content. Also, badges serve as motivators by providing a tangible reward for completing tasks. Some gamified tasks can use badges to unlock additional content, features, or levels. This creates a sense of progression and keeps participants interested in exploring more within the platform.

When implemented effectively, badges can contribute to a positive and engaging gamification experience, providing students with tangible evidence of their accomplishments and motivating them to continue their learning as a gaming journey (Kornilov, 2020; Zhou et al., 2019). (see Figure 2)

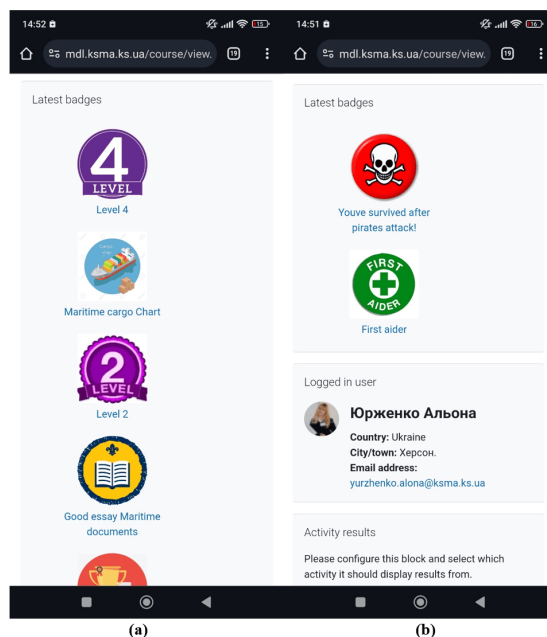


Figure 2 Digital badges on LMS MOODLE: (a) latest Badges section; (b) three online course sections.

4.3 Points

Points are a fundamental gamification element used to quantify and measure participant achievements or progress within a game, learning platform, or any other gamified system. They numerically represent a user's accomplishments and create a sense of competition, achievement, and progression. Points provide a quantifiable way to measure and track a student's achievements. Different activities or tasks can be assigned specific point values based on their complexity or significance.

Points introduce an element of competition, as participants strive to earn more points than their groupmates. The competitive aspect can enhance engagement and create a desire for motivation.

4.4 Levels and missions

Levels and missions in educational gamification serve several vital purposes and enhance the learning experience. The prospect of advancing to the next level serves as a powerful motivator. Learners are encouraged to actively participate and achieve more to unlock new levels that can allow for a gradual increase in difficulty. Challenges become more complex as learners progress, aligning with their growing knowledge and skills. This ensures a suitable level of difficulty at each stage. Levels can be tied to personalised learning pathways. Learners may choose different paths or topics based on their interests, and levels help guide them through a structured curriculum.

Missions set specific, goal-oriented tasks for learners to complete. These tasks align with learning objectives, ensuring learners focus on specific skills or knowledge areas. Missions often involve real-world application of knowledge. Learners are presented with scenarios that require them to apply what they have learned in practical situations, promoting deeper understanding (Jurgelaitis et al., 2018). Educational missions can include various activities, such as solving problems, conducting experiments, or engaging in collaborative projects. This diversity keeps the learning experience dynamic and engaging.

Missions often require learners to use critical thinking and problem-solving skills. By presenting challenges that demand thoughtful solutions, missions contribute to developing higher-order cognitive abilities. Some missions encourage collaboration among learners. Collaborative missions promote teamwork, communication, and exchanging ideas, fostering a sense of community. Missions can be adapted to suit different learning styles and preferences. This adaptability ensures learners can engage with the material in ways that resonate with their needs (Vittaharju et al., 2021). Educators create a structured and engaging learning environment that motivates learners, tracks progress, and provides meaningful goals and challenges aligned with educational objectives by integrating levels and missions into educational gamification.

4.5 Maps

Maps can be valuable and versatile in educational gamification, visually representing content, progress, and learning pathways. Educational maps can serve as visual guides for learning pathways. Course maps on LMS MOODLE are given in Figure 3. Learners navigate through different levels on the map, each representing a specific topic or concept. Advancing on the map indicates progress in the learning journey.

