

|  |            |
|--|------------|
| <b>Секція А1 Освітні науки</b>                           |            |
| <b>УДК 378.147:37.091.3:004</b>                          |            |
| <b>Дата першого надходження статті до видання</b>        | 2026-04-05 |
| <b>Дата прийняття статті до друку після рецензування</b> | 2026-05-30 |
| <b>Дата публікації/оприлюднення</b>                      | 2026-05-30 |

### **Гейміфікація та мотивація в ESP-навчанні: цифровий підхід**

**Мельник Оксана Володимирівна**

старший викладач кафедри англійської мови та комунікації

Факультет романо-германської філології, Київський столичний університет імені

Бориса Грінченка, м. Київ, Україна

e-mail: o.melnyk@kubg.edu.ua

<https://orcid.org/0000-0003-3293-3887>

**Терещук Марія Олександрівна**

викладач кафедри англійської мови та комунікації

Факультет романо-германської філології, Київський столичний університет імені

Бориса Грінченка, м. Київ, Україна

e-mail: m.tereshchuk@kubg.edu.ua

<https://orcid.org/0009-0008-8167-5208>

**Анотація.** У дослідженні аналізується вплив цифрової гейміфікації на мотивацію та залученість студентів університетів на заняттях з англійської мови для професійного спрямування (ESP). Спираючись на теорію самодетермінації та моделі емоційного залучення, робота досліджує, як ігрові інструменти навчання посилюють внутрішню та зовнішню мотивацію у професійній мовній освіті. У дослідженні із застосуванням змішаних методів взяли участь 120 студентів та 15 викладачів, які протягом семестру використовували інтерактивні платформи, бейджі та завдання на основі викликів. Кількісні дані було проаналізовано за допомогою SPSS, а якісні висновки отримано з напівструктурованих інтерв'ю та рефлексивних щоденників. Результати свідчать про значне зростання мотивації, активності та впевненості студентів у виконанні професійних комунікативних завдань. Гейміфікація позитивно вплинула на емоційне залучення та саморегуляцію в цифровому середовищі. Викладачі наголосили, що баланс між ігровим характером і академічною строгістю є ключовим для підтримання мотивації. Стаття завершується педагогічними рекомендаціями щодо інтеграції цифрової гейміфікації в навчальні програми ESP для стимулювання активного навчання та емоційної стійкості. Отримані результати роблять внесок у ширший дискурс щодо мовного навчання з підтримкою технологій та мотиваційно орієнтованого дидактичного дизайну.

**Ключові слова:** гейміфікація, мотивація, цифрова педагогіка, емоційне залучення, вища освіта, англійська мова для професійного спрямування (ESP).

## Gamification and Motivation in ESP Classes: A Digital Approach

**Oksana Volodymyrivna Melnyk**

Senior Lecturer, Department of English Language and Communication  
Faculty of Romance and Germanic Philology, Borys Grinchenko Kyiv Metropolitan University,  
Kyiv, Ukraine  
e-mail: o.melnyk@kubg.edu.ua  
<https://orcid.org/0000-0003-3293-3887>

**Mariia Oleksandrivna Tereshchuk**

Lecturer, Department of English Language and Communication  
Faculty of Romance and Germanic Philology, Borys Grinchenko Kyiv Metropolitan University,  
Kyiv, Ukraine  
e-mail: m.tereshchuk@kubg.edu.ua  
<https://orcid.org/0009-0008-8167-5208>

**Abstract.** The study explores the impact of digital gamification on university students' motivation and engagement in English for Specific Purposes (ESP) classes. Grounded in self-determination theory and emotional engagement models, the research investigates how game-based learning tools enhance intrinsic and extrinsic motivation in professional language education. A mixed-methods design was employed with 120 ESP students and 15 teachers participating in a semester-long digital gamification program using interactive platforms, badges, and challenge-based tasks. Quantitative data were analyzed through SPSS, while qualitative insights were derived from semi-structured interviews and reflective journals. The findings reveal a significant increase in learners' motivation, participation, and confidence in performing professional communication tasks. Moreover, gamification positively influenced students' emotional involvement and self-regulation in digital environments. Teachers emphasized the balance between playfulness and academic rigor as key to sustaining motivation. The paper concludes with pedagogical recommendations for integrating digital gamification in ESP curricula to foster active learning and emotional engagement. The results contribute to the broader discourse on technology-enhanced language learning and motivation-based instructional design.

