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ORIGINAL RESEARCH PAPER

THE EFFECTS OF GAMIFICATION ON STUDENT MOTIVATION AND ACHIEVEMENT IN LEARNING ENGLISH AS A FOREIGN LANGUAGE IN HIGHER EDUCATION

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ABSTRACT

Gamification has grown tremendously in popularity and is now widely used in various fields including information and communication technology (ICT), healthcare, marketing, education and business. Its core principle revolves around the integration of elements from games into non-game environments with the ultimate goal of shaping behavior, enhancing motivation, and fostering increased engagement (Caponetto, 2014). The main aim of this study is to investigate the impact of gamification on student motivation and academic performance in the specific context of teaching English as a foreign language (EFL) at higher education institutions in Bosnia and Herzegovina. To conduct this study, a cohort of 202 students attending both private and public universities in Bosnia and Herzegovina was carefully selected using targeted snowball sampling techniques. The questionnaire distributed to the participants included 57 items from various areas, including academic achievement, frequency and proficiency in using language learning apps, motivation and attitudes towards app-based language learning, and perceived improvements in listening, speaking, reading and writing skills This is attributed to the use of apps to learn the English language (ELL). To analyze the gathered data, descriptive statistics, tests for normality, reliability analysis, and linear regression were employed. The results of the study indicate a significant impact of gamification strategies on students' motivation to learn English as a foreign language, as well as their overall success in EFL learning and academic achievement. In higher education settings, the inclusion of games has been shown to have a positive impact on students' listening, speaking, reading and writing skills. In addition, gamification contributes to the motivation of the students and thus increases their academic performance. The integration of games into education is expected to continue to evolve and lead to transformative changes in curricula, teaching methods and learning models. Consequently, acquiring ICT skills among academic staff is crucial to effectively mentoring students and ensuring successful educational experiences.

Keywords: gamification, student motivation, academic achievement, language skills, English language learning

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1. Introduction

Rapid advances in technology are increasing pressure on professionals in academia to improve their technological skills. This pressure is particularly pronounced for teachers, who are encouraged to move from traditional teaching methods to a more modern and technology-oriented approach (Godwin-Jones, 2015). One area that is growing rapidly is computer-based and mobile learning and language learning is no exception to this trend. The advent of mobile apps and devices introduced a transformative concept that forever changed the educational landscape: gamification. In education, the use of gamification means the integration of game components in conjunction with different teaching approaches to enhance language teaching and learning, with the primary goal of increasing motivation (Boudadi, 2020).

The need for the integration of game elements in courses was created due to the widespread presence of smartphones and applications in the everyday lives of students. Game-based language apps have high-engagement potential, which promotes and maintains motivation for acquiring knowledge since the needs of new-generation students have evolved and are no longer satisfied with the traditional teacher-centered approach. Nowadays, for learning English or other languages, students turn to apps based on gamification such as Duolingo, Busuu, Babbel, and Memrise, which provide categorized, bite-sized lessons. Students are increasingly drawn to mobile applications for language learning due to several noteworthy factors. Firstly, these apps offer unparalleled accessibility as they can be easily accessed on smartphones, which are commonly owned by most students. Secondly, the apps employ an entertaining and engaging format, incorporating multimedia-integrated tasks that enhance the learning experience. Additionally, the convenience of being able to learn anytime and anywhere is a compelling aspect of these mobile applications. Finally, students value the chance to generate and exchange content with their peers, expanding the learning experience beyond the boundaries of the conventional classroom environment (Haliem, 2018).

Gamification is a popular concept that has spread to many areas of human activity, including information and communications technology, medicine, marketing, education, and business. As Caponetto (2014) explains, gamification involves the integration of elements typically found in games into non-gaming contexts to influence behavior, increase motivation, and encourage greater participation. The term is gaining popularity in the Balkan region and is increasingly used in academic research, as well as in educational and business contexts. Therefore, this research examines how the use of gamification increases learners' motivation to learn English, influences their academic performance, and improves their language skills.

1.1. Theoretical Background

Second language acquisition has become one of the greatest necessities in a modern interconnected world. Bilingualism is gradually becoming the norm and, in 2021, it was estimated that 43% of the global population is bilingual, while an additional 17% is multilingual (Gration, 2022). This encompasses a majority of the global population. The study conducted by Lee and Hammer (2011) has provided compelling evidence indicating that low motivation stands out as one of the prevalent challenges encountered by learners. Prensky (2011) argues that with the changing times, the manner in which learners study and the primary means of input are changing, which has an impact on motivation. Consequently, games, as a form of entertainment, present fertile ground for knowledge transmission and have been doing so for a long time (Rego, 2015).

1.1.1 Fundamental Concepts of Gamification and Game-based Learning in Educational Settings

Deterding et al. (2011) have defined gamification as the implementation of game design elements in contexts that are not games per se. Similarly, Sheldon (2020) supports this perspective, noting that gamification involves the integration of game mechanics into real-world activities. Bedwell et al. (2012) proposed a categorization of nine game attributes that Landers (2014) modified to make them applicable in the learning context. These attributes include storyline, evaluation, conflict/challenge, control, environment, game fiction, human interaction, immersion, and rules or goals (Bedwell et al., 2012). Nuez Castellar et al. (2016) present game-based learning as a vehicle for the learning process and distinguish between two types. The first type is the deliberate development of games for educational purposes, the second type is the adaptation of originally entertainment-based games for learning contexts. Game-based learning differs from

gamification in that it offers its own learning space, while gamification facilitates the learning process and increases motivation.