Incorporating a map into a gamified educational scenario allows educators to create immersive storytelling experiences. Learners can embark on quests, solving problems or completing challenges in various locations on the map (Kumar & Sharma, 2016). A map can visually represent a learner's progress through a course or curriculum. As learners complete modules or achieve milestones, they move along the map, providing a clear visual indicator of their advancement. Maps can be used for in-game exploration, allowing learners to discover new concepts or content and navigate to specific points on the map to access challenges, reinforcing their understanding of the material.

Maps can support team-based or collaborative learning. Learners in different locations on the map may need to work together to solve problems or accomplish specific tasks, fostering teamwork. Educational maps can simulate virtual field trips, allowing learners to explore historical sites, ecosystems, or landmarks without leaving the classroom. This immersive experience enriches the learning process. Integrating maps into educational gamification provides a visually engaging and interactive way to present content, track progress, and create dynamic learning experiences. It appeals to learners' sense of exploration and adventure while

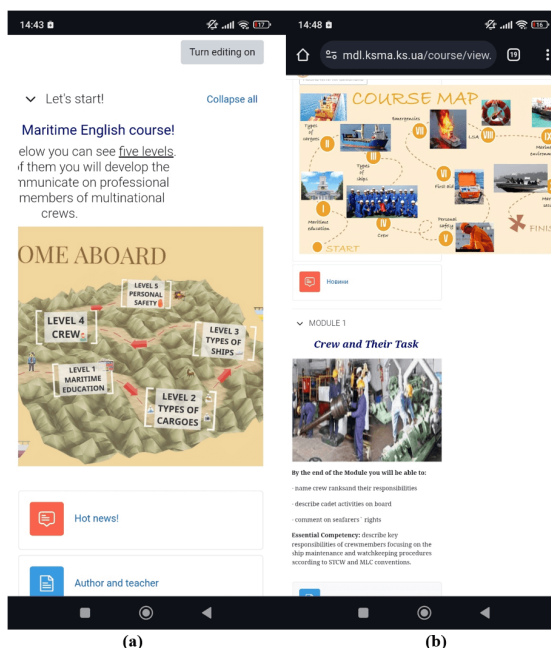


Figure 3 Course maps on LMS MOODLE: (a) “Welcome aboard” map (Kudriavtheva et al., 2016); (b) “Seven Seas Ahead” map.

enhancing the educational journey.

4.6 Scenario

A scenario in gamification refers to a narrative or storyline that sets the stage for the gamified experience. It provides context, purpose, and a framework for the activities or challenges within the game. Creating compelling scenarios is crucial for engaging learners, as it adds a layer of immersion and relevance to the educational content. Scenarios help contextualise the learning material within real-life situations. This context makes the content more relatable and meaningful to learners.

A scenario typically follows a narrative structure with a clear beginning, middle, and end. This structure keeps learners engaged and invested in the unfolding story. Scenarios often involve characters or roles that learners can assume. These characters may have specific challenges, goals, or roles within the narrative, providing learners a sense of purpose (Garrido et al., 2016; Strang, 2017).

The scenario introduces problems that learners must solve. They are directly tied to the learning objectives, requiring learners to apply their knowledge and skills to progress in the game. A well-crafted scenario is a motivational tool that captures learners’ interest and maintains engagement. In educational gamification, scenarios are pivotal in creating a dynamic and engaging learning environment. They transform content into a story-driven experience, making the learning journey more enjoyable and effective for participants (Kiv et al., 2020).

5 Conclusion

Mobile phones in education can play a positive and a negative role in students’ lives. It is essential to consider the potential advantages and disadvantages to make informed decisions about their use (Papadakis et al., 2023). Cell phones can be a valuable tool for students when used responsibly and in moderation. Balancing educational use with potential distractions is critical for positive effects on academic performance and overall well-being. Gamification in the context of m-learning can be a crucial tool for motivating students and improving their learning. According to the experiment, students in the experimental group improved their attendance of classes and their knowledge of the subject by 43.7%.