**Keywords:** gamification, motivation, digital pedagogy, emotional engagement, higher education, English for Specific Purposes (ESP).

### Introduction

#### Relevance of the Problem.

In recent years, the integration of gamification into educational contexts has gained significant traction, particularly in language-learning environments. Gamification – the use of game-design elements in non-game settings – has been shown to enhance learner engagement, motivation, and emotional involvement in academic tasks [1]. Within English for Specific Purposes (ESP) instruction, where learners often face abstract or professionally oriented content, maintaining motivation is a persistent challenge [2]. This issue is especially

pronounced in post-conflict and transitional educational systems, such as Ukraine's, where emotional resilience and pedagogical innovation are critical [3].

Motivation in ESP classes is multifaceted, encompassing both intrinsic and extrinsic dimensions. Self-Determination Theory (SDT) posits that learners are more likely to engage deeply when their needs for autonomy, competence, and relatedness are met [4]. Gamified environments can support these needs by offering choice, feedback, and social interaction [5]. Moreover, Flow Theory suggests that optimal learning occurs when students are fully immersed in tasks that balance challenge and skill [6]. Digital gamification tools – such as Kahoot, Quizizz, and Classcraft – create such immersive conditions, especially when tailored to learners' professional goals and cultural contexts [7]. Unlike general English instruction, ESP often involves abstract terminology, rigid formats, and discipline-specific discourse that can alienate learners and reduce emotional engagement [11], a problem exacerbated in post-conflict environments where students face psychological stress and disrupted learning trajectories [12].

### **Analysis of Recent Research and Publications.**

The integration of gamification into ESP instruction has gained scholarly attention over the past decade, with a growing body of research examining its motivational and pedagogical impact [18]. A systematic review by Jaramillo-Mediavilla et al. (2024) analyzed over fifty studies and concluded that gamification consistently improves academic performance and learner motivation across disciplines, including language education. The review emphasized that game elements such as points, badges, and leaderboards foster intrinsic motivation when aligned with clear learning goals and feedback mechanisms. Researchers have likewise conducted meta-analyses of gamification in educational settings, finding that its effectiveness is amplified when emotional engagement and cognitive challenge are balanced – support for the application of Flow Theory in gamified ESP environments, where learners experience deep immersion through well-designed tasks.

In the ESP domain specifically, García-Sánchez and Luján-García (2022) explored gamified MOOCs and their role in promoting autonomous learning. The authors found that gamification not only increased motivation but also improved self-regulation and task persistence among students in business and tourism ESP tracks, and highlighted the need for culturally responsive design that reflects learners' emotional and professional identities. Sailer et al. (2017) examined the psychological mechanisms behind gamification and identified competence, autonomy, and relatedness as key motivational drivers, echoing the principles of Self-Determination Theory. Melnyk (2023) argues for a psycholinguistic approach that considers emotional responses to academic texts, suggesting that gamification can bridge cognitive rigor and emotional resilience in ESP instruction.

The theoretical foundation of this study integrates psychological, pedagogical, and design-based perspectives. Self-Determination Theory, developed by Ryan and Deci [21], holds that motivation is driven by the fulfilment of three basic needs – autonomy, competence, and relatedness – which gamification supports through choice, feedback and progression, and collaborative elements such as leaderboards or team quests [22]. Flow Theory, introduced by Csikszentmihalyi [23], describes a state of deep immersion that arises when tasks balance challenge and skill; digital platforms such as Kahoot or Classcraft can induce flow by transforming abstract language tasks into interactive experiences [24]. Gamification design

principles drawn from Human-Computer Interaction, User Experience, and narrative theory [25] require that mechanics – points, badges, levels, avatars, storytelling – be aligned with learners' professional goals and cultural contexts. Recent psycholinguistic research further highlights the role of emotional response in academic reading and language acquisition [26], positioning gamification as a bridge between cognitive rigor and emotional engagement in conflict-affected settings.

### **Identification of the Unsolved Part of the Problem.**

Despite growing interest, empirical research on gamification in ESP remains limited and fragmented, particularly in Eastern European settings. Existing studies often focus on general EFL contexts or overlook the emotional and intercultural dimensions critical to effective ESP instruction [8], [17]. Few address the emotional dimensions of gamified learning in conflict-affected regions such as Ukraine, or examine which game mechanics best support specific motivational constructs across professional tracks. This study addresses that gap by examining how digital gamification influences motivation and emotional engagement among Ukrainian ESP students in business, IT, and tourism tracks.

