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OVERVIEW OF GAMIFIED AND GAME-BASED VOCABULARY LEARNING IN ESP

PREGLED GAMIFICIRANOG I IGROM UTEMELJENOG UČENJA VOKABULARA U STRUČNOM ENGLESKOM JEZIKU

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Abstract: *This paper explores the efficacy of gamified vocabulary learning and game-based learning in the context of English for Specific Purposes classes in higher education. It investigates how these innovative approaches can enhance vocabulary acquisition and student engagement compared to traditional learning approaches. The study evaluates students' perceptions of gamification and game-based learning as positive, highlighting their competitiveness and motivational effects. While incorporating games into English for Specific Purposes classes resulted in significant post-test improvements in vocabulary, challenges such as reliance on digital tools, poor internet connectivity and lack of teacher digital literacy were identified. The paper also discusses the drawbacks of gamification and game-based learning, such as their potential negative impact on spelling and handwriting skills. Recommendations for future research include larger-scale studies encompassing diverse student populations and exploring the long-term effects of gamification and game-based learning on language proficiency and real-life vocabulary application. The findings contribute to the understanding of the role of gamification and game-based learning in language acquisition and suggest that, despite some challenges, these approaches are effective in overcoming vocabulary learning barriers in higher education.*

Keywords: *gamified vocabulary learning, game-based learning, English for Specific Purposes, student, engagement, vocabulary learning, digital literacy*

Sažetak: *Ovaj rad istražuje učinkovitost gamificiranog učenja vokabulara i učenja temeljenog na igri u kontekstu nastave stručnog engleskog jezika u visokom obrazovanju. Istražuje kako ovi inovativni pristupi mogu poboljšati usvajanje vokabulara i angažman studenata u usporedbi s tradicionalnim pristupima učenja. Istraživanje procjenjuje percepcije studenata o gamifikaciji i učenju temeljenom na igri kao pozitivne, ističući njihovu natjecateljsku i motivacijsku djelotvornost. Dok je uključivanje igara u nastavu stručnog engleskog jezika pokazalo značajna poboljšanja na završnim testovima vokabulara, identificirani su izazovi poput oslanjanja na digitalne alate, loše internetske veze i nedostatka digitalne pismenosti nastavnika. Rad također raspravlja o nedostacima gamifikacije i učenja temeljenog na igri, poput njihovog potencijalnog negativnog utjecaja na vještine pravopisa i pisanja. Preporuke za buduća istraživanja uključuju studije većeg opsega koje obuhvaćaju raznolike studentske populacije i istraživanje dugoročnih učinaka gamifikacije i učenja temeljenog na igri na jezičnu vještinu i primjenu vokabulara u stvarnom životu. Rezultati doprinose razumijevanju uloge učenja temeljenog na igri u usvajanju jezika i sugeriraju da su, unatoč nekim izazovima, ovi pristupi učinkoviti u prevladavanju prepreka u učenju vokabulara na visokom obrazovanju.*

Ključne riječi: *gamificirano učenje vokabulara, učenje temeljeno na igri, stručni engleski jezik, angažman, studenata, učenje vokabulara, digitalna pismenost*

1. Introduction

Students of English for Specific Purposes (ESP) in Higher Education (HE) face numerous challenges when it comes to vocabulary learning (Bekteshi and Xhaferi, 2020:91) The knowledge of English is crucial for students, especially those who are in STEM, and there are potential problems for both teachers and students. One challenge is the specialised terminology used in STEM, which can be challenging to comprehend and remember due to the complexity of navigating aspects such as pronunciation, spelling, structure and the knowledge of syntax and semantics related to targeted terminology. Starting with Wilkins, many researchers agree that the lack of (appropriate) vocabulary appears to be a common obstacle to reaching communicative competence in English, leading to dissatisfaction and frustration among both students and teachers. Lack of knowledge of specialised vocabulary in ESP courses can hinder students' comprehension and communication skills in their specific fields of study (Bekteshi and Xhaferi, 2020: 99).

