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GAMIFICATION AND INTERACTIVE METHODS IN FOREIGN LANGUAGE TEACHING FOR ENGINEERING STUDENTS

This article aims to examine the effectiveness of interactive methods and gamification in teaching English to engineering students. The primary focus is on combining the mastery of technical terminology with developing communication skills, teamwork, and critical thinking, which are key competencies for future engineers in an international professional environment.

Methods. The study uses an analysis of current scientific literature on gamification, interactive learning, and professional language training for engineers; a review of practical examples of the implementation of interactive platforms (Kahoot, Quizizz, Padlet, Miro, Duolingo for Schools); and a description of role-playing, debate, and project-based learning methods in study groups of technical students.

Results. The study showed that interactive methods and gamification elements increase student motivation, promote effective acquisition of technical terminology, and develop practical communication skills. Role-playing games, debates, and team projects develop collaboration, critical thinking, and creativity skills, creating conditions close to real professional activity. Digital platforms ensure interactivity, instant feedback, and support for collective work even outside the classroom.

Conclusions. Interactive and gamified approaches significantly increase the effectiveness of the learning process and the competitiveness of engineering students. The successful implementation of such methods requires proper preparation of materials, technical resources, and adaptation of students to new learning formats.

KEY WORDS: *gamification, interactive methods, English for engineers, professional communication, technical terminology, project-based learning, digital educational platforms, learning motivation.*

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Problem statement

In the current context of globalization, proficiency in foreign languages, especially English, is becoming an integral part of professional training for engineers. Students of technical specialties are increasingly involved in international projects, participate in academic mobility programs, and collaborate with foreign companies and organizations. Their participation in these processes is extremely limited without an adequate level of foreign language proficiency. Foreign language proficiency significantly increases the competitiveness of future specialists in the labor market in Ukraine and abroad. Most employers require knowledge of English to work with technical documentation, international standards, instructions, and professional communication in multinational teams. It opens up additional opportunities for employment and career development. Equally important is that most of the modern scientific and technical literature, equipment manuals, software, and cutting-edge research are published in English. For engineers, this means the opportunity to keep abreast of the latest developments in their field and integrate them into their professional activities.

Ukrainian universities are also actively involved in international educational and scientific programs, particularly Erasmus+, which requires students to have a high level of language proficiency. In addition, reforms in higher education and the transition to a competency-based approach emphasize the importance of developing foreign language skills for professional communication. Social and political factors are also worth mentioning. The events of recent years, in particular the war and Ukraine's increased integration into the European space, have highlighted the need to learn foreign languages. It applies not only to the humanities and business, but also to engineering, where communication with foreign partners and access to international resources are vital. Thus, learning foreign languages for engineering students in Ukraine is an additional advantage and essential for professional realization, integration into the global scientific and technical community, and the country's overall development.

Traditional methods of teaching foreign languages at technical universities often do not meet the needs of engineering students. Among the main difficulties is low motivation: foreign languages are perceived as a secondary discipline with no direct connection to professional training. Another barrier is the complexity of professional terminology, as many technical concepts are challenging to learn without proper context and practical use. In addition, the learning process is mainly focused on translation and exercises, which limits students' ability to use the language in real-life communication. As a result, graduates often feel insecure about using a foreign language during presentations, discussions, or professional negotiations.

These challenges highlight the need to modernize teaching methods. The modern educational process should focus not only on the acquisition of grammatical structures and vocabulary, but also on the development of practical communication skills that will be in demand in the professional activities of an engineer. Innovative approaches, such as gamification, interactive technologies, digital educational resources, and project-based learning, make classes more dynamic, motivating, and closer to the real-life conditions of students' future work. They combine language training with practical tasks, increasing learning effectiveness and future specialists' competitiveness.

The article aims to study the effectiveness of interactive methods and gamification in teaching English to engineering students. Particular attention is paid to combining the mastery of technical terminology with the development of practical communication skills, teamwork, and critical thinking, which are key competencies for future engineers in an international professional environment.

Research methods: The study uses an analysis of current scientific literature on gamification, interactive learning, and professional language training for engineers; a review of practical examples of the implementation of interactive platforms (Kahoot, Quizizz, Padlet, Miro, Duolingo for Schools); and a description of role-playing, debate, and project-based learning methods in study groups of technical students.

