

Gamification and ESL Proficiency: Leveraging Game Design Elements in Language Learning

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ABSTRACT

Learning English as a Second Language (ESL) often poses challenges such as limited learner motivation, insufficient practice opportunities, and heightened anxiety during language acquisition. Educators have sought innovative approaches to address these issues, with gamification emerging as a promising solution. This study explores the integration of gamification and game-based elements in enhancing proficiency in ESL. Gamification, defined as applying game design principles in non-game contexts, fosters motivation, engagement, and skill acquisition among ESL learners. By examining game-based tools like Minecraft Edu and Roblox, the study highlights their potential to build vocabulary, improve grammar, and strengthen core language skills, including listening, speaking, reading, and writing. Gamified platforms such as Quizizz and Kahoot! further enhance grammar and vocabulary acquisition through instant feedback and incremental challenges. The study also underscores the value of feedback mechanisms, rewards, and role-playing in fostering interactive and immersive learning environments. Through a thematic analysis, the study reveals that gamification strategies effectively address challenges such as low motivation, limited practice opportunities, and anxiety in language learning. The findings emphasize the importance of balancing educational objectives with engaging game mechanics to optimize learning outcomes in ESL education.

Keywords: gamification in language learning, game design elements, ESL proficiency

INTRODUCTION

Games have been a great source of enjoyment for many people for centuries and will continue to bring joy to people in the future. The integration of gamification in language learning has emerged as a transformative approach to enhancing English as a Second Language (ESL) proficiency. According to Deterding et al. (2011), gamification is defined as the integration of games into a non-gaming context. In other words, it refers to using game elements—such as rewards, challenges, and storytelling—in non-game contexts to motivate and engage learners. ESL learners often face challenges such as low motivation, limited opportunities for practical use, and difficulty mastering complex linguistic structures. Hence, gamification offers a promising solution by fostering interactive and immersive learning environments for ESL learners. Using gamification in language learning has been said to increase pupils' motivation to learn (Subhash & Cudney, 2018), as well as bring positive effects on learners' engagement and performance. It also has a significant impact on learners' motivation, engagement, and skill acquisition. For instance, it has been noted that gamified environments can increase learners' active participation, reduce anxiety, and create a positive attitude towards language learning (Yaccob et al., 2022).

Research also highlights the effectiveness of specific game-based tools like Kahoot! and PowerPoint Challenge Game in improving grammar and vocabulary acquisition among ESL learners (Hashim et al., 2019). Furthermore, gamification elements, such as feedback, rewards, and leaderboards, have been linked to enhanced student engagement and performance (Zhang & Hasim, 2023). However, ESL teachers seem to lack an understanding of gamification in language learning and how gamification or game design elements can enhance ESL proficiency. Hence, this paper reviews the emerging themes that relate to gamification in language learning as well as how game design elements can enhance ESL proficiency.

Gamification and Their Role in Enhancing ESL Proficiency

Incorporating gamification into educational contexts has transformed traditional approaches to English as a Second Language (ESL) instruction. These innovative strategies leverage principles from game mechanics—such as rewards, feedback, challenges, and narratives—to create engaging, immersive, and effective learning environments. By tapping into learners' intrinsic and extrinsic motivations, game-based learning encourages active participation and fosters essential language skills, including grammar, vocabulary, and communication. Gamification involves the incorporation of game aspects into activities. It refers to the incorporation of activities through the utilization of game elements (Deterding et al., 2011). Gamification is not an entirely novel concept, having been presented in the 1980s. Gamification in language acquisition refers to the incorporation of game design elements and gaming ideas into educational settings (Pařová & Vejačka, 2022). In the field of education, it represents a form of social engineering that educators may utilize to support their action plans (Thurairasu, 2022). Gamified activities enhance learners' interest and motivation compared to non-gamified environments. Platforms such as Minecraft Edu, Roblox, and Quizizz exemplify how these tools can promote problem-solving, collaboration, and contextual learning, offering learners opportunities to apply language skills in meaningful and real-world scenarios. This section explores the theoretical underpinnings, practical applications, and significant outcomes of using gamification in ESL education, highlighting their impact on learners' motivation, engagement, and language proficiency.