Due to the inherently competitive human nature, games provide a sense of fulfillment by offering rewards such as points, titles, advancement to higher and more challenging levels, and recognition (Werbach & Hunter, 2012). In the field of language learning, gamification is crucial element in facilitating language practice and knowledge acquiring through the use of language learning applications. Available on any mobile device with internet access, these applications offer a free way to learn vocabulary, grammar, writing and/or pronunciation in various foreign languages anytime, anywhere, and make learning motivating and fun through the use of gamification. A great example of this is Duolingo, an application that has taken the world by storm. Duolingo and other similar applications based on gamification provide a space for so-called edutainment, where through games learners can acquire skills that can be applied to problems in real-world context (Lee & Hammer, 2011).

Werbach and Hunter (2012) conducted comprehensive research on the topic of gamification, wherein they provided an extensive definition of the concept. They described gamification as the implementation and utilization of game principles in real-life situations for the purpose of problem-solving. According to their research, elements of the game can be divided into three distinct categories: components, dynamics, and mechanics. The *components* category encompasses various elements found in games, such as levels, avatars, badges, quests, unlocking mechanisms, visual representations (graphs), teams, and similar features (Werbach et al., 2012). *Dynamics*, as described by Werbach and Hunter (2012), involve the intricate abstractions that exist within a game. This includes elements such as the narrative structure, limitations imposed on the players, and the progression system that drives the game forward. The *mechanics* aspect refers to the interactive processes that engage users. It includes elements such as rewards, feedback mechanisms, the number of attempts allowed collaboration with other users, and the presence of challenges (Werbach et al., 2012). Werbach and Hunter's research provides valuable insights into the multifaceted nature of gamification, offering a comprehensive understanding of its key elements, dynamics, and mechanics.

Kapp (2012) goes further and proposes game aspects that are specifically crucial in the context of education, and he categorizes them as:

- *mechanics* - includes points, rewards and statuses that can be improved,
- *aesthetics* – includes the appeal of the interface,
- *game thinking* – applying competitiveness to daily situations.

Points are a form of reward that adopt the same role as money in a real-life context, so they are a virtual currency that a player earns by spending more time and effort on playing, thus making greater achievements (Kim, 2015). *Badges* are also virtual rewards that motivate the player by reflecting the level of success in completing tasks in the game (Thornbury, 2005). *Levels* are virtual ranks that reflect the progress of skill, mastery, and knowledge of the player, so they serve to reflect their growth in abilities and it promotes competitiveness (Kim, 2015). *Leaderboards* are digital lists of players sorted by level of achievement in the form of scores to shape a competitive environment (Thornbury, 2005)

1.1.2 Gamification and the Psychology of Learning

These game elements and gamification as a general concept are tied to and based on child psychology. Games are a process for children to explore various roles and develop new perspectives. Most importantly, children acquire knowledge or learn through play. In this regard, a child should have opportunities for unrestricted play so as to recognize ambitions and sensations (Đurić, 2022), which is necessary for his/her general development – social, cognitive, sensi-motor and so on (Rajić & Petrović-Sočo, 2015). Consequently, learning through play is instilled in human psychology from early stages. It is for this reason that play is so important and it is a crucial aspect to incorporate into the educational context and allow children and adults to nurture this natural model of acquiring knowledge through enjoyable experiences tailored to their needs (Đurić, 2022).

In Werbach and Hunter's (2012) research, they highlighted the importance of two forms of motivation in foreign language learning: intrinsic motivation and extrinsic motivation. Intrinsic mo-

tivation is considered the internal drive that arises from the inherent rewards associated with an activity, such as personal enjoyment, learning, or a sense of achievement. On the other hand, extrinsic motivation occurs when individuals participate in an activity to attain rewards or avoid punishment (Lepper, 1988). Gamification leverages game elements to address both types of motivation. For instance, features like levels, points, and badges can serve as extrinsic motivators, encouraging learners through rewards and recognition. At the same time, feelings of accomplishment, autonomy, and mastery within the game context inspire intrinsic motivation among learners (Werbach and Hunter, 2012). By incorporating these aspects, gamification caters to both intrinsic and extrinsic motivations, fostering a holistic motivational environment for language learners.

1.1.3 Barriers and Opportunities in Complex Digital Transformation of Education

The widespread adoption of games as an educational tool faces a significant obstacle, namely the resistance from teachers and parents who associate gaming with potential violence and addictive behaviors (Elson & Ferguson, 2014). This perception poses a challenge to the integration of games into educational settings. However, computer and mobile games can be adjusted for teaching purposes in a manner that boosts creativity, understanding, initiative-taking, and productivity, and strengthens motivation for students to continue their studies at home. Lee and Hammer (2011) highlight the potential of gamification as a powerful tool for motivating learner engagement within educational environments. They argue that gamification offers educators enhanced resources to provide scaffolding and reward students' learning efforts, ultimately fostering deep learning experiences. Through the utilization of gamification principles, educators have the opportunity to construct a learning environment that is not only captivating but also fosters active engagement and facilitates the acquisition of meaningful learning outcomes.

1.1.4 Gamification for Enhanced Learning of English as a Foreign Language

The results of many studies show that gamification can improve the process of acquiring English skills (Kriyakova, Yordanova and Angelova, 2014). These studies provide evidence and arguments that highlight the positive impact of gamification on the process of language learning. English learning is often perceived as uninteresting and challenging for foreign learners in non-gaming contexts, and it is more engaging through gamification. In his comprehensive report The Advantages of Gamification in the English Learning Context (2020), Rahmani studied a number of studies consistent with the advantages of Gamification in the acquisition of English. The results of these studies consistently show that gamification has a favourable impact on English learning results. Despite differences in participant preferences and learning contexts, these studies consistently identified four main advantages of gamification: increased motivation, improved attitudes and performance, cultivation of 21st-century skills and cognitive achievement, and improvements in social interaction, independence and competitiveness. These advantages are constantly observed in various studies, underscoring the positive impact of gamification in these important areas of English learning.