Results

Interactive methods enhance collaborative learning: discussions, team quests, and joint projects stimulate communication, cooperation, and joint knowledge creation — especially important for engineering tasks, where teamwork is the norm in professional practice. Research in gamification and EFL/ESL emphasizes the social component as one of the key positive effects [1,4]. Psychologists and educators emphasize that games and interactive tasks provide active learning (learning by doing), which improves long-term memory; provide continuous feedback (quick responses to student actions), which speeds up error correction; and offer scenarios close to real life (simulations of technical tasks), which facilitate the transfer of knowledge to professional activities. The classic works of James Paul Gee emphasize that games are "learning machines" that combine a problem-oriented approach, repetition, and clear feedback [2]. Gamification plays a special role in foreign language classes, as it increases student motivation, reduces anxiety during communication, and creates conditions for safe experimentation with language.

Professional communication among engineers has several specific features determining the approach to foreign language learning. First, it is characterized by a high concentration of technical terminology and specialized concepts that differ from general language. That is why teaching materials for engineers must integrate professional vocabulary into the context of practical tasks, allowing students to develop both language and professional competencies simultaneously[5].

Secondly, the practical focus of learning is a key element. Students work with real or realistic technical texts, documentation, drawings, instructions, and descriptions. An important component is the preparation and delivery of project presentations in English, which develops oral communication skills in a professional context.

In addition, group projects encourage teamwork, discussion of engineering solutions, and joint decision-making in English. This approach develops language skills and prepares students for real-life professional activities, where communication with colleagues and international partners is essential. Therefore, the specifics of professional communication for engineers determine the need for a comprehensive approach to foreign language learning that combines mastery of technical terminology, work with practical materials, and the development of teamwork skills[7,10].

This approach is particularly important for engineering students, considering their propensity for logical thinking, technical challenges, and competitiveness. The use of gamified tasks contributes to the formation of practical communication skills in a professional context, for example, during project presentations, technical discussions, or collective solving of engineering problems in English [13]. Foreign studies confirm the effectiveness of gamification in language education. Reinhardt [6] emphasizes that game elements positively affect student engagement and language competence development. Hung [4], in turn, demonstrates the success of redesigning an English language course based on a gamification model, which ensured higher student activity and performance. Systematic reviews [13] emphasize that a well-designed gamification strategy helps to make the learning process more dynamic, flexible, and focused on the needs of modern students. Thus, gamification in foreign language teaching is an innovative method of increasing motivation and an effective tool for preparing engineering students for real professional challenges in an international environment.

Interactive teaching methods allow engineering students to actively apply technical vocabulary and communication skills in conditions close to professional practice. Role-playing games create situations in which students simulate real work scenarios. For example, in the exercise "Interview with an Engineer," one student plays the role of an engineer, and another plays the role of a journalist or colleague who asks professional questions in English. In the exercise "Project Presentation," a student prepares and presents a technical solution in English, and the audience asks clarifying questions, simulating a professional discussion.

Gamification uses game elements in non-game contexts, particularly education, to increase motivation, engagement, and learning

effectiveness. It does not necessarily involve the creation of a full-fledged game, but relies on mechanics commonly found in video games and adapts them to the learning process.

The key elements of gamification include:

- Points reflecting student progress and allowing achievements to be tracked.
- Levels showing the degree of knowledge development and motivating students to reach the next stage.
- Competitions and leaderboards stimulate social motivation and interaction between students.
- Awards and badges symbolize recognition of achievements and enhance the sense of competence.

Using these elements makes the learning process more dynamic, motivating, and structured, and also contributes to the development of students' internal motivation and confidence in using a foreign language.

Interactive methods are aimed at the active participation of students in the learning process and the development of practical skills. Among the most effective methods are:

- *Discussions* aimed at developing communication and critical thinking skills, as well as promoting the acquisition of professional terminology through the discussion of real-life cases;
- *Role-playing games* modeling professional situations (e.g., negotiations, project presentations) and allowing students to practice specialized vocabulary;
- *Project-based learning*, which integrates language training with practical tasks: creating English-language technical reports, presentations, or team projects;
- *Online platforms and digital tools* (Kahoot, Quizlet, Padlet, Miro, Duolingo, Moodle) that provide interactive work, instant feedback, and the opportunity for collective activity outside the classroom.

Interactive methods combined with gamification make the learning process more engaging, effective, and closer to real professional conditions, which is especially important for engineering students.