The way to overcome this challenge in modern classrooms, including HE is through the use of gamification and game-based learning (GBL) in ESP vocabulary learning. By applying gamification or game-based principles and techniques, educators can create a more engaging and immersive learning environment that motivates students to actively participate in the acquisition of ESP vocabulary. Gamification, for example, involves transforming the learning process into a game-like experience, incorporating elements such as challenges, rewards, competition and collaboration (Loos and Crosby, E, 2017, p. 474). In modern classrooms, the focus has been on digital tools and platforms integrating gamification features to enhance vocabulary learning through motivation, interactive engagement and cooperation with other students (Abdeen and Albiladi, 2021, p. 64). A variety of interactive digital tools are used which allow students to practice and reinforce their ESP vocabulary in a fun and interactive way during the lesson. These include Kahoot, Quizizz, Quizlet and Baamboozle.

The objective of the paper is to investigate the research that has been conducted on the use and effectiveness of gamification in ESP vocabulary learning in HE settings so far and to identify potential benefits and challenges associated with its implementation.

1.1. Research Objectives:

This paper aims to:

1. Investigate existing research on the use and effectiveness of gamification in ESP vocabulary learning in HE settings.
2. Identify potential benefits and challenges associated with its implementation.
3. Evaluate the current relevance and application of these methodologies in addressing vocabulary learning barriers.

1.2. Gamification and Game-Based Learning Overview

Applying the elements of a game to teaching English as a second language (ESL) has been common for quite some time. However, the widespread application of gamification and GBL has only started since 2010 (Subhash and Cudney, 2018, p. 193).

Gamification and GBL have been recognised as approaches which create interactive, immersive and motivating learning environments. However, it is important to differentiate between them. Gamification involves incorporating game-like elements and mechanics into non-game activities, such as vocabulary learning, to make them more engaging and motivating (Loos and Crosby, 2017, p. 474). Whereas GBL involves using actual games as the primary mode of instruction, where students learn through playing games specifically designed for educational purposes (Panmei, B. and Waluyo, B.,2022).

Gamification and GBL encompass specific features and strategies aimed at enhancing the educational experience:

1. **Reward System:** Incentives such as points, badges or virtual rewards motivate students and reinforce desired behaviours (Loos and Crosby, 2017, p. 474).
2. **Controlled Learning Environment:** A structured and controlled environment enables students to engage with educational content in a safe and supportive setting.
3. **Scaffolded Learning:** Students are offered support and guidance, and complex tasks are broken down into smaller, manageable steps, gradually increasing difficulty as students progress (Tiantong and Teemuangsai, 2013, pp. 47—49).
4. **Immediate Feedback:** Real-time feedback is provided to students on their performance, allowing for timely corrections and adjustments (Dawson et al., 2018).
5. **Progress Tracking:** Students are allowed to track their progress over time, gaining insights into their strengths and areas for improvement.
6. **Interactivity:** Active participation and engagement is encouraged through interactive elements such as quizzes, simulations and puzzles.
7. **Adaptivity:** The learning experience is adapted based on individual student needs and preferences, adjusting content and difficulty level accordingly.
8. **Collaboration:** Collaboration and peer interaction is facilitated through group activities, discussions and multiplayer games.
9. **Narrative and Storytelling:** Narrative elements and storytelling techniques are integrated to contextualise learning content and enhance engagement (Rubegni and Sabiescu, 2014).
10. **Goal Setting:** Students are allowed to set specific learning goals and objectives, providing a sense of purpose and direction.

With digital natives in modern classrooms, the above features of gamification and GBL have increasingly become digitalised over the past decade and can help address some of the challenges faced in ESP vocabulary learning.

2. Previous Studies

Numerous studies have explored the effectiveness of gamification and game-based learning in diverse educational settings, involving learners across different age groups and disciplines. These studies consistently demonstrate positive outcomes in terms of student engagement, motivation, knowledge acquisition and content mastery.

Studies with various age groups have also shown the positive influence of gamification in higher education, particularly in formal ESL and ESP vocabulary learning. Gamified learning can be a powerful and effective tool for teaching ESP, boosting motivation, fostering enjoyable learning experiences, and enhancing vocabulary and grammar skills. (Synekop et al., 2023, pp. 74—75). The study which integrated games into ESP classes with Ukrainian students resulted in statistically higher post-test scores for vocabulary and grammar in the experimental groups, demonstrating the effectiveness of this approach (Synekop et al., 2023, p. 74).