Theme 1: Game-Design Elements

Game-based elements or Game design elements in education are innovative tools designed to make learning engaging and effective by interacting with game mechanics in educational settings. These elements include rewards, rules, goals, interaction, feedback, problem-solving, competition, and fun (Khaleel et al., 2016; Vandercruysse et al., 2012), which are used to enhance learners' motivation, engagement, and learners' learning outcomes. For example, rewards and leaderboards foster competition and achievement, which can significantly enhance pupils' motivation (Plass et al., 2015). Similarly, incorporating narratives in educational games creates a contextual and emotional connection to the content, facilitating deeper understanding and retention (Rai & Beck, 2012). Studies have shown that these elements help learners to improve their focus, encourage consistent practice, and enhance learners' skills such as vocabulary, grammar, and conversational skills (Govender & Arnedo-Moreno, 2021). Game-based elements help learners to improve their English proficiency and their language skills effectively. First and foremost, game elements that are challenging such as giving rewards and leaderboards keep the learners motivated and engaged in learning. For example, in Minecraft, learners have to complete the tasks that require them to use the English language to progress which maintains their high level of engagement (Yee et al., 2021).

Besides, the use of game-based elements in learning provides immersive environments to the learners where they will use the language meaningfully. Contextual and practical learning such as role-playing and storytelling mimics real-life scenarios which allow learners to practice in context. One of the examples is that Roblox enables role-playing in virtual worlds as well as supporting text and voice communication. Hence, it encourages the learners to communicate in English to complete the tasks given. The findings of a study show that the function of Roblox can support learners' social interaction and collaborative learning by interacting with other users in the games (Han et al., 2023). Furthermore, learning through games also builds learners' skill development across modalities. Some games with the features of voice chat or textual communication allow learners to learn actively and enhance their four English language skills, namely listening, speaking, reading, and writing skills. In Minecraft Edu, an educational version of Minecraft, inculcating problem-solving activities with language puzzles helps to enhance learners' grammar skills and increase their vocabulary (Nebel et al., 2016). When the learners play the games together, it promotes collaboration and social interaction. This will help foster the learner's communication skills as well as teamwork in the targeted language. A study has found that collaborative tasks in Minecraft Edu encourage learners to negotiate meaning and practice conversational phrases either verbally or in writing (Nebel et al., 2016).

There are few studies demonstrating the benefits of using games in learning among learners. According to Nebel et al. (2016), Minecraft Edu helps to foster learners' academic and linguistic development which allows learners to engage in problem-solving tasks through open-ended and immersive nature games features.

Through Minecraft Edu, the learners have to follow the given instructions to complete the tasks, build collaboration among their friends as well as navigate the challenges given. The tasks given by Minecraft Edu mimic learners' real-life situations, which encourages the learners to communicate and provides a practical framework for language learning. This study also shows that Minecraft Edu has an impact on learners' motivation and encourages learners to participate actively in learning the language. The learners must collaborate and work together with their friends to construct the buildings which requires them to negotiate meaning, give instruction, and share their ideas in English. These games, not only help learners to improve their four main English skills but also inculcate vocabulary banks and grammatical structures through interactive activity.

Another study by Govender and Arnedo-Moreno (2021) shows that Roblox is a platform with learning elements that allows educators to design specific scenarios based on the learning objectives. For example, educators can design the game in Roblox which allows learners to do role-playing to practice situational dialogues. Those scenarios are related to real-world contexts where it requires learners to use language skills to complete the tasks. Studies also highlighted that Roblox enhances learners' conversational proficiency by interacting with each other in games to solve puzzles or complete certain tasks (Han et al., 2023). Throughout the activity, the learners will also enhance their listening and speaking skills as well as make a connection between vocabulary and real-world objects and actions which help them to improve comprehension and retention.