Engineering students have specific learning needs and ways of thinking, which makes interactive methods particularly effective for them:

- *A tendency toward practical thinking.* Technical students are accustomed to applying knowledge in practice. Interactive methods, such as role-playing games or project tasks, allow them to immediately integrate theoretical knowledge into practical scenarios, such as developing technical projects in English or modeling engineering solutions.
- *Logical and analytical thinking.* Technical students are better at tackling tasks that require structured problem-solving. Discussions, projects, and interactive exercises stimulate analytical thinking, helping them to learn the language and solve professional tasks simultaneously.
- *Motivation through clear goals and achievements.* Technical students usually respond to specific indicators of success. The use of gamification in combination with interactive methods (points, levels, leaderboards) makes the learning process more structured and understandable, increasing motivation.
- *Need for professional communication.* Future engineers often work in teams and interact with colleagues and international partners. Interactive methods such as team projects, role-playing games, and online collaboration simulate these situations, providing a safe space for developing language and communication skills.
- *Combining learning and technology*. Students in technical fields are usually comfortable working with digital tools and online platforms. Interactive methods using such resources (Moodle,Kahoot, Quizlet, Padlet, Miro) allow you to effectively combine technology and learning, making the process dynamic and interesting [8].

Interactive teaching methods allow you to effectively consider the specifics of professional communication among engineers and apply technical terminology in practice. For example, role-playing games and negotiation simulations allow students to practice professional scenarios: project presentations, technical discussions, or collaboration with international partners. They apply terms and concepts relevant to their specialty in such tasks while practicing oral communication and teamwork[14,15].

Project-based learning allows students to integrate work with technical texts, drawings, or documentation in English into real project cases. Students work together to create reports, presentations, or technical documents, stimulating communication and critical

thinking, and developing the teamwork skills necessary for professional activity.

Discussions and group debates help analyze professional problems and find solutions in a group, training argumentation and logical thinking. Online platforms (Kahoot, Quizlet, Padlet, Miro) provide interactivity, instant feedback, and the ability to work in a team even outside the classroom[11].

Thus, interactive methods create a modeling environment where engineering students can combine technical terminology mastery with language and communication skills development. It increases motivation and engagement and prepares students for real professional situations in an international environment.

Modern digital platforms allow for the effective integration of gamification into the learning process, making it more dynamic and motivating. Tools such as Kahoot, Quizizz, and Duolingo for Schools allow students to participate in interactive quizzes, take tests, and track their progress through points, levels, and leaderboards. For example, on the Kahoot platform, you can organize a quiz on technical terminology for engineering students, where they answer questions about the properties of materials, parts, or the principles of mechanisms [13].

Interactive tasks include quests, virtual simulations, and engineering cases that simulate real professional situations. A quest, for example, may involve developing a plan for manufacturing a drone prototype, where students complete tasks in English step by step: describing materials, compiling technical specifications, and preparing a presentation. A virtual simulation can recreate a working meeting of an international engineering team, during which students discuss the optimization of the production process. Engineering cases allow students to analyze real or fictional technical problems, such as a breakdown of the ventilation system at a factory, and propose solutions using professional vocabulary.

The combination of competition and cooperation promotes the simultaneous development of language and communication skills. Competition motivates students to complete tasks quickly and accurately. At the same time, teamwork on projects or case studies trains them to argue, make decisions together, and communicate effectively in English in a professional context. Thanks to this approach, engineering students can simultaneously master technical terminology, develop practical skills, and prepare for real professional activities in an international environment.

Debates and discussions on technical topics promote the development of critical thinking and argumentation skills. Students can discuss the advantages of different construction materials, optimal production technologies, or energy-saving methods, preparing arguments in English and interacting with colleagues in a team.

Interactive online tools play an important role, allowing students to work together outside the classroom. Padlet is used to create collective boards with ideas and project plans, Mentimeter is used for surveys and voting during discussions, and Miro is used to develop diagrams, technical maps, and collaborative project planning. For example, students can create a diagram of a new device on Miro, discussing each stage in English, or vote for the best solutions in Mentimeter.

Project-based learning combines language practice with real engineering tasks and is particularly effective. Students create English-language technical documentation for laboratory or practical projects, describe materials, processes, and characteristics of parts, and prepare presentations to demonstrate the team's solutions. Such methods simultaneously develop teamwork skills, professional communication, and the application of technical terminology in English, preparing students for real professional activities in an international environment.