In comparison, the control group only improved by 7.8%. The iterative and dynamic nature of the gamified content of classes attracts students’ attention, fostering a positive attitude towards the educational material. Students are motivated to participate actively in learning as they seek to earn points, badges, or other virtual rewards, creating a sense of accomplishment.

The analysis of other m-learning methods (e.g., game-based learning and problem-based learning) for improving the quality of online maritime English courses suggests prospects for further research.

References

- Ala, B., & Najah, L. M. (2024). Tutorials and mobile learning in higher education: Enhancing and accessibility. *Advances in Mobile Learning Educational Research*, 4(1), 920–926.
<https://doi.org/10.25082/amler.2024.01.003>
- Al-Momani, M. M., & Hasan, M. Y. (2022). Evaluating the Students' Attitude Toward the Use of Moodle Mobile Application at Zarqa University in the COVID-19 Pandemic. *The Implementation of Smart Technologies for Business Success and Sustainability*, 607–616.
https://doi.org/10.1007/978-3-031-10212-7_50
- Armakolas, S., Lora, C., & Waligóra, A. (2024). Increased mobile phone use in high school students as a social problem under the dimension of addiction. *Advances in Mobile Learning Educational Research*, 4(1), 911–919.
<https://doi.org/10.25082/amler.2024.01.002>
- Athanassopoulos, S., Manoli, P., Gouvi, M., Lavidas, K., & Komis, V. (2023). The use of ChatGPT as a learning tool to improve foreign language writing in a multilingual and multicultural classroom. *Advances in Mobile Learning Educational Research*, 3(2), 818–824.
<https://doi.org/10.25082/amler.2023.02.009>
- Call, M. W., Fox, E., & Sprint, G. (2021). Gamifying Software Engineering Tools to Motivate Computer Science Students to Start and Finish Programming Assignments Earlier. *IEEE Transactions on Education*, 64(4), 423–431.
<https://doi.org/10.1109/te.2021.3069945>
- Dahal, N., & Manandhar, N. K. (2024). The reality of e-Learning: Success and failure of learning management system. *Advances in Mobile Learning Educational Research*, 4(1), 903–910.
<https://doi.org/10.25082/amler.2024.01.001>
- Garrido, A., Morales, L., & Serina, I. (2016). On the use of case-based planning for e-learning personalization. *Expert Systems with Applications*, 60, 1–15.
<https://doi.org/10.1016/j.eswa.2016.04.030>
- Jurayev, T. N. (2023). The use of mobile learning applications in higher education institutes. *Advances in Mobile Learning Educational Research*, 3(1), 610–620.
<https://doi.org/10.25082/amler.2023.01.010>
- Jurgelaitis, M., Čeponienė, L., Čeponis, J., & Drungilas, V. (2018). Implementing gamification in a university-level UML modeling course: A case study. *Computer Applications in Engineering Education*, 27(2), 332–343. Portico.
<https://doi.org/10.1002/cae.22077>
- Kiv, A. E., Shyshkina, M. P., Semerikov, S. O., Striuk, A. M., Striuk, M. I., & Shalatska, H. M. (2020). CTE 2019 – When cloud technologies ruled the education.
<https://doi.org/10.31812/123456789/3850>
- Kornilov, I. V. (2020). USING BADGES IN LMS MOODLE AS A GAMIFICATION ELEMENT IN BLENDED LEARNING. *BALTIC HUMANITARIAN JOURNAL*, 9(32).
<https://doi.org/10.26140/bgz3-2020-0903-0023>
- Kudriavtseva, V., Moroz, O., Petrovska, Y., & Frolova, O. (2016) *Welcome aboard: Student's Book*—Kherson: LLC VK STAR LTD, 266.
- Kumar, V., & Sharma, D. (2016). Creating Collaborative and Convenient Learning Environment Using Cloud-Based Moodle LMS. *International Journal of Web-Based Learning and Teaching Technologies*, 11(1), 35–50.
<https://doi.org/10.4018/ijwltt.2016010103>
- Lavidas, K., Papadakis, S., Filippidi, A., Karachristos, C., Misirli, A., Tzavara, A., Komis, V., & Karacapilidis, N. (2023). Predicting the Behavioral Intention of Greek University Faculty Members to Use Moodle. *Sustainability*, 15(7), 6290.
<https://doi.org/10.3390/su15076290>
- Online training of the Kherson State Maritime Academy. Main page, KSMA ONLINE. (n.d.).
<https://mdl.ksma.ks.ua>
- Oliveira, W., Hamari, J., Shi, L., Toda, A. M., Rodrigues, L., Palomino, P. T., & Isotani, S. (2022). Tailored gamification in education: A literature review and future agenda. *Education and Information Technologies*, 28(1), 373–406.
<https://doi.org/10.1007/s10639-022-11122-4>
- Papadakis, S. (2023). Choosing the best educational apps for young children: What parents and educators need to know. In *Desafíos de la inclusión digital: la brecha digital de género y las competencias digitales docentes en el contexto educativo* (pp. 77-94). Octaedro.
- Papadakis, S., Kiv, A. E., Kravtsov, H. M., Osadchyi, V. V., Marienko, M. V., Pinchuk, O. P., Shyshkina, M. P., Sokolyuk, O. M., Mintii, I. S., Vakaliuk, T. A., Azarova, L. E., Kolgatina, L. S., Amelina, S. M., Volkova, N. P., Velychko, V. Ye., Striuk, A. M., & Semerikov, S. O. (2023). *ACNS Conference on Cloud and Immersive Technologies in Education: Report. CTE Workshop Proceedings*, 10, 1–44.
<https://doi.org/10.55056/cte.544>