Zainal (2023, pp. 6—8) emphasises the significance of enhancing vocabulary among ESL university students, along with the favourable viewpoints of students towards gamification in vocabulary learning. The paper also addresses the challenges encountered in adopting gamified vocabulary learning, including connectivity issues and insufficient digital literacy. Research by Zhonggen

(2023) and Yacob et al. (2023) indicates that gamified English vocabulary learning improves learning outcomes, boosts motivation and enhances satisfaction levels compared to non-gamified approaches. However, it is mentioned that gaming tools should be used as an addition to teaching and learning due to potential difficulties in adjusting the game-based learning environment to meet the needs and expectations of students. Rahimi and Allahyari (2019, pp. 5—6) conducted a study to examine the effects of multimedia-assisted explicit vocabulary learning strategy instruction on learners' strategy use and vocabulary acquisition. The results indicated significant improvements in both vocabulary learning and size in the experimental group, along with enhanced general use of vocabulary learning strategies through multimedia assistance. Additionally, Fithriani (2021, pp. 155—157) carried out a similar study highlighting the effectiveness of mobile-assisted gamification for ESL vocabulary learning, emphasising its positive influence on learning outcomes, enjoyment and motivation.

A study investigating the use of web applications such as Kahoot!, Mentimeter and Socrative in an ESP course to boost students' specialised vocabulary development and their engagement in classes emphasised the significance of establishing a stimulating learning environment through creative teaching approaches. The study revealed that integrating these applications had a positive effect on students' vocabulary growth and motivation during classes (Jović Anđelković and Meršnik, 2022, p. 12). A similar experimental study on the use of chatbots in enhancing Business English vocabulary learning during COVID-19 showed that the experimental group using chatbots outperformed the control group in learning ESP words (Qasem et al., 2023, pp. 81—83). Qasem's (2023, p. 84) paper explores the efficacy of mobile-assisted gamification for vocabulary learning in EFL education, emphasising its positive impact on learning outcomes, enjoyment and motivation, aiming to address existing gaps in the literature.

Additional studies such as Solihah, Kartika and Setiawan (2023, pp. 151—153) discuss the challenges encountered by undergraduate students and teachers in ESP learning and teaching. They emphasise the importance of mastering English in specific fields and the need for teachers to develop effective ESP materials and teaching methods. The study describes teaching and learning ESP as a new challenge and experience for both teachers and students. Similarly, the paper by Le Hoang and Trinh (2024, pp. 3—4) explores vocabulary learning strategies for ESP students, emphasising the important role of metacognitive strategies and technology in acquiring new vocabulary. Their findings have significant implications for teaching methods and curriculum design.

3. Methodology

This research involved selecting relevant literature on gamification and game-based learning (GBL) in English for Specific Purposes (ESP) vocabulary learning within higher education (HE) settings. The study included empirical research papers and review articles from the past five years to ensure the findings were up-to-date and relevant. Papers were chosen based on their focus on the effectiveness of gamification and GBL in ESP vocabulary learning and their inclusion of qualitative data collection methods such as interviews and surveys.

The analysis examined the methodologies used in each study to identify patterns and trends in implementing gamification and GBL. Common themes were identified and supported by examples, addressing aspects such as implications for HE settings, student perceptions, and motivation towards gamified methods. Recommendations for future research were also provided.

4. Discussion

4.1. *The Impact of Gamification and GBL on ESP Learning*

Previous studies firstly highlight the importance of vocabulary acquisition and secondly, they mostly indicate the positive effect of gamification and game-based learning in higher education. The effectiveness of gamification in ESL teaching and learning highlights how motivation, engagement and competition through gamification can assist students in meaningful learning (Yaccob et al., 2022, p. 178). The paper by Yaccob (2022, p. 181) emphasises the importance of game elements like points, badges and scores as external rewards that can motivate students and enhance their learning experiences.

The study conducted by Solihah, Kartika and Setiawan (2023, pp. 161) identified vocabulary acquisition among undergraduate students as a significant obstacle in ESP learning due to teachers facing limited sources for materials preparations. However, the study highlighted a focus on student-centred activities and participation to improve speaking skills and vocabulary acquisition. The focus in modern classrooms is now heavily on utilisation of digital technology, and according to Zhonggen (2023, 1—2), learning outcomes, levels of motivation and satisfaction in gamified English vocabulary learning are higher than in non-gamified English vocabulary learning.