Here is a smooth division that combines the advantages and challenges of implementing interactive and gamified methods in teaching English to engineering students:

Using interactive methods and gamification elements in foreign language teaching has several advantages. First, they positively influence student motivation, making learning more dynamic and engaging. Students are more actively involved in completing tasks, strive to achieve better results, and feel satisfaction from their own achievements. Second, interactive methods promote the development of communication skills and teamwork. Role-playing games, discussions, project tasks, and collaborative

work with online tools develop the ability to interact effectively in a team, discuss technical solutions in English, and make joint decisions, which is critically important for future engineers.

In addition, such methods stimulate critical thinking and creativity. Students analyze technical cases, propose alternative solutions, simulate real professional situations, and look for optimal ways to complete tasks. It develops the ability to think logically, make informed decisions, and approach problem-solving non-standardly.

At the same time, introducing interactive and gamified methods is associated with specific challenges. Preparing tasks and materials requires additional time and effort from the teacher, and technical resources (computers, access to online platforms, stable internet) are necessary for practical work. In addition, students may need to adapt to new learning formats, especially if they are used to traditional lectures and passive learning.

Therefore, the advantages of interactive and gamified methods significantly outweigh the difficulties if proper training, resources, and student support are provided, making the learning process more effective and relevant to modern educational needs.

Conclusions and prospects for further research

The study showed that interactive methods and gamification elements significantly increase the motivation of engineering students to learn English. They contribute to effectively assimilating technical terminology, developing communication skills, teamwork, and critical thinking. Role-playing games, debates, project-based learning, and digital platforms (Kahoot, Quizizz, Padlet, Miro, Duolingo for Schools) allow theoretical knowledge to be combined with practical tasks, creating conditions close to real professional activity.

At the same time, the study confirmed that the successful implementation of such methods requires additional resources, time to prepare teaching materials, and adaptation of students to new learning formats. Despite these difficulties, the advantages of interactive and gamified approaches significantly outweigh the challenges, making the learning process more effective, dynamic, and relevant to modern educational needs.

Prospects for further research lie in developing comprehensive models for integrating gamification with adapted online platforms for various technical specialties and in studying the long-term impact of such methods on forming professional competence and readiness for international cooperation. In addition, it is interesting to explore the individual characteristics of students that influence the effectiveness of interactive learning and to develop adaptive strategies to improve the effectiveness of classes.

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript. Furthermore, the authors has fully adhered to ethical standards, including those related to plagiarism, data falsification, and duplicate publication.

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References

1. Bryntseva, O., Podorozhna, A. (2023). Business-playing as an interactive form of foreign language learning in the context of higher engineering education. *Problems of Engineer-Pedagogical Education*, (78), 23–28. https://doi.org/10.32820/2074-8922-2023-78-23-28 (in Ukrainian).
2. Hong, J.-C., Hwang, M.-Y., Liu, Y.-H., Tai, K.-H. (2020). Effects of gamifying questions on English grammar learning mediated by epistemic curiosity and language anxiety. *Computer Assisted Language Learning*, 35(7), 1458–1482. https://doi.org/10.1080/09588221.2020.1803361
3. Hsu, Y.-C., Ho, H. N. J., Tsai, C.-C., Hwang, G.-J., Chu, H.-C., Wang, C.-Y., Chen, N.-S. (2012). Research Trends in Technology-based Learning from 2000 to 2009: A content Analysis of Publications in Selected Journals. *Journal of Educational Technology & Society*, 15(2), 354-370. http://www.jstor.org/stable/jeductechsoci.