### **Aim of the Article.**

The primary goal of this study is to investigate how digital gamification influences student motivation and emotional engagement in ESP instruction within higher education. The research is guided by three questions: (1) How do specific gamification elements affect motivational dimensions in ESP learners? (2) What emotional responses are triggered by digital gamified instruction? (3) How can gamification be culturally adapted to support inclusive pedagogy in conflict-affected contexts? Specifically, the study aims to:

- identify which game-based elements (points, badges, narratives, leaderboards) most effectively enhance the motivational constructs of autonomy, competence, and relatedness defined by Self-Determination Theory [19];
- explore the emotional responses of ESP learners to gamified digital environments, drawing on psycholinguistic insights into academic reading and affective engagement [20];
- evaluate the pedagogical impact of gamification across different ESP domains (business, IT, tourism), with attention to learners' professional goals and cultural contexts;
- develop recommendations for integrating gamification into ESP curricula in a way that supports inclusive, emotionally sensitive, and resilient education, particularly in conflict-affected regions such as Ukraine.

### **Scientific Novelty.**

The study is among the first to examine the combined motivational and emotional impact of digital gamification in Ukrainian ESP instruction across three professional tracks (business, IT, tourism), foregrounding the cultural and emotional adaptation of gamified tasks in a conflict-affected educational context.

### **Practical Significance.**

The findings yield concrete pedagogical recommendations for integrating culturally responsive, emotionally attuned gamification into ESP curricula, supporting active learning, self-regulation, and psychological resilience among university students.

## **Methodology**

### **Research Methods.**

The study employs a mixed-methods research design, integrating quantitative and qualitative approaches to capture both measurable outcomes and nuanced learner experiences. It follows an explanatory sequential design, beginning with quantitative data collection and analysis, followed by qualitative exploration to contextualize and deepen the findings; this structure supports triangulation and enhances validity [27]. Quantitative data were analyzed in SPSS using descriptive statistics, paired t-tests, and ANOVA to identify significant changes in motivation across groups, while qualitative data were coded thematically in NVivo, focusing on emotional responses, perceived autonomy, and cultural resonance. The study adhered to ethical standards for educational research: informed consent was obtained from all participants, data confidentiality was ensured, and the research was approved by the institutional ethics committees of the participating universities.

### **Data Sources.**

The study involved 120 undergraduate students enrolled in ESP courses across three Ukrainian universities, representing the disciplines of business, IT, and tourism. A subset of 15 participants was selected for in-depth interviews based on their engagement levels and willingness to reflect on emotional responses. Participants engaged in a six-week gamified ESP module, with weekly tasks incorporating points, badges, leaderboards, and story-based missions. Surveys were administered pre- and post-intervention, and interviews were conducted in the final week. A modified version of the Academic Motivation Scale (AMS) [28] assessed intrinsic and extrinsic motivation, while semi-structured interviews explored emotional engagement, perceptions of gamification, and cultural relevance.

### **Analytical Tools.**

Data analysis relied on SPSS for the quantitative strand (descriptive statistics, paired t-tests, ANOVA) and NVivo for thematic coding of the qualitative strand. The gamification intervention used Kahoot, Quizizz, and Classcraft, selected for their accessibility, narrative features, and collaborative mechanics. Visualizations – bar charts and heatmaps – were generated to illustrate motivational shifts and emotional-engagement patterns [29].

### **Research Limitations.**

Several limitations apply. The design captured short-term motivational gains over a six-week period; long-term effects on language retention and professional readiness were not measured. Occasional digital fatigue and unequal access to devices – particularly in rural areas – constrained participation, although these were partially mitigated by asynchronous options and mobile-friendly platforms [30]. Varying levels of gamification literacy among educators also limit the generalizability of the implementation.

## **Results**

A paired-sample t-test comparing pre- and post-intervention scores on the Academic Motivation Scale (AMS) revealed statistically significant increases in intrinsic motivation across all three ESP domains ( $p < 0.01$ ). Table 1 summarizes the mean scores before and after the six-week gamified module.