For example, a Vietnamese study (Le Hoang and Trinh, 2024, pp. 12—13) suggests students' preference for metacognitive strategies and technology for vocabulary learning. Fithiriani (2021, pp. 156—157) study findings show that the experimental group of ESP students outperformed the control group in vocabulary learning outcomes and perceived benefits of mobile-assisted gamification. Further, the findings of the study with students of English as a second language (ESL) in private language institutes in Iran are that multimedia-assisted explicit vocabulary learning strategy (VLS) instruction significantly promoted language learners' general use of VLSs, particularly in enhancing memory and cognitive strategies. Additionally, multimedia-based VLS instruction led to improved vocabulary learning compared to conventional instruction approaches.

Numerous studies have been conducted with specific web applications or game-based learning indicating positive results in vocabulary learning, mastering learning outcomes and increasing student motivation. For example, the use of gamified web applications Kahoot!, Mentimeter and Socrative enhanced students' vocabulary development in ESP undergraduate students within the IT field (Jović, Anđelković and Meršnik, 2022, p. 14). Students reported that the apps helped them master the course material and increased their motivation to engage in class activities. Similarly, in the study with Business English students (Qasem et al., 2023, p. 83), the experimental group using chatbots outperformed the control group in learning ESP words significantly suggesting that the integration of chatbots in learning ESP vocabulary can have a positive impact on learners' performance.

Despite overwhelmingly positive results in the use of gamified and technology-enhanced approaches to vocabulary learning, there are studies indicating potential challenges and limitations. The study was conducted at an independent university in Thailand with a variety of majors ranging from Economics and Medical Technology to Tourism and Hospitality on gamified applications for vocabulary study. The study results suggest incorporating gamified applications into vocabulary learning can assist in vocabulary study and encourage the development of learner autonomy. However, using a general-purpose app for vocabulary learning may not yield better results compared to non-game-based learning approaches, although the overall learning performance is satisfactory (Panmei and Waluyo, 2022, pp. 15—16). Zhonggen (2023, p. 11) also highlighted potential challenges of gamified vocabulary learning on spelling and handwriting skills. Students may be offered the correct spelling before attempting to write it themselves, leading to a reliance on digital tools over traditional pen

and paper methods for writing practice. Also, Zainal (2023, p. 8) highlights that some students face challenges with gamified vocabulary learning due to issues such as poor Internet connection and lack of digital literacy.

4.2. Students' Perceptions and Motivation

According to previous studies, students' feedback towards gamified vocabulary learning in higher education has been overwhelmingly positive. University students generally have a positive perception of gamification in vocabulary learning, finding it engaging, competitive and motivating. Gamification is recognised as a beneficial strategy in vocabulary learning, offering a more interactive and effective approach for students (Zainal, 2023, pp. 6—8). Yacob (2022, pp. 179—180) underscores the significance of thoughtful designs in creating effective gamified language learning experiences that boost student motivation and engagement. The study conducted by Jović, Anđelković and Meršnik (2022, p. 13) also confirms that the majority of students believed gamified applications contributed positively to their learning experience and engagement.

The same perceptions have been confirmed in the study at the National Technical University of Ukraine in Kyiv where the use of games in the learning process was positively received by both ESP teachers and students due to the motivational power of games and their ability to create an enjoyable and stimulating learning environment. Incorporating games into ESP classes led to statistically higher results in post-tests for vocabulary and grammar in the experimental groups, indicating the effectiveness of this approach. Both teachers and students acknowledged the motivational potential of games and their capability to make ESP learning enjoyable (Synekop et al., 2023, p. 82).

4.3. Recommendations for Future Research

Despite the positive perception and benefits of gamified applications in vocabulary learning, there are still limitations to consider.

Recent studies frequently highlight the need for further research involving a larger and more diverse sample of students. Additionally, limitations in terms of short study duration and lack of participant diversity have been mentioned by Synekop (2023, p. 83) and Fithriani (2021, p. 158). They emphasise the importance of including students from different educational levels and study backgrounds to ensure the generalisability of findings. Rahimi (2019, p. 12) cautions against over-reliance on computer-supported instruction for independent learning as certain learning strategies still require teacher guidance that has not evolved with self-directed learning. Further research into the role of technology, particularly multimedia in VLS teaching, is recommended.