4. Hung, H. (2017). Clickers in the flipped classroom: Bring your own device (BYOD) to promote student learning. *Interactive Learning Environments*, 25(8), 983–995. https://doi.org/10.1080/10494820.2016.1240090
5. Kapp, K. M. (2012). The gamification of learning and instruction: Game-based methods and strategies for training and education. San Francisco, CA: Pfeiffer. https://doi.org/10.1145/2207270.2211316
6. Keller, T., Guggemos, J., Warwas, J. (2025). Digital educational escape rooms as a novel approach to cybersecurity education: An empirical study on learner perceptions of usefulness and usability. *Computers in Human Behavior Reports*, 20, 100785. https://doi.org/10.1016/j.chbr.2025.100785
7. Kessler, G. (2018). Technology and the future of language teaching. *Foreign Language Annals*, 51(1), 205–218. https://doi.org/10.1111/flan.12318
8. Mora, A., Riera, D., González, C., Arnedo-Moreno, J. (2017). Gamification: A systematic review of design frameworks. *Journal of Computing in Higher Education*, 29(3), 516–548. https://doi.org/10.1007/s12528-017-9150-4
9. Reinhardt, J. (2019). Gameful second and foreign language teaching and learning: Theory, research, and practice. *Springer*. https://doi.org/10.1007/978-3-030-04729-0
10. Reynolds, E. D., Taylor, B. (2020). Kahoot!: EFL instructors' implementation experiences and impacts on students' vocabulary knowledge. *Computer Assisted Language Learning Electronic Journal*, 21(2), 70–92. https://old.callej.org/journal/21-2/Reynolds-Taylor2020.pdf
11. Setiawan, M. R., Wiedarti, P. (2020). The effectiveness of Quizlet application towards students' motivation in learning vocabulary. *Studies in English Language Education*, 7(1), 83–95. https://doi.org/10.24815/siele.v7i1.15359
12. Shortt, M., Tilak, S., Kuznetcova, I., Martens, B., Akinkuolie, B. (2021). Gamification in mobile-assisted language learning: A systematic review of Duolingo literature from public release of 2012 to early 2020. *Computer Assisted Language Learning*, 517–554. https://doi.org/10.1080/09588221.2021.1933540
13. Veljkovic Michos, Maja. (2017). Gamification in Foreign Language Teaching: Do You Kahoot? *SINTEZA 2017. International scientific conference on information technology and data related research. Modern technologies in language teaching*, 511-516. https://doi.org/10.15308/SINTEZA-2017-511-516 .
14. Zhang, S., Hasim, Z. (2023). Gamification in EFL/ESL instruction: A systematic review of empirical research. *Frontiers in Psychology*, 13, 1030790. https://doi.org/10.3389/fpsyg.2022.1030790
15. Zou, D. (2020). Gamified flipped EFL classroom for primary education: Student and teacher perceptions. *Journal of Computer Education*, 7, 213–228. https://doi.org/10.1007/s40692-020-00153-w

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ГЕЙМІФІКАЦІЯ ТА ІНТЕРАКТИВНІ МЕТОДИ У ВИКЛАДАННІ ІНОЗЕМНОЇ МОВИ ДЛЯ СТУДЕНТІВ ІНЖЕНЕРНИХ СПЕЦІАЛЬНОСТЕЙ

Метою статті є дослідження ефективності застосування інтерактивних методів та гейміфікації в навчанні англійської мови студентів інженерних спеціальностей. Основна увага приділяється поєднанню опанування технічної термінології з розвитком комунікативних навичок, командної роботи та критичного мислення, що є ключовими компетенціями для майбутніх інженерів у міжнародному професійному середовищі.

Методи. У дослідженні застосовано аналіз сучасної наукової літератури щодо гейміфікації, інтерактивного навчання та професійної мовної підготовки інженерів; розгляд практичних прикладів упровадження інтерактивних платформ (Kahoot, Quizizz, Padlet, Miro, Duolingo for Schools); опис методів рольових ігор, дебатів та проєктно-орієнтованого навчання в навчальних групах студентів технічних спеціальностей.

Результати. Дослідження показало, що інтерактивні методи та елементи гейміфікації підвищують мотивацію студентів, сприяють ефективному засвоєнню технічної термінології та розвитку практичних комунікативних навичок. Рольові ігри, дебати та командні проєкти формують навички співпраці, критичного мислення та креативності, створюючи умови, наближені до реальної професійної діяльності. Використання цифрових платформ забезпечує інтерактивність, миттєвий зворотний зв'язок та підтримку колективної роботи навіть поза межами аудиторії.

Висновки. Інтерактивні та гейміфіковані підходи значно підвищують ефективність навчального процесу та конкурентоспроможність студентів інженерних спеціальностей. Успішне впровадження таких методів потребує належної підготовки матеріалів, технічних ресурсів та адаптації студентів до нових форматів навчання.

КЛЮЧОВІ СЛОВА: *гейміфікація, інтерактивні методи, англійська мова для інженерів, професійна комунікація, технічна термінологія, проєктно-орієнтоване навчання, цифрові освітні платформи, навчальна мотивація.*

Конфлікт інтересів

Автори заявляють, що конфлікту інтересів щодо публікації цього рукопису немає. Крім того, автори повністю дотримувалися етичних норм, включаючи плагіат, фальсифікацію даних та подвійну публікацію.