Table 1

*Mean Motivation Scores (Pre- and Post-Intervention)*

| ESP Domain | Pre-Test Mean | Post-Test Mean | Δ Mean | Significance (p) |
|------------|---------------|----------------|--------|------------------|
| Business   | 3.21          | 4.05           | +0.84  | 0.008            |
| IT         | 3.45          | 4.32           | +0.87  | 0.004            |
| Tourism    | 3.18          | 4.01           | +0.83  | 0.011            |

Students reported the highest gains in autonomy and competence, particularly when using platforms such as Classcraft, which allowed for personalized avatars and narrative progression. Leaderboards and team-based challenges also boosted relatedness, especially in the tourism and business tracks.

Qualitative data from interviews revealed that gamification elicited strong emotional responses, including excitement, curiosity, and pride. Students described feeling “more connected” to the content and “less anxious” about making mistakes. As one IT student noted: “When I saw my name on the leaderboard, I felt like I belonged in the class.” A thematic analysis identified three dominant emotional themes:

- Empowerment: students felt more in control of their learning;
- Enjoyment: game elements made ESP content more accessible and engaging;
- Resilience: gamification helped students cope with external stressors, particularly in the context of ongoing conflict.

Gamified tasks that incorporated culturally familiar scenarios (e.g., Ukrainian business case studies, tourism simulations) were rated as more engaging. This aligns with Melnyk's (2023) findings on the importance of emotional resonance in academic reading: students responded more positively to tasks that reflected their professional aspirations and national identity.

## Discussion

### Interpretation of Results.

The findings support Self-Determination Theory: gamification enhanced all three motivational needs – autonomy, competence, and relatedness. Flow Theory was also validated, as students reported deep immersion during timed quizzes and narrative quests. The convergence of quantitative gains and qualitative accounts of empowerment, enjoyment, and resilience indicates that gamification operated not only on measurable motivation but also on learners' emotional relationship to professionally oriented content.

### Comparison with Other Studies.

These results echo prior studies on gamification and motivation [18], [19] but extend them by emphasizing emotional and cultural dimensions in a Ukrainian ESP context. Where earlier work concentrated on general EFL settings or on performance outcomes, the present study foregrounds affective engagement and culturally responsive design as conditions for sustained motivation, consistent with García-Sánchez and Luján-García (2022) on autonomy in gamified ESP and with Sailer et al. (2017) on the psychological needs underlying gamified learning.

### Scientific Novelty (Expanded).

The study advances the field by demonstrating that, in a conflict-affected setting, digital gamification functions as a bridge between cognitive rigor and emotional support rather than

as a purely motivational add-on. By linking motivational outcomes to emotional resilience and cultural identity across business, IT, and tourism tracks, it contributes an emotionally and culturally situated account of gamified ESP instruction that prior research has largely overlooked.

### **Practical Significance (Expanded).**

For practice, the results underscore the value of thoughtful formatting of gamified objects – lists, formulas, tables, figures, and software code – in making abstract content accessible, personalized, and emotionally resonant. Educators can integrate points, badges, avatars, and narrative missions into ESP modules while balancing playfulness with academic rigor, and should favor culturally familiar scenarios and mobile-friendly, asynchronous options to widen access. These recommendations are especially pertinent to curricula that must support both academic achievement and psychological resilience.

### **Conclusions**

This study demonstrates that digital gamification significantly enhances motivation and emotional engagement in ESP instruction. By integrating game-based elements – points, badges, avatars, and narrative missions – into ESP modules, educators can foster autonomy, competence, and relatedness in line with Self-Determination Theory. The use of culturally relevant scenarios and emotionally attuned feedback further supports Flow Theory, enabling deep immersion during language tasks. Quantitative findings revealed marked increases in intrinsic motivation across business, IT, and tourism tracks, while qualitative data highlighted emotional responses such as pride, enjoyment, and resilience. These outcomes suggest that gamification is not merely a motivational tool but a bridge between cognitive rigor and emotional support – especially vital in conflict-affected educational contexts such as Ukraine. Limitations remain: digital fatigue, unequal access to devices, and varying gamification literacy among educators challenge widespread implementation, and long-term effects on retention and professional readiness require further study. Future research directions include:

- longitudinal studies to assess the sustained impact of gamification on ESP learning outcomes;
- cross-cultural comparisons of how gamification functions in diverse educational systems;
- AI-enhanced gamification using adaptive algorithms to personalize learning paths and emotional feedback;
- teacher-training models to support the integration of gamification into ESP pedagogy;
- resilience-focused frameworks that combine gamification with trauma-informed and inclusive teaching strategies.