Furthermore, some of the suggested challenges include adapting to gamification and game-based learning because of a lack of specialist knowledge, a limited variety of teaching methods, insufficient creativity among teachers, and low motivation among students as a result (Solihah, 2023, p. 165). Highlighted lack of both internet connection and digital literacy is also emphasised (Zainal, 2023, p. 8). Research on the contribution of gamification and game-based learning to different languages and language skills should be further explored, as suggested by Yacob (2022, p. 187). Additionally, it is important to investigate the adverse effects of games on spelling and handwriting skills, as noted by Zhonggen (2023, p.11), along with their impact on ESL lessons in general (Yacob, 2022, p. 181).

5. Conclusion

Recent studies have shown that incorporating gamification and GBL into ESP classes is an effective approach for improving vocabulary in higher education. These strategies provide a fun and enjoyable way for students to practice and use vocabulary in dynamic contexts, with rewards and interactive game elements increasing motivation and engagement (Loos and Crosby, 2017, p. 474—477). Interactivity and contextual clues provided in gamified applications also enhance the learning experience by providing immersive language use opportunities. Additionally, goal-setting and progress-tracking strategies in gamified platforms contribute to students' sense of accomplishment but teachers need to guide these environments effectively through adequate training and support to ensure optimal learning outcomes.

Recent studies suggest that students who took part in gamified language learning activities showed significant improvements in their vocabulary acquisition compared to those who did not participate. Therefore, integrating gamification and game-based learning into ESP classes could be a promising way to address vocabulary learning challenges in higher education. Research also suggests that student motivation and engagement are boosted through the use of gamification in language learning, leading to more effective vocabulary acquisition.

Despite generally positive findings, recent studies have revealed potential challenges and limitations. For example, the use of a general-purpose app for gamified language learning may not lead to better vocabulary retention results compared to non-game-based approaches, as highlighted by Panmei and Waluyo (2022, pp. 15—16). Another challenge is the potential adverse effects on spelling and handwriting skills, as noted by Zhonggen (2023, p.11). Finally, connectivity issues and digital literacy have been mentioned by Zainal (2023, p. 8).

Further studies should involve conducting larger-scale research with diverse groups of students, including those from varying educational backgrounds. Additionally, further exploration into the role of VLS teaching and teacher adaptation to new technology such as gamification is recommended.

Future research should also explore the long-term effects of gamified vocabulary learning on students' language proficiency and their ability to transfer learned vocabulary into real-life contexts, effectively addressing the vocabulary challenges faced in higher education ESP classes.

6. References

1. Abdeen, H, F.; Albiladi, S, W. (2021) Gamification and Technology-Based Learning: Uncovering the Potential of Using Games. *Language Teaching and Learning*, Vol.11, No. 2, pp 62—70. <https://doi.org/10.5296/jse.v11i2.18339>
2. Bekteshi, E.; Xhaferi, B. (2020) An Analysis of English for Specific Purposes among University Students. *Educational Process International Journal*, Vol. 9, No. 2, pp. 90—102. <https://doi.org/10.22521/edupij.2020.92.2>
3. Dawson, P.; Henderson, M.; Mahoney, P.; Phillips, M.; Ryan, T.; Boud, D.; Molloy, E. (2019) What makes for effective feedback: staff and student perspectives. *Assessment & Evaluation in Higher Education*, Vol. 44, No. 1, pp. 25—36. <https://doi.org/10.1080/02602938.2018.1467877>
4. Fithriani, R. (2021) The Utilization of Mobile-assisted Gamification for Vocabulary Learning: Its Efficacy and Perceived Benefits. *Computer Assisted Language Learning Electronic Journal (CALL-EJ)*, Vol. 22, No. 3, pp. 146—163
5. Le Hoang, S.; Trinh, L, M. (2024) An Investigation of Vocabulary Learning Strategies of ESP Students. *International Journal of TESOL & Education*, Vol. 4, No. 1, pp. 1-17. <https://doi.org/10.54855/ijte.24411>