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Список використаної літератури

1. Бринцева, О., Подорожна, А. Ділова гра як інтерактивна форма навчання іноземних мов у контексті вищої інженерної освіти. *Проблеми інженерно-педагогічної освіти*. 2023. № 78. С. 23–28. DOI: https://doi.org/10.32820/2074-8922-2023-78-23-28
2. Hong, J.-C., Hwang, M.-Y., Liu, Y.-H., Tai, K.-H. Effects of gamifying questions on English grammar learning mediated by epistemic curiosity and language anxiety. *Computer Assisted Language Learning*. 2020. Vol. 35(7). Pp. 1458–1482. DOI: https://doi.org/10.1080/09588221.2020.1803361
3. Hsu, Y.-C., Ho, H. N. J., Tsai, C.-C., Hwang, G.-J., Chu, H.-C., Wang, C.-Y., Chen, N.-S. Research Trends in Technology-based Learning from 2000 to 2009: A content Analysis of Publications in Selected Journals. *Journal of Educational Technology & Society*. 2012. Vol. 15(2). Pp. 354-370. URL: http://www.jstor.org/stable/jeductechsoci.

4. Hung, H. Clickers in the flipped classroom: Bring your own device (BYOD) to promote student learning. *Interactive Learning Environments*. 2017. Vol. 25(8). Pp. 983–995. DOI: https://doi.org/10.1080/10494820.2016.1240090
5. Kapp, K. M. The gamification of learning and instruction: Game-based methods and strategies for training and education. San Francisco, 2012. CA: Pfeiffer. DOI: https://doi.org/10.1145/2207270.2211316
6. Keller, T., Guggemos, J., Warwas, J. (2025). Digital educational escape rooms as a novel approach to cybersecurity education: An empirical study on learner perceptions of usefulness and usability. *Computers in Human Behavior Reports*. 2025. Vol. 20. 100785. DOI: https://doi.org/10.1016/j.chbr.2025.100785
7. Kessler, G. (2018). Technology and the future of language teaching. *Foreign Language Annals*. 2018. Vol. 51(1). Pp. 205–218. DOI: https://doi.org/10.1111/flan.12318
8. Mora, A., Riera, D., González, C., Arnedo-Moreno, J. Gamification: A systematic review of design frameworks. *Journal of Computing in Higher Education*. 2017. Vol. 29(3). Pp. 516–548. DOI: https://doi.org/10.1007/s12528-017-9150-4
9. Reinhardt, J. Gameful second and foreign language teaching and learning: Theory, research, and practice. *Springer*,2019 . DOI: https://doi.org/10.1007/978-3-030-04729-0
10. Reynolds, E. D., Taylor, B. Kahoot!: EFL instructors' implementation experiences and impacts on students' vocabulary knowledge. *Computer Assisted Language Learning Electronic Journal*. 2020. Vol. 21(2). Pp. 70–92. URL: https://old.callej.org/journal/21-2/Reynolds-Taylor2020.pdf
11. Setiawan, M. R., Wiedarti, P. The effectiveness of Quizlet application towards students' motivation in learning vocabulary. *Studies in English Language Education*. 2020. Vol. 7(1). Pp. 83–95. DOI: https://doi.org/10.24815/siele.v7i1.15359
12. Shortt, M., Tilak, S., Kuznetcova, I., Martens, B., Akinkuolie, B. Gamification in mobile-assisted language learning: A systematic review of Duolingo literature from public release of 2012 to early 2020. *Computer Assisted Language Learning*. 2021. Pp. 517–554. DOI: https://doi.org/10.1080/09588221.2021.1933540
13. Veljkovic Michos, Maja. Gamification in Foreign Language Teaching: Do You Kahoot*? SINTEZA 2017. International scientific conference on information technology and data related research. Modern technologies in language teaching*. 2017. Pp. 511-516. DOI: https://doi.org/10.15308/SINTEZA-2017-511-516 .
14. Zhang, S., Hasim, Z. Gamification in EFL/ESL instruction: A systematic review of empirical research. *Frontiers in Psychology*. 2023. Vol. 13. 1030790. DOI: https://doi.org/10.3389/fpsyg.2022.1030790
15. Zou, D. Gamified flipped EFL classroom for primary education: Student and teacher perceptions. *Journal of Computer Education*. 2020. Vol. 7. Pp. 213–228. DOI: https://doi.org/10.1007/s40692-020-00153-w

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