### **Список використаних джерел**

1. Anthony, L. (2018). *Introducing English for Specific Purposes*. Routledge.
2. Csikszentmihalyi, M. (1990). *Flow: The Psychology of Optimal Experience*. Harper & Row.
3. Deci, E. L., & Ryan, R. M. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. Springer.
4. Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: Defining gamification. *Proceedings of the 15th International Academic MindTrek Conference*, 9–15. <https://doi.org/10.1145/2181037.2181040>

5. Dicheva, D., Dichev, C., Agre, G., & Angelova, G. (2015). Gamification in education: A systematic mapping study. *Educational Technology & Society*, 18(3), 75–88.
6. Domínguez, A., Saenz-de-Navarrete, J., de-Marcos, L., Fernández-Sanz, L., Pagés, C., & Martínez-Herráiz, J. J. (2013). Gamifying learning experiences: Practical implications and outcomes. *Computers & Education*, 63, 380–392. <https://doi.org/10.1016/j.compedu.2012.12.020>
7. Gee, J. P. (2003). *What Video Games Have to Teach Us About Learning and Literacy*. Palgrave Macmillan.
8. Hamari, J., Koivisto, J., & Sarsa, H. (2014). Does gamification work? A literature review of empirical studies on gamification. *Proceedings of the Annual Hawaii International Conference on System Sciences*, 3025–3034. <https://doi.org/10.1109/HICSS.2014.377>
9. Huang, W. H.-Y., & Soman, D. (2013). *Gamification of Education*. University of Toronto, Rotman School of Management.
10. Hutchinson, T., & Waters, A. (1987). *English for Specific Purposes: A Learning-Centred Approach*. Cambridge University Press.
11. Jaramillo-Mediavilla, L., Basantes-Andrade, A., Cabezas-González, M., & Casillas-Martín, S. (2024). Impact of gamification on motivation and academic performance: A systematic review. *Education Sciences*, 14(6), 639. <https://doi.org/10.3390/educsci14060639>
12. Kapp, K. M. (2012). *The Gamification of Learning and Instruction*. Pfeiffer.
13. Kiryakova, G., Angelova, N., & Yordanova, L. (2014). Gamification in education. *Proceedings of International Balkan Education and Science Conference*, 1–5.
14. Kivunja, C. (2015). Teaching students to learn and to work well with others using digital gamification. *International Journal of Higher Education*, 4(1), 101–111.
15. Landers, R. N. (2014). Developing a theory of gamified learning: Linking serious games and gamification. *Simulation & Gaming*, 45(6), 752–768.
16. Melnyk, O. V., & Huryna, N. V. (2024). Interactive platforms in foreign language learning for students of non-lingual specialties. *Visnyk Natsionalnoho Universytetu "Chernihivskiyi Kolehium" imeni T. H. Shevchenka*, 27(183), 122–127. <https://doi.org/10.58407/visnik.242720>
17. Noels, K. A., Pelletier, L. G., Clément, R., & Vallerand, R. J. (2003). Why are you learning a second language? Motivational orientations and self-determination theory. *Language Learning*, 53(S1), 33–64. <https://doi.org/10.1111/1467-9922.53223>
18. Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
19. Sailer, M., Hense, J., Mayr, S., & Mandl, H. (2017). How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction. *Computers in Human Behavior*, 69, 371–380. <https://doi.org/10.1016/j.chb.2016.12.033>
20. Seaborn, K., & Fels, D. I. (2015). Gamification in theory and action: A survey. *International Journal of Human-Computer Studies*, 74, 14–31. <https://doi.org/10.1016/j.ijhcs.2014.09.006>
21. Suh, A., & Wagner, C. (2017). Learning with gamification: User engagement and learning outcomes. *Computers in Human Behavior*, 73, 1–12.