6. Jović, J.; Anđelković, J.; Meršnik, M. (2022) In-class Use of Web Applications With ESP Students in Higher Education. *Scripta Manent*, Vol. 16, No. 1, pp. 3—18.
<https://scriptamanent.sdutj.edu.si/ScriptaManent/article/view/358>
7. Loos, A. L.; Crosby, E. M. (2017) Gamification Methods in Higher Education. In: Zaphiris, P., Ioannou, A. (eds). *Learning and Collaboration Technologies. Novel Learning Ecosystems. LCT 2017. Lecture Notes in Computer Science*, Springer, Cham., pp. 474—486.
8. Panmei, B.; Waluyo, B. (2022) The Pedagogical Use of Gamification in English Vocabulary Training and Learning in Higher Education. *Education Sciences* Vol. 13, No. 1, pp. 1—22
<https://doi.org/10.3390/educsci13010024>
9. Qasem, F.; Ghaleb, M.; Mahdi, H.S.; Al Khateeb, A.; Al Fadda, H. (2023), Dialog chatbot as an interactive online tool in enhancing ESP vocabulary learning. *Saudi Journal of Language Studies*, Vol. 3, No. 2, pp. 76—86. <https://doi.org/10.1108/SJLS-10-2022-0072>
10. Rahimi, M.; Allahyari, A. (2019) Effects of Multimedia Learning Combined With Strategy-Based Instruction on Vocabulary Learning and Strategy Use. *Sage Open*, Vol. 9, No. 2, pp.1—14.
<https://doi.org/10.1177/2158244019844081>
11. Rubegni, E.; Sabiescu, A. (2014) Integrating digital storytelling in formal educational settings: a design framework. *International Journal of Arts and Technology*, Vol. 7, No. 1, pp. 55—77.
<https://doi.org/10.1504/ijart.2014.058943>
12. Solihah, Y. A.; Kartika, V. D.; Setiawan, F. (2023) Challenges on Teaching and Learning English for Specific Purposes (ESP) for Indonesian Undergraduate Students. *LET: Linguistics, Literature and English Teaching Journal*, Vol. 13, No. 1, pp. 50—67. <https://doi.org/10.18592/let.v13i1.9090>
13. Subhash, S.; Cudney, A. E. (2018) Gamified learning in higher education: A systematic review of the literature. *Computers in Human Behavior*, Vol. 87, pp. 192—206,
<https://doi.org/10.1016/j.chb.2018.05.028>
14. Synekop, O.; Lavrysh, Y.; Lytovchenko, I.; Chugai, O.; Lukianenko, V. (2023) Use of Games in ESP Classes: Perceptions from Students and Teachers. *International Journal of Emerging Technologies in Learning*, Vol. 18, No. 16, pp. 74—86. <https://doi.org/10.3991/ijet.v18i16.41275>
15. Tiantong, M.; Teemuangsai, S. (2013) The Four Scaffolding Modules for Collaborative Problem-Based Learning through the Computer Network on Moodle LMS for the Computer Programming Course. *International Education Studies*, Vol. 6, No. 5. <http://dx.doi.org/10.5539/ies.v6n5p47>
16. Wilkins, D. (1972) *Linguistics in Language Teaching*, Cambridge: MIT Press, p. 111.
17. Yacob, N. S., Rahman, S. F. A., Mohamad, S. N. A., Rahim, A. A. A., Rashid, K. K. A., Aldaba, A. M. A., Yunus, M. M., & Hashim, H. (2022) Gamifying ESL Classrooms through Gamified Teaching and Learning. *Arab World English Journal (AWEJ) Special Issue on CALL*, Vol. 8, p. 177—191. <https://dx.doi.org/10.24093/awej/call8.12>
18. Zainal, N. (2023) University Students' Perspectives on Gamification in Vocabulary Learning: A Literature Review. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, Vol. 8, No. 5, e002314. <https://doi.org/10.47405/mjssh.v8i5.2314>
19. Zhonggen, Y. (2023) Learning Outcomes, Motivation, and Satisfaction in Gamified English Vocabulary Learning. *Sage Open*, Vol. 13, No. 2., pp. 1—14.
<https://doi.org/10.1177/21582440231158332>