Theme 2: Encouraging Experiences of Learners Participation

Several studies (Baldauf et al., 2017; Guaqueta & Castro-Garces, 2018; Hasegawa et al., 2015; Homer et al., 2018; Kétyi, 2020; Zhou et al., 2017) have highlighted the encouraging experiences of learners participating in gamified learning activities. Grammar and vocabulary, essential elements of acquiring English as a second language (ESL), can be efficiently imparted using gamified techniques. Platforms such as Quizizz and Kahoot! have proven efficient in teaching fundamental concepts by offering instant feedback, allowing students to rectify mistakes in real-time and enhance their foundational comprehension (Pham, 2023). The research conducted by Hashim et al. (2019) highlights the effectiveness of gamified learning in instructing grammar to ESL learners, demonstrating that learners acquire significant outcomes while engaging with grammar through online language games. These findings indicate that gamified learning tools not only improve learner engagement but also significantly aid in the development of crucial language abilities.

Gamified language acquisition improves communicative competence—the ability to utilize language effectively and suitably across diverse social contexts—by incorporating game-like features such as rewards, challenges, and interactivity. Gamified technologies, through immersive and contextual learning, model real-life situations, enabling learners to engage in realistic language use, including situational dialogues that imitate actual interactions. Instantaneous feedback, a fundamental characteristic of gamified platforms, supports learners in enhancing their grammatical proficiency by detecting and rectifying errors in real time. The incentive elements of gamification, such as acquiring badges or progressing through levels, promote regular practice, thereby enhancing discourse competency by allowing learners to develop coherent and meaningful sentences in communication. The low-risk and engaging atmosphere of gamified learning promotes risk-taking and experimentation with language, enhancing strategic competence as learners discover methods to address linguistic problems. Social engagement elements, including multiplayer modes and leaderboards, facilitate significant and dynamic conversation, boosting pragmatic ability by enabling learners to practice suitable language usage in many circumstances. Research supports these advantages, with studies such as those by Hamari et al. (2014) suggesting enhanced engagement and prolonged effort in gamified learning, and Reinhardt and Sykes (2012) highlighting the congruence of game-based methodologies with communicative language instruction. Gamification establishes an efficient and captivating framework for enhancing communicative competence in language learners.

Theme 3: Enhance ESL Proficiency

The use of gamification in English as a Second Language (ESL) instruction has proven to be an innovative and effective approach for fostering motivation, engagement, and confidence among learners. By incorporating

game elements such as points, badges, leaderboards, incremental challenges, feedback mechanisms, role-playing, and storytelling, educators can create dynamic learning environments that cater to diverse learning needs. This section explores how game design elements enhance ESL proficiency. Game elements like points, badges, and leaderboards introduce tangible rewards and competition, fostering motivation and active participation in ESL learning. Points function as an immediate reinforcement mechanism, enabling learners to visualize their progress and experience a sense of reward for their efforts. This corresponds with Skinner's Operant Conditioning, which posits that rewards, like points, reinforce desired behaviors (Skinner, 1957). By providing immediate gratification, learners are encouraged to actively engage with the learning material.

Badges, like digital trophies, represent specific accomplishments, such as mastering vocabulary or grammar. These elements reinforce Deci and Ryan's Self-Determination Theory (SDT) by satisfying the need for competence, thereby intrinsically motivating learners when they perceive themselves as capable and accomplished (Ryan & Deci, 2020). For instance, students who receive a badge for finishing a series of vocabulary exercises frequently experience an enhancement in pride and self-assurance regarding their competencies.

Well-designed leaderboards promote constructive competition and enhance motivation. Su and Cheng (2014) discovered that gamified platforms like Quizizz enhanced student engagement and motivation by offering insight into their progress. Nevertheless, inadequately designed leaderboards can dishearten underperforming learners, increasing their anxiety levels. Implementing tiered leaderboards or individual progress boards fosters inclusivity, guaranteeing that all learners receive acknowledgment for their contributions. This notion corresponds with Vygotsky's Zone of Proximal Development (ZPD), emphasizing the significance of guided tasks that can be accomplished with assistance (Vygotsky, 1978).