Research by Al-Falqani (2019), Lin, Ganapathy, Kaur (2018), and Mufida (2016) consistently shows that English proficiency in high and low-level learners is not significant when playing gamified activities. Gamification promotes active student participation and increased use of English, creating an inclusive, fear-free learning environment, and was found to increase the use of English, as reported by Flores (2015), Mufida (2016), and Lam (2016). The integration of badges into game activities promotes social interaction and healthy competition between students, thereby improving social competence, improving English language abilities (including grammar, vocabulary, fluency, pronunciation, speed and conversation) and using technology for learning. These conclusions were supported by research by Flores (2015), Mufida (2016), Lam (2016), Mikasyte (2018), Boyinbode (2018), Lin, Ganapathy, Kaur (2018) and Dehghanzadeh. (2019) and Alfulaih (2019). The implementation of gamification in English classrooms offers a promising solution to combat the ineffective and passive learning environment and provides students with more engaging and meaningful experiences. Successful integration of gamification strategies into these classrooms leads to an active learning atmosphere, active student involvement, improved English skills (especially in speaking) and improved cognitive performance, as evidenced by higher scores in the above-mentioned studies.

2. Literature Review

2.1 Gamification and Motivation

The central element of gamification lies in the user's motivation, which plays a crucial role in determining their performance within the application. Zichermann and Cunningham (2011) emphasize entertainment as one of the primary drivers and reasons for the extensive engagement with video games. Psychologists have extensively studied video games as a source of motivation for decades, which has led to a significant interest in their application in educational and other contexts (Ramirez & Squire, 2015). Prensky (2011) proposes that by leveraging the motivational influence of games and integrating it into educational contexts, learning experiences can become more efficient. Through the integration of gamification, the negative connotation of failure in the learning process is reframed as a constructive and valuable experience. Instead of feeling helpless, anxious, or overwhelmed, students perceive failure as a new opportunity for growth and improvement. This shift in perspective enables students to embrace challenges and view setbacks as steppingstones towards progress and success.

Felicia (2009) also revises about how motivating computer educational games are, stating that it is one of the main qualities of computer games since they contain a variety of auditory, tactile, visual and intellectual stimuli, which actually make the game more interesting and addictive. According to the researcher, the incorporation of multimedia content within games results in increased concentration and focus among players, compelling them to employ their abilities to achieve the objectives set forth in the game. By incorporating diverse forms of multimedia such as visuals, audio, and interactive elements, games captivate players' attention and encourage them to actively engage with the game mechanics to achieve their goals. This immersive and interactive experience facilitates the utilization and development of various skills by the players. In this regard, motivation it is possible to achieve different factors, depending on the student's personality, aspirations, interests, complexity of the game, and so on (Felicia, 2009).

As Skender and Karas (2017) state, due to this way of choosing games, students are more concentrated and more active in teaching compared to other forms of learning. The game is one of the easiest ways to bring the teaching content closer to the students, which is adjusted to their interests and intellectual abilities. Several researchers and studies found that for successful teaching, it is necessary to methodically and creatively design games that will be adapted to the age, abilities, and interests, but also games that will be focused on the teaching content and achieving the goals of teaching (Deterding et al., 2011; Pipo, 2021).

Applications may speed up feedback processes by providing students with timely responses to maintain their continuous engagement (Lee & Hammer, 2011). This timely feedback enables students to evaluate their own abilities and progress, creating an environment where effort is rewarding rather than focusing solely on competence. As a result, the pressure associated with learning processes has been reduced. Figueroa-Flores (2015) argues that the integration of gamification activities leads to greater student engagement. Such activities are seen as exciting challenges for students to overcome. Challenges in gaming serve as motivators for students and encourage active participation and effort in learning processes (Figueroa-Flores, 2015). This increased engagement contributes to a more dynamic and interactive learning environment. According to Huang and Soman (2013), the majority of students prefer interactive learning because it allows them to acquire knowledge on their own time and tempo, thereby eliminating traditional educational pressures.

However, Yanes and Bououd (2019) discovered through their research that a minority of students perceive gamified environments as childish and immature. Some students also indicated that although game-based activities may improve their competitive spirit, they do not necessarily contribute to a deeper understanding of the importance of learning. Gamification is considered to be a valuable tool for enhancing motivation and supporting language learning, but it is recognized that games are valuable tools for improving motivation and support language learning, Lee and Hammer (2011) argue that it should be regarded as an additional resource rather than a substitute for traditional learning methods. This perspective aligns with Brown's (1994) assertion regarding the crucial role of motivation in foreign language acquisition. Figueroa Flores (2015) further highlights the potential of gamification to increase student motivation. Furthermore, Ybarra and Green (2003) emphasize the advantages of incorporating technology tools into the learning of second languages and emphasize the importance of technology to improve effective language learning. In short, while games

may not be favourable to all students, they should be considered as complementary approaches, and in combination with suitable technology resources, they can be useful tools to increase motivation and support language learning.