- Sarwari, A. Q., & Mohd Adnan, H. (2024). The effectiveness of artificial intelligence (AI) on daily educational activities of undergraduates in a modern and diversified university environment. *Advances in Mobile Learning Educational Research*, 4(1), 927–930.
<https://doi.org/10.25082/amler.2024.01.004>
- Serhan, D. (2020). Transitioning from Face-to-Face to Remote Learning: Students' Attitudes and Perceptions of using Zoom during COVID-19 Pandemic. *International Journal of Technology in Education and Science*, 4(4), 335–342.
<https://doi.org/10.46328/ijtes.v4i4.148>
- Strang, K. D. (2017). Predicting Student Satisfaction and Outcomes in Online Courses Using Learning Activity Indicators. *International Journal of Web-Based Learning and Teaching Technologies*, 12(1), 32–50.
<https://doi.org/10.4018/ijwltt.2017010103>
- Strelan, P., Osborn, A., & Palmer, E. (2020). The flipped classroom: A meta-analysis of effects on student performance across disciplines and education levels. *Educational Research Review*, 30, 100314.
<https://doi.org/10.1016/j.edurev.2020.100314>
- Viitaharju, P., Yliniemi, K., Nieminen, M., & Karttunen, A. J. (2021). Learning experiences from digital laboratory safety training. *Education for Chemical Engineers*, 34, 87–93.
<https://doi.org/10.1016/j.ece.2020.11.009>
- Wibawa, S. C., Sulistiyo, E., Martiningsih, N. G. A. G. E., Handoyo, E., & Johan, A. (2020). Moodle mobile development in enjoyable learning in computer system subjects. *IOP Conference Series: Materials Science and Engineering*, 830(3), 032017.
<https://doi.org/10.1088/1757-899x/830/3/032017>
- Yurzhenko, A. Yu. (2019). AN E-COURSE BASED ON THE LMS MOODLE TO TEACH “MARITIME ENGLISH FOR PROFESSIONAL PURPOSE.” *Information Technologies and Learning Tools*, 71(3), 92.
<https://doi.org/10.33407/itlt.v71i3.2512>
- Yurzhenko, A. Y., Bevzenko, J. Y., & Kononova, O. Y. (2022). Creation of a Distance Communication Channel With Gamification Elements. *Advances in Game-Based Learning*, 226–240.
<https://doi.org/10.4018/978-1-6684-4287-6.ch012>
- Zhou, L., Chen, L., Fan, Q., & Ji, Y. (2019). Students' Perception of Using Digital Badges in Blended Learning Classrooms. *Sustainability*, 11(7), 2151.
<https://doi.org/10.3390/su11072151>