The incorporation of gamified elements diminishes learner anxiety, thereby endorsing Krashen's Affective Filter Hypothesis, which posits that a low-anxiety environment enhances language acquisition (Krashen, 1982). By establishing systems that acknowledge effort and advancement, gamification guarantees that learners feel encouraged and motivated during their educational experience. Incremental challenges offer learners scaffolded tasks that progressively escalate in complexity, thereby maintaining continuous engagement. These organized progressions embody Vygotsky's Zone of Proximal Development (ZPD), wherein learners attain success through assistance in executing tasks that slightly exceed their present capabilities (Vygotsky, 1978). This principle is incorporated into gamified platforms such as Duolingo, which begin with basic content and gradually introduce more complex sentence structures. This progression corresponds with Csikszentmihalyi's Flow Theory, which underscores the necessity of balancing task difficulty with learner skill level to achieve optimal engagement. Casanova-Mata (2023) indicated that students utilizing gamified tools with progressive challenges exhibited enhanced motivation and significant improvements in language acquisition. These structured activities keep learners in the "flow" state, allowing them to remain focused and immersed without boredom or frustration (Csikszentmihalyi, 1990).

Furthermore, as described by Dweck (2006), incremental challenges promote a growth mindset. By acknowledging effort and progress, gamified platforms motivate learners to perceive challenges as opportunities for growth, fostering resilience and perseverance. For example, students who accomplish progressively challenging tasks frequently attribute their success to diligence and perseverance. Incremental progression also reinforces Krashen's Input Hypothesis (I+1), which asserts that learners acquire language most effectively when exposed to comprehensible input slightly exceeding their current proficiency level (Krashen, 1982). Gamified platforms facilitate effective language acquisition by incrementally introducing new vocabulary or grammatical structures, ensuring learners consistently engage with input that challenges their existing comprehension.

Feedback mechanisms in gamified platforms are essential for facilitating immediate and personalized learning. Platforms like Quizizz and Kahoot! offer immediate feedback following each question, assisting learners in rectifying errors in real-time. This reinforces precise language usage and prevents the entrenchment of errors, consistent with Skinner's Operant Conditioning, wherein immediate feedback fortifies desired behavior (Skinner, 1957). Customized feedback corresponds with Vygotsky's Zone of Proximal Development (ZPD), offering learners specific assistance to surmount obstacles and attain proficiency (Vygotsky, 1978). Adaptive

systems that detect particular learner errors and propose corrective strategies provide students with targeted guidance where necessary. Pham (2023) established that students who obtained customized grammar and sentence structure feedback surpassed those who depended exclusively on conventional classroom techniques. Moreover, immediate feedback sustains learner engagement and motivation by providing timely constructive corrections. This corresponds with Krashen's Affective Filter Hypothesis, which asserts that alleviating frustration and confusion cultivates a conducive learning environment that enhances language acquisition (Krashen, 1982). For example, when students receive immediate clarification on incorrect answers, they are less discouraged and more likely to persevere with their tasks. Feedback mechanisms exemplify the principles of Deci and Ryan's Self-Determination Theory (SDT) by fulfilling learners' need for competence. Gamified platforms enhance learners' sense of competence and motivation to engage with more complex tasks by validating progress and offering explicit guidance for improvement (Ryan & Deci, 2020).

Leveraging Game Design Elements in Language Learning

Game design elements offer diverse pathways to enhance the educational impact of language learning. Digital games, with their interactive mechanics and engagement strategies, facilitate immersive experiences that capture learners' attention and sustain their motivation. For instance, cultural immersion is a notable outcome of games that simulate real-world interactions, enabling learners to grasp contextual language usage and appreciate the cultural nuances tied to the target language. These tools provide a platform for learners to acquire new vocabulary, practice word usage in meaningful contexts, and solidify their understanding through gameplay. In addition to vocabulary integration, game-based approaches contribute significantly to language acquisition by fostering contextual and interactive learning environments. Elements such as narrative frameworks and adaptive gameplay encourage learners to actively participate in their educational journey. For example, interactive mechanics in games empower learners to engage in real-time decision-making, enhancing their language skills organically. Moreover, social interactions within multiplayer games reinforce communication competencies and collaboration, ensuring language learning extends beyond isolated exercises to dynamic, real-world applications. The following figure depicts the concept map of how game design elements could be leveraged in enhancing ESL proficiency.