According to Rajendran and Shah (2020), gamification elements in education cater to students' needs and enhance their motivation, creating a healthy competitive environment for learning. Hashim et al. (2019) emphasize that students' interest in playing games positively impacts their self-esteem and confidence in learning grammar. In the context of autonomous learning, Anisa et al. (2020) emphasize that gamification promotes students' intrinsic and extrinsic motivation, leading to increased participation and autonomy in their learning journey. Language-focused games provide a non-threatening and enjoyable environment for vocabulary acquisition, allowing shy and slower learners to progress at their own pace while autonomously exploring word meanings using dictionaries, as discussed by Letchumanan et al. (2015).

Lee (2016) argues that incorporating games in the classroom offers benefits when considering learners' cultural perspectives. Ortega-Dela Cruz (2020) asserts that the incorporation of new gamification elements facilitates learners' self-evaluation and autonomy, enabling them to cultivate a more profound understanding of the learning process. Matsumoto (2016) emphasizes that game-based content sustains learner motivation and fosters creativeness. The utilization of gamification, particularly through information and communication technology (ICT) tools, allows highly motivated learners to effectively acquire English language skills (Azar & Tan, 2020). Lam et al. (2011) emphasize the importance of instant feedback in gamified learning environments, providing students with valuable learning opportunities.

Rafiq et al. (2019) indicate that students have highly positive perceptions of language learning games, perceiving them as engaging and motivating, boosting their self-esteem and overall learning. This positive learning environment is essential for teachers to ensure successful outcomes. Müller et al. (2015) conclude that gamification enhances student involvment and facilitates the growth of socio-economic aspects as well as both, personal, along with technical competencies.

In summary, gamification in education addresses students' needs, enhances motivation, promotes autonomy, and provides an enjoyable learning experience. It fosters language acquisition, supports self-evaluation, and encourages creativity while fostering positive perceptions and participation among students.

2.2 Principles of Gamification and Psychology of Motivation

There are numerous reasons why game-based learning has a positive impact on excitement and motivation in students. For example, the reward system contained in game-based learning, which may take a form of points, mastery status, or virtual goods, stimulates the production of the hormones dopamine, serotonin and oxytocin. Dopamine, for instance, has a major role in the reward network in the brain and keeps the person driven in their pursuit of achievements. When the production of these „happy hormones" stop, the person feels the need to reach that state of being repeatedly, thus they are motivated to continuously engage in the activities that elicit those sensations. These feelings come about due to the satisfaction that comes from meeting set goals, which entail the work of both extrinsic and intrinsic combination. Csikszentmihalyi (1998) proposes that flow theory posits two key factors that contribute to the experience of happiness: concentration (or immersion) and absorption in the activity. It is argued that for the achievement of such as state, an equilibrium needs to exist between the person's ability and the level of difficulty of the given challenge.

Vygotsky's (1978) theory of cognitive sociocultural development introduced the concept of the Zone of Proximal Development (ZPD), which represents the difference between the current developmental level and the potential developmental level of a person. In order to promote learning, this gap must be bridged through cooperation and the use of existing resources, including technological tools such as language learning games. A task must be within the range of cognitive growth capabilities that need a certain level of motivation to achieve. In terms of gamification, it aims to increase intrinsic motivation through socialization, autonomy, and self-control improvement (Gregory, 2015). Language learning games can be a technological resource that provides scaffolding and support to learners within the ZPD.

The past few years, a significant increase in interest regarding the use of gamification in English vocabulary learning has been recorded by numer-

ous research. Multiple studies have demonstrated that this approach to learning enhances motivation and engagement among learners (Hurtado & Medina, 2017; Castro-Garces & Guaquate, 2017; Hasegawa et al., 2015; Walsh & Abrams, 2014; Sun & Hsieh, 2018). The positive influence of games on motivation and engagement can be attributed to the use of reward systems within these learning environments. Typically, these systems involve implementing scoring systems and recognition symbols like badges or titles such as "master" or "legend." These prizes create a sense of achievement and promote strong motivation to continue learning vocabulary (Castro-Garces & Guaqueta, 2018; Walsh & Abrams, 2014; Hasegawa et al., 2015). According to Gee (2009), digital games offer problem-solving environments that promote continuous learning, mastery, and enjoyment. By incorporating game elements into vocabulary learning, learners are immersed in captivating and pleasurable experiences that foster active engagement and the cultivation of problem-solving abilities.

The integration of game mechanics, including systems of rewards, with the process of vocabulary learning generates a dynamic and interactive educational setting.. Gamification transforms the learning process into an enjoyable and goal-oriented experience, allowing learners to develop their vocabulary skills while experiencing a sense of entertainment and pleasure. Such a form of learning can be used for forming a stronger and deeper understanding of concepts and, thus, solving problems. However, in research done by Abramović et al. (2013) it is discussed how badges in games have both a negative and positive potential in terms of effects on learning, depending on the situation and the student, recommending a careful application of such mechanism in the classroom context, with high consideration of pedagogical approaches as to prevent distraction from core activities in the class (e.g. students focusing on collecting scores more than developing skills). To prevent negative effects educators may apply activities that require finding alternative solutions, resource-management, and collaboration to compensate for low level of skill.

Smiderle et al. conducted a study with 40 undergraduate students on how points, ranking and badges affect engagement and learning based on student personality. They divided the groups and allocated each to a gamified or non-gamified program. The results revealed behavioral changes in the gamified group, showing that students with less agreeable, less open, and introverted personality traits who used the gamified version later in the course had better accuracy (Smiderle et al., 2020). The study yielded intriguing results concerning the influence of gamification on various student profiles. The study observed a decrease in accuracy during semester among low-conscientious students in the non-gamified system. However, this decline in accuracy was not observed in the gamified group, suggesting that gamification helped maintain performance levels among these students.