22. Vallerand, R. J., Pelletier, L. G., Blais, M. R., Brière, N. M., Senécal, C., & Vallières, E. F. (1992). The Academic Motivation Scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and Psychological Measurement*, 52(4), 1003–1017. <https://doi.org/10.1177/0013164492052004025>
23. Werbach, K., & Hunter, D. (2012). *For the Win: How Game Thinking Can Revolutionize Your Business*. Wharton Digital Press.
24. Zeybek, N., & Saygı, E. (2024). Gamification in education: Why, where, when, and how? *Games and Culture*, 19(2), 237–264. <https://doi.org/10.1177/15554120231158625>

## References

1. Anthony, L. (2018). *Introducing English for Specific Purposes*. Routledge.
2. Csikszentmihalyi, M. (1990). *Flow: The Psychology of Optimal Experience*. Harper & Row.
3. Deci, E. L., & Ryan, R. M. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. Springer.
4. Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: Defining gamification. *Proceedings of the 15th International Academic MindTrek Conference*, 9–15. <https://doi.org/10.1145/2181037.2181040>
5. Dicheva, D., Dichev, C., Agre, G., & Angelova, G. (2015). Gamification in education: A systematic mapping study. *Educational Technology & Society*, 18(3), 75–88.
6. Domínguez, A., Saenz-de-Navarrete, J., de-Marcos, L., Fernández-Sanz, L., Pagés, C., & Martínez-Herráiz, J. J. (2013). Gamifying learning experiences: Practical implications and outcomes. *Computers & Education*, 63, 380–392. <https://doi.org/10.1016/j.compedu.2012.12.020>
7. Gee, J. P. (2003). *What Video Games Have to Teach Us About Learning and Literacy*. Palgrave Macmillan.
8. Hamari, J., Koivisto, J., & Sarsa, H. (2014). Does gamification work? A literature review of empirical studies on gamification. *Proceedings of the Annual Hawaii International Conference on System Sciences*, 3025–3034. <https://doi.org/10.1109/HICSS.2014.377>
9. Huang, W. H.-Y., & Soman, D. (2013). *Gamification of Education*. University of Toronto, Rotman School of Management.
10. Hutchinson, T., & Waters, A. (1987). *English for Specific Purposes: A Learning-Centred Approach*. Cambridge University Press.
11. Jaramillo-Mediavilla, L., Basantes-Andrade, A., Cabezas-González, M., & Casillas-Martín, S. (2024). Impact of gamification on motivation and academic performance: A systematic review. *Education Sciences*, 14(6), 639. <https://doi.org/10.3390/educsci14060639>
12. Kapp, K. M. (2012). *The Gamification of Learning and Instruction*. Pfeiffer.
13. Kiryakova, G., Angelova, N., & Yordanova, L. (2014). Gamification in education. *Proceedings of International Balkan Education and Science Conference*, 1–5.
14. Kivunja, C. (2015). Teaching students to learn and to work well with others using digital gamification. *International Journal of Higher Education*, 4(1), 101–111.
15. Landers, R. N. (2014). Developing a theory of gamified learning: Linking serious games and gamification. *Simulation & Gaming*, 45(6), 752–768.
16. Melnyk, O. V., & Huryňa, N. V. (2024). Interactive platforms in foreign language learning for students of non-lingual specialties. *Visnyk Natsionalnoho Universytetu "Chernihivskiyi*

- Kolehium" imeni T. H. Shevchenka, 27(183), 122–127.  
<https://doi.org/10.58407/visnik.242720>
17. Noels, K. A., Pelletier, L. G., Clément, R., & Vallerand, R. J. (2003). Why are you learning a second language? Motivational orientations and self-determination theory. *Language Learning*, 53(S1), 33–64. <https://doi.org/10.1111/1467-9922.53223>
  18. Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
  19. Sailer, M., Hense, J., Mayr, S., & Mandl, H. (2017). How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction. *Computers in Human Behavior*, 69, 371–380. <https://doi.org/10.1016/j.chb.2016.12.033>
  20. Seaborn, K., & Fels, D. I. (2015). Gamification in theory and action: A survey. *International Journal of Human-Computer Studies*, 74, 14–31. <https://doi.org/10.1016/j.ijhcs.2014.09.006>
  21. Suh, A., & Wagner, C. (2017). Learning with gamification: User engagement and learning outcomes. *Computers in Human Behavior*, 73, 1–12.
  22. Vallerand, R. J., Pelletier, L. G., Blais, M. R., Brière, N. M., Senécal, C., & Vallières, E. F. (1992). The Academic Motivation Scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and Psychological Measurement*, 52(4), 1003–1017. <https://doi.org/10.1177/0013164492052004025>
  23. Werbach, K., & Hunter, D. (2012). *For the Win: How Game Thinking Can Revolutionize Your Business*. Wharton Digital Press.
  24. Zeybek, N., & Saygı, E. (2024). Gamification in education: Why, where, when, and how? *Games and Culture*, 19(2), 237–264. <https://doi.org/10.1177/15554120231158625>