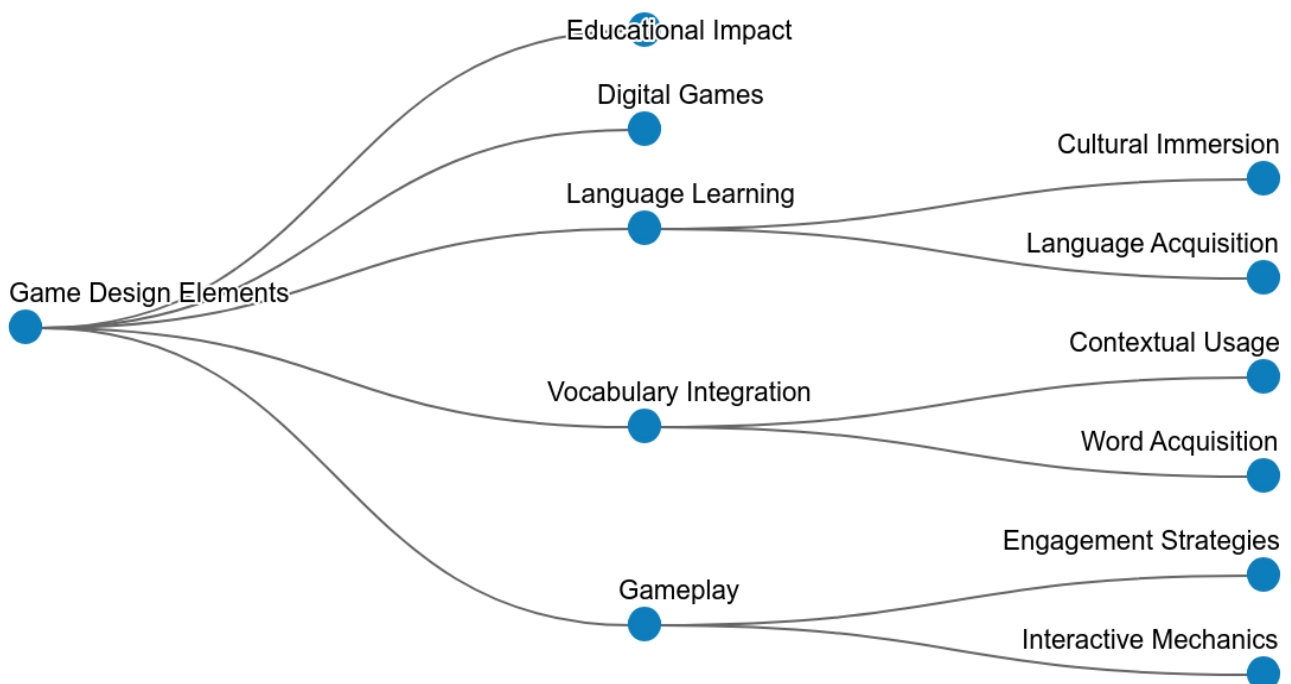


Figure 1. Leveraging Game Design Elements in Language Learning

Educators can use gamification in teaching language to create dynamic and engaging learning environments. By designing meaningful, fun, and purposeful lessons, educators can align gamified tasks with the learning

objectives, no matter which English skills. For example, educators can use “Quizziz” or “Wordwall” applications in the classroom as a task for the students as well as an assessment tool for the learners. This approach helps balance educational value and fun, making the lessons enjoyable and effective (Deterding et al., 2011). Besides, the gamified tasks can also be done outside the classroom where the learners can complete the tasks given during their free time. Another significant implication for educators is that educators should ensure that the games that are used for learning purposes should also foster healthy competition among learners. In the classroom, educators can use leaderboards or team challenges to encourage learners and motivate them to continue learning. Games not only can be done by using gadgets or online, it can also be done in the classroom physically. Hence, educators can conduct scavenger hunts related to language learning outside the classroom which can stimulate learners' interest as well as sharpen learners' collaborative problem-solving skills. However, it is still important for educators to emphasize effort and teamwork among the learners to ensure that competition remains positive and inclusive (Kapp, 2013).