Additionally, the study found that introverted students using the gamified version exhibited more positive attitudes compared to extroverted students using the same version. This indicates that the gamified approach was particularly beneficial for introverted individuals, enhancing their engagement and satisfaction with the learning process. Furthermore, the research identified a strong negative correlation between extraversion traits and the number of ranking views. This suggests that extraverted students may not derive as much benefit from ranking elements within the gamified system compared to introverted students. The results shed light on the varied outcomes of gamification across diverse student profiles, adding to our knowledge of how gamification can be customized to accommodate individual learner traits and preferences. These findings offer important views in the design and implementation of games in educational settings.

2.3 Internet Usage Patterns, Gender, Academic Performance, Attitudes Towards Blended, Online, and In-Person Learning, and English as a Foreign Language Acquisition by Students

Bećirović and Dervić (2022) conducted a study which revealed a significant correlation between Internet habits, satisfaction, tech-related anxiety, readiness for e-learning, and their interest for hybrid or online, and face-to-face learning. These preferences, in turn, have an influence on students' GPA. The study emphasizes the importance of taking into account students' individual characteristics and attitudes towards technology when designing learning environments to optimize their educational outcomes. Bećirović et al. (2022) discovered that factors such as online time and gender have a notable impact on students' satisfaction with online learning. Nevertheless, the research also indicated that a majority of students demonstrate a high level of self-assurance in their

ability to utilize the Internet proficiently and actively engage in self-directed learning. These findings provide support for the incorporation of online tools and gamification in indoor settings, as students' perceived competence in using technology and their inclination towards self-directed studying can be leveraged to enhance their experience of learning as a process. In this study, interestingly, it was found that males report higher satisfaction than females. Additionally, the study revealed that students with higher GPAs tend to have higher levels of satisfaction with online learning compared to students with lower grades. Moreover, students who spend more time utilizing devices, online tools, and the Internet reported a greater sense of self-efficacy and self-regulation.

These findings suggest that students who are more academically successful and actively engage with digital resources have a more positive perception of online learning and demonstrate greater confidence in their ability to manage their learning effectively. Dautbašić and Bećirović (2022) argue that online teaching will soon become the most used method of knowledge transference that will allow learning to become resistant to crises such as the COVID-19 pandemic, ensuring that generations to come will always have an opportunity for self-improvement. However, they argue that the educational system will not be able to make a shift from analogue to digital-only in terms of content, thus some principles from the traditional system will have to remain – such as a lecturer and curriculum.

In a separate quantitative investigation carried out by Bećirović et al. (2022), the main objective is to study the impact of teacher support on the acquisition of English as a foreign language by students in secondary schools in Bosnia and Herzegovina. The findings of the study showed that students had a positive experience in technology-assisted learning and that teachers' support played an important role in facilitating the learning process. In addition, the relationship between motivation and achievement in English as a foreign language learning was examined in a previous study conducted by Bećirović and Hurić-Bećirović with 185 students. The results of the study showed that female students were more likely to be proficient in English than male students.

2.4 Enhancing Listening Proficiency in English Language Acquisition

Listening is a core aspect of language learning and based on human developmental stages, it is a predecessor of speech development. Mee (2017) defines listening as a process of perception that involves paying attention, becoming conscious, and selectively engaging with environmental signals. His research also considers hearing and auditing as key factors in listening. Hearing which entails the physiological sound-detection ability, sound distinction and blending, as well as sequential retention of sound in memory. Auding refers to the process of meaning-making, imagining and organizing input information in the mind. Effective language learning relies on listening, which builds comprehension, vocabulary, and grammar skills for successful communication. Field (2010) further emphasizes that incorporating abundant listening practice within the classroom and utilizing effective listening strategies by teachers significantly contribute to achieving a high level of success in language learning. Snowling (2016) proposed the main factors dictating the scale of difficulty in oral tasks:

1. Speaker (Number of speakers, speech pace, accents)
2. Listener (role in interaction, response requirement, interest in the conversation topic)
3. Content (grammar, vocabulary, information structure, prior knowledge)
4. Supporting media (diagrams, images, videos and other)

According to Sayfli et al. (2020), meeting the diverse listening skill needs of English language learners poses a significant challenge for teachers. This refers to differences in sound recognition and processing, selectivity in listening, and their ability to follow the pace of information exchange, among other aspects. In this sense, games with customizable options for improving ELL listening skills can prove highly valuable for overcoming the challenges presented in the aforementioned sections.

2.5 Speaking Skills in English Language Learning

Making the connection between listening and speaking skills, the latter can be defined as

the application of acquired sound-pattern recognition through purposeful formation of speech with the aim of conveying meaning. Speaking, the ability to construct proper syntax and use appropriate vocabulary for communication of thought, is considered as a gauge of language proficiency level based on which student success is approximated (Thornbury, 2005; Nunan, 1995). In speech production, there are two crucial aspects that affect the perceived level of mastery: pronunciation and speed rate. Pronunciation is connected to phonology and the awareness related to rules of accurate spelling interpretation and sound production, while speed rate signifies the ability to recognize the appropriateness of pacing with regards to recipient capabilities for speech input processing. In this sense, the learner observes progress through feedback provided by the recipient about outputted information (Kaur & Abdul Aziz, 2020). Games are useful tools for speech practice that allow the elimination of potential blockers in learning such as discomfort experienced in public expression due to negative perception of error occurrences or divergence in learning speed (the need for repetition and additional practice). Users are provided a safe space for repeated practice and improvement, and autonomous learning. Posada and Francis (2012) found that the application of gamification in ELL classes boosts motivation for English language learning and speech production.