CONCLUSION

This paper highlights the transformative potential of gamification and game-based elements in enhancing ESL proficiency. By incorporating features such as rewards, leaderboards, role-playing, and feedback, educators can design immersive and engaging learning experiences that effectively develop learners' vocabulary, grammar, and communication skills. The findings underscore the ability of gamified learning to boost motivation, alleviate anxiety, and facilitate meaningful language practice. Practical applications like Minecraft Edu, Roblox, Quizizz, and Kahoot! demonstrate how gamification promotes active participation, collaborative learning, and real-world language application. As gamification continues to advance, educators are encouraged to harness its capabilities to foster inclusive, enjoyable, and impactful ESL learning environments.

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REFERENCES

1. Baldauf, M., Brandner, A., & Wimmer, C. (2017). Mobile and gamified blended learning for language teaching - Studying requirements and acceptance by students, parents and teachers in the wild. *ACM International Conference Proceeding Series*, 13–24. <https://doi.org/10.1145/3152832.3152842>
2. Casanova-Mata, I. (2023). Enhancing English Acquisition: Effects of among us Game-Based Gamification on Language Competence, Motivation, Attention, and Attitude towards the English Subject. *Educ. Sci.*, 13(11), 1094.
3. Csikszentmihalyi, M. (1990). *Flow : The Psychology of Optimal Experience*. Harper & Row.
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: Envisioning Future Media Environments*, MindTrek 2011, March 2014, 9–15. <https://doi.org/10.1145/2181037.2181040>
5. Govender, T., & Arnedo-Moreno, J. (2021). An analysis of game design elements used in digital game-based language learning. *Sustainability (Switzerland)*, 13(12). <https://doi.org/10.3390/su13126679>
6. Guaqueta, C. A., & Castro-Garcés, A. Y. (2018). The Use of Language Learning Apps as a Didactic Tool for EFL Vocabulary Building. *English Language Teaching*, 11(2), 61. <https://doi.org/10.5539/elt.v11n2p61>
7. 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>
8. Han, J., Liu, G., & Gao, Y. (2023). Learners in the Metaverse: A Systematic Review on the Use of Roblox in Learning. *Education Sciences*, 13(3). <https://doi.org/10.3390/educsci13030296>
9. Hasegawa, T., Koshino, M., & Ban, H. (2015). An English vocabulary learning support system for the learner's sustainable motivation. *SpringerPlus*, 4(1), 1–9. <https://doi.org/10.1186/s40064-015-0792-2>