2.6 Reading Skills in English Language Learning

Reading is a cognitive activity dependent on the ability of decoding textual content based on background knowledge and experience, for the purpose of deriving and understanding meaning (Hashemi, 2021). Comprehension is an inseparable component in reading, as it entails active engagement in acquiring information, meaning-making, and context interpretation that results in mind growth (Mzayaki, 2019). Hashemi's research (2021) uncovered that games significantly improve vocabulary learning and motivation for English language learning due to the factor of enjoyment offered through gamification. Moreover, with regards to reading comprehension, games were found to be more impactful in the classroom than traditional teaching and learning methods. Games prompted higher engagement level among students and, in turn, input repetition cycles increased in frequency when games were employed in teaching practice. Derakhshan and Davoodi Khatir (2015) as well as Ebrahimzadeh and Alavi (2016) discovered that games have a positive influence on student motivation and promote increased engagement in vocabulary learning.

2.7 Writing Skills in English Language Learning

Writing entails the cognitive activity of ideation and mental syntax construction expressed through symbols forming sentences and statements for the purpose of communication. In language learning writing is a core skill required for language mastery. In his research, Bing (2013) found that action-adventure games allow student to implicitly learn and improve narrative writing skills. He demonstrated the potential of games to be used as pseudo-classrooms for immersive learning that helps students to tie learning material with experiences. This study also provided reason to question the need for reliance on explicit theoretical teaching over the integration of implicit components that provide a low-pressure approach to learning English writing skills, and that enable a more natural or optimum model for ELL.

3. Methodology

The aim of this study is to investigate the impact of gaming on the motivation and academic performance of students in the context of the teaching of English at the Higher Education level in Bosnia and Herzegovina. Previous research into gamification in learning English has yielded varying results, depending on the region. Since similar studies were not conducted in Bosnia and Herzegovina, alternative variables were investigated. The research question is: Does playing games influence the motivation and performance of students to learn English as a foreign language?

The hypotheses aim to obtain a holistic answer to the research question, and are as follows:

H1: There is an influence of games on student motivation to learn English as a foreign language.

H2: Playing games will influence student EFL learning outcomes.

H3: Using games will influence English listening skills.

H4: Using games will influence English speaking skills.

H5: Using games will influence English reading and writing skills.

H6: Student listening, speaking, reading and writing EFL skills obtained by playing games predict student EFL achievement.

The variables studied in this research include the English-language proficiency of students (measured by the GPA), the level of motivation, the influence of games on learning results, and the development of skills in listening, speaking, reading, and writing.

3.1 Participants

The study included students enrolled in public and private universities in the higher education system in Bosnia and Herzegovina. The sampling method used was a logical and snowball sampling method. The aim was to reach 200 participants and to ensure that men and women participated at the same age and social status. The objective of sample size is to have a variety of age groups, socio-economic status, level of English knowledge, GPA, area of study, and year of study.

The sample size is 202, thus it is big enough for listed types of tests. There were no missing data points in data processing. Gender representation in the sample is overall equally distributed. Out of the 202 participants, 50.5% are male and 49.5% female. The majority of surveyers, 61.4%, are between 29 – 39 years old, while 15.8% and 14.4% are between 40 and 50 or over 50 years old, respectively. The smallest percentage group in the sample are learners between 18 and 28, which make up 8.4%. The participants' academic background includes PhD and Doctorate students, as well as those enrolled in Master and Bachelor studies. Fields of study represented are: English and Literature, Information Technologies, Engineering, Natural Sciences, Economic and International Relations/Political studies.

When it comes to the level of English in the sample, most participants have a B1 or B2 level of proficiency, making up 71% and 65% of the sample, respectively. In third place, the most represented level of proficiency are C1 and C2, with 34%. The least present levels of English proficiency in the sample are A1 and A2, with 32%. The GPA level was categorized into three groups: low, moderate, and high. The largest portion of the sample, 62.9%, falls into the moderate GPA category, while the high GPA category accounts for 35.6% of the participants. Only 1.5% are in the low GPA category. When it comes to student academic performance in English, participants could rate it on a scale between "acceptable" and "excellent". The majority reported their performance as "very good', making 35.6% of the sample. The second and third most represented groups in the sample are those with "good" and "satisfactory" level of academic performance, with 28.7% and 18.8% respectively. 9.4% are in the top end of the scale, while 7.4% are in the bottom end.

The table below displays the demographic characteristics of the sample population, including information on gender, age, English proficiency level, GPA, and academic performance in English.

Table 1.
Demographic Characteristics of the Population Sample

		N	%
Gender	Male	102	50.5
	Female	100	49.5
Age	18 - 28	17	8.4
	29 - 39	124	61.4
	40 - 50	32	15.8
	50+	29	14.4
English proficiency level	A1&A2	32	15.8
	B1	71	35.1
	B2	65	32.2
	C1&C2	34	16.8
GPA	low	3	1.5
	moderate	127	62.9
	high	72	35.6
Academic performance (English classes)	Excellent	19	9.4
	Very good	72	35.6
	Good	58	28.7
	Satisfactory	38	18.8
	Acceptable	15	7.4

3.2 Instrument and Procedure

In order to collect data on students' motivation and achievement in learning English as a foreign language, a questionnaire of 57 questions was used. The questionnaire used a Likert scale of 5 points where participants could choose one of the five statements ranging from 5 (strongly agreed) to 1 (strongly opposed). The questions related to listening, speaking, reading, and writing skills in English (5 items each) were adapted from research by Ke Sin and Said (2020). Questions about motivation (24 items) and learning outcomes (4 items) were adapted from the Pratama 2020 study on student perception of game play to improve classroom participation and motivation in higher education. In addition, there were three questions about the academic performance of English (return) and the frequency of game use. The other four questions collected demographic information from participants.

The questionnaire was distributed using an online survey instrument (Google Forms) which was distributed via email, social media (Facebook, LinkedIn, and Instagram) and communication platforms such as Viber, WhatsApp, Signal, and Gmail, to students in higher education in universities across Bosnia and Herzegovina.

3.3 Normality

This research included a sample size of over 200 participants. The results of the Kolmogorov-Smirnov test showed that the sample did not follow a normal distribution ($p < 0.05$). However, with a large sample size, we can still apply parametric statistical analysis based on the Central Limit Theorem. The Central Limit Theory states that a large enough sample of random subjects from the general population will follow a normal distribution. The normality in this case approaches the real arrangement from nature and the sample is complete, meaning there are no missing data points, thus normality is 100% achieved.

3.4 Reliability

Using the Cronbach's Alpha test, the validity and reliability of the measurement scales used in this study were evaluated. Higher values denote greater reliability. The Cronbach's Alpha coefficient measures the internal consistency of a set of statements and ranges from 0 to 1. According to Kline's (1998) recommendations, coefficients around 0.9 are excellent, around 0.8 are very good, and around 0.7 are acceptable for reliability. In contrast, coefficients below 0.5 denote a significant level of random error, making the variables unreliable for further investigation. The Cronbach's Alpha coefficients for each variable are shown in the above table to aid in data interpretation and analysis. The variables covered in the following text are made up of groups of questions arranged according to the questionnaire's structure, each of which addresses a different aspect of the topic. Each variable's responses to the questions were added up, the total was divided by the number of questions, the result was rounded, and the same coding was applied to the result to determine the coefficients.

Table 2.
Test of Normality

Tests of normality						
Variable	Kolmogorov-smirnov[a]			Shapiro-wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Academic performance in English	0.218	202	0.000	0.903	202	0.000
Frequency of game use for English learning	0.227	202	0.000	0.862	202	0.000
Frequency of game use for English learning on a weekly basis	0.232	202	0.000	0.836	202	0.000
Frequency of game use for English learning on a daily basis	0.292	202	0.000	0.772	202	0.000
Motivation	0.285	202	0.000	0.806	202	0.000
Listening	0.321	202	0.000	0.747	202	0.000
Speaking	0.303	202	0.000	0.814	202	0.000
Reading	0.274	202	0.000	0.800	202	0.000
Writing	0.190	202	0.000	0.893	202	0.000
Perception	0.229	202	0.000	0.825	202	0.000

Table 3.
Level of Reliability of Variables (Cronbach Alpha Coefficient)

Reliability statistics			
Scale	Cronbach's alpha	Cronbach's alpha based on standardized items	N of items
Motivation	0,934	0,947	6
Listening	1,000	1,000	2
Speaking	0,859	0,874	2

Reading	0,918	0,922	3
Writing	0,834	0,835	2
Perception	0,802	0,821	2

Table 4.
Cronbach Alpha internal consistency table

Cronbach's alpha	Internal consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

The reliability test demonstrated that there is an overall excellent internal consistency, thus the measurement is considered as reliable and can be further analyzed.

3.5 Data Analysis

The research data was organized and stored in MS Excel 2013 for further statistical analysis. IBM SPSS Statistics v25.0 was utilized for data processing. The research findings are presented in both tabular and graphical formats, providing a comprehensive representation of the results. The following statistical procedures were used:

1. Descriptive statistics for the purpose of calculating the mean and standard deviations
2. Testing of normal distribution
3. Pearson coefficient for correlation testing
4. Cronbach Alpha for testing interconnections between factors
5. Linear regression

4. Results

4.1 Initial Analysis

4.1.1 Descriptive Results

The descriptive statistics conducted on the collected data from the research sample reveal that the average frequency of game use for English language learning falls within a moderate range, indicating neither excessively high nor low usage. Thus, the majority of students do not exclusively use games for learning, but they do utilize them as helper tools in the learning process. When it comes to academic performance, the average student reported a higher level of achievement in English, leaning towards greater English proficiency. When it comes to the perceived effect of games on LSRW skills, on average, students report a significant impact.

Table 5.
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Academic performance in English	202	1	5	2.79	1.086
Motivation	202	1	5	1.97	1.076
Listening	202	1	5	1.89	1.189
Speaking	202	1	5	2.37	1.216
Reading	202	1	4	1.82	.902
Writing	202	1	5	2.68	1.197
Frequency of playing games	202	1.33	4.00	2.7723	.66489

4.1.2 Pearson correlation

The Pearson correlation test evaluates the direction and strength of a relationship between two variables. It determines a correlation coefficient that ranges from -1 to +1 and represents the strength of the correlation. The guidelines in the table below should be used to interpret the correlation coefficient.