10. Hashim, H., Rafiq, K. R. M., & Yunus, M. M. (2019). Improving ESL Learners' Grammar with Gamified-Learning. *Arab World English Journal (AWEJ)*, Special Issue on CALL Number 5, 41–50.
11. Homer, R., Hew, K. F., & Tan, C. Y. (2018). Comparing digital badges-and-points with classroom token systems: Effects on elementary school ESL students' classroom behavior and English learning. *Educational Technology and Society*, 21(1), 137–151.
12. Kapp, K. M. (2013). *The gamification of learning and instruction fieldbook: Ideas into practice*. John Wiley & Sons.
13. Kétyi, A. (2020). From Mobile Language Learning to Gamification: an Overlook of Research Results with Business Management Students over a Five-Year Period. *Porta Linguarum Revista Interuniversitaria de Didáctica de Las Lenguas Extranjeras*, November. <https://doi.org/10.30827/digibug.54087>
14. Khaleel, F. L., Ashaari, N. S., Tengku Wook, T. S. M., & Ismail, A. (2016). Gamification Elements for Learning Applications. *International Journal on Advanced Science Engineering and Information Technology*, 6(6), 868–874.
15. Krashen, S. D. (1982). *Principles and practice in second language acquisition*. Pergamon Press.
16. Nebel, S., Schneider, S., & Rey, G. D. (2016). Mining learning and crafting scientific experiments: A literature review on the use of Minecraft in education and research. *Educational Technology and Society*, 19(2), 355–366.
17. Pařová, D., & Vejačka, M. (2022). Project-based Learning in the University Course and its Effectiveness. *TEM Journal*, 11(4), 477–1484. <https://doi.org/10.18421/TEM114-07>
18. Pham, A. T. (2023). The impact of gamified learning using Quizizz on ESL learners' grammar achievement. *Contemporary Educational Technology*, 15(2). <https://doi.org/10.30935/cedtech/12923>
19. Plass, J. L., Homer, B. D., & Kinzer, C. K. (2015). Foundations of Game-Based Learning. *Educational Psychologist*, 50(4), 258–283. <https://doi.org/10.1080/00461520.2015.1122533>
20. Rai, D., & Beck, J. E. (2012). Math Learning Environment with Game-Like Elements: An Experimental Framework. *International Journal of Game-Based Learning*, 2(2), 21.
21. Reinhardt, J., & Sykes, J. M. (2012). Conceptualizing Digital Game-Mediated L2 Learning and Pedagogy: Game-Enhanced and Game-Based Research and Practice. In H. Reinders (Ed.), *Digital Games in Language Learning and Teaching* (pp. 32–49). Palgrave Macmillan London. <https://doi.org/https://doi.org/10.1057/9781137005267>
22. Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, 61. <https://doi.org/10.1016/j.cedpsych.2020.101860>
23. Skinner, B. F. (1957). *Verbal behavior*. Appleton-Century-Crofts.
24. Su, C.-H., & Cheng, C.-H. (2014). A mobile gamification learning system for improving the learning motivation and achievements. *Journal of Computer Assisted Learning*, 31(3), 268–286. <https://doi.org/https://doi.org/10.1111/jcal.12088>
25. Subhash, S., & Cudney, E. A. (2018). Gamified learning in higher education: A systematic review of the literature. *Computers in Human Behavior*, 87, 192–206.
26. Thurairasu, V. (2022). Gamification-Based Learning as The Future of Language Learning: An Overview. *European Journal of Humanities and Social Sciences*, 2(6), 62–69. <https://doi.org/10.24018/ejsocial.2022.2.6.353>
27. Vandercruysse, S., Vandewaetere, M., & Clarebout, G. (2012). Game-Based Learning: A Review on the Effectiveness of Educational Games. In M. M. Cruz-Cunha (Ed.), *Handbook of Research on Serious Games as Educational, Business and Research Tools* (pp. 628–647). IGI Global.
28. Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
29. Yacob, N. S., Abd. Rahman, S. F., Azlan Mohamad, S. N., Abdul Rahim, A. A., Khalilah Abdul Rashid, K., Mohammed Abdulwahab Aldaba, A., Md Yunus, M., & Hashim, H. (2022). Gamifying ESL Classrooms through Gamified Teaching and Learning. *Arab World English Journal*, 8, 177–191. <https://doi.org/10.24093/awej/call8.12>
30. Yee, P. J., Choo Chuan, T., Sharifah Sakinah Binti Syed Ahmad, Thoe, N. K., & Lim, S. H. (2021). Minecraft education edition: The perspectives of educators on game-based learning related to STREAM education. *Learning Science and Mathematics (LSM) Journal*, 1(16), 1–20.

http://www.recsam.edu.my/sub_lsmjournal

31. Zhang, S., & Hasim, Z. (2023). Gamification in EFL/ESL instruction: A systematic review of empirical research. In *Frontiers in Psychology* (Vol. 13). <https://doi.org/10.3389/fpsyg.2022.1030790>
32. Zhou, L., Yu, J., Liao, C., & Shi, Y. (2017). Learning as Adventure: An App Designed with Gamification Elements to Facilitate Language Learning. *International Conference on HCI in Business, Government, and Organizations*. https://doi.org/10.1007/978-3-319-58481-2_21