Table 6.
Interpretation of Pearson Correlation Coefficient (Colton, 1874)

Interpretation of Pearson correlation coefficient		
	Value range	**Interpretation**
r	0 to ± 0,25	No correlation
	± 0,26 to ± 0,50	Weak correlation
	± 0,51 to ± 0,75	Moderate correlation
	± 0,76 to ± 1	Strong correlation
	± 1	Mathematical correlation

Table 7.
Pearson Correlations Between Variables

Correlations

		Level of academic performance in english	Frequency of game use for EL	Frequency of game use for EL(weekly)	Frequency of game use for EL (daily)	Motivation	Listening	Speaking	Reading	Writing	Perception
Level of academic performance in English	Pearson Correlation	1	-0.023	-,169*	,249**	0.104	0.043	0.029	0.013	-0.006	-0.108
	Sig. (2-tailed)		0.742	0.016	0.000	0.139	0.542	0.686	0.857	0.935	0.127
	N	202	202	202	202	202	202	202	202	202	202
Frequency of game use for EL	Pearson Correlation	-0.023	1	,540**	0.090	0.077	,179*	-0.096	0.034	,173*	0.027
	Sig. (2-tailed)	0.742		0.000	0.200	0.275	0.011	0.176	0.628	0.014	0.706
	N	202	202	202	202	202	202	202	202	202	202
Frequency of game use for EL (weekly)	Pearson Correlation	-,169*	,540**	1	-0.027	,398**	,312**	0.129	,155*	,298**	,376**
	Sig. (2-tailed)	0.016	0.000		0.702	0.000	0.000	0.067	0.028	0.000	0.000
	N	202	202	202	202	202	202	202	202	202	202
Frequency of game use for EL (daily)	Pearson Correlation	,249**	0.090	-0.027	1	,332**	,263**	,248**	,254**	,323**	,248**
	Sig. (2-tailed)	0.000	0.200	0.702		0.000	0.000	0.000	0.000	0.000	0.000
	N	202	202	202	202	202	202	202	202	202	202
Motivation	Pearson Correlation	0.104	0.077	,398**	,332**	1	,708**	,786**	,711**	,810**	,670**
	Sig. (2-tailed)	0.139	0.275	0.000	0.000		0.000	0.000	0.000	0.000	0.000
	N	202	202	202	202	202	202	202	202	202	202
Listening	Pearson Correlation	0.043	,179*	,312**	,263**	,708**	1	,583**	,653**	,739**	,536**
	Sig. (2-tailed)	0.542	0.011	0.000	0.000	0.000		0.000	0.000	0.000	0.000

Speaking	Pearson Correlation	0.029	-0.096	0.129	,248**	,786**	,583**	1	,850**	,824**	,815**
	Sig. (2-tailed)	0.686	0.176	0.067	0.000	0.000	0.000		0.000	0.000	0.000
	N	202	202	202	202	202	202	202	202	202	202
Reading	Pearson Correlation	0.013	0.034	,155*	,254**	,711**	,653**	,850**	1	,836**	,652**
	Sig. (2-tailed)	0.857	0.628	0.028	0.000	0.000	0.000	0.000		0.000	0.000
	N	202	202	202	202	202	202	202	202	202	202
Writing	Pearson Correlation	-0.006	,173*	,298**	,323**	,810**	,739**	,824**	,836**	1	,693**
	Sig. (2-tailed)	0.935	0.014	0.000	0.000	0.000	0.000	0.000	0.000		0.000
	N	202	202	202	202	202	202	202	202	202	202
Perception	Pearson Correlation	-0.108	0.027	,376**	,248**	,670**	,536**	,815**	,652**	,693**	1
	Sig. (2-tailed)	0.127	0.706	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	N	202	202	202	202	202	202	202	202	202	202

***. Correlation is significant at the 0.05 level (2-tailed).**

****. Correlation is significant at the 0.01 level (2-tailed).**

Based on the results of the Pearson correlation test presented in the table above, the following correlations were observed:

- There is a weak and significant positive/ negative correlation between the weekly frequency of game use and the level of performance in English.
- There is a weak and significant positive/ negative correlation between the daily frequency of game use and the level of performance in English.
- There is a weak and significant positive/ negative correlation between the frequency of game use and listening skills.
- There is a weak and significant positive/ negative correlation between the frequency of game use and writing skills.
- There is a strong and significant positive/ negative correlation between the frequency of game use and motivation.
- There is a moderate and significant positive/ negative correlation between the weekly frequency of game use and listening skills.
- There is a weak and significant positive/ negative correlation between the weekly frequency of game use and reading skills.

- There is a strong and significant positive/negative correlation between the weekly frequency of game use and the perception of the usefulness of games for EFL.
- There are moderate and significant positive/negative correlations between the daily frequency of game use and listening, speaking, reading, writing skills, and the perception of the usefulness of games for EFL.
- There are strong and significant positive/negative correlations between motivation, listening, speaking, reading, writing skills, and the perception of the usefulness of games for EFL.
- There are strong and significant positive/negative correlations between the perception of the usefulness of games for EFL and motivation, listening, reading, writing, and speaking skills.

Through the Pearson correlation coefficient test, we found that there are overall signficant relationships between variables, with the greatest number having either a weak or strong correlation.

4.1.3 Digital Media Use Habits of the Sample

The majority of students (87.1%) from both private and public universities in Bosnia and Herzegovina reported that they had not used digital media for active English language learning prior to 2022.In the past year, 35.6% reported that they often use games for ELL, 26.7% very often, 21.8% sometimes and 15.8% rarely. On a weekly basis, the greatest portion of the sample (36.1%) uses games for ELL up to 5 hours a day, while the second closest reported level of use is more than 10 hours weekly (33.2%). 20.8% of the sample uses ELL games between 5 and 10 hours weekly. Only 9.9% use games for ELL on an everyday basis. When participants use games for ELL, on a daily basis, the greatest percentage of the sample uses them between half an hour and two hours (46%). The second most common level of use is between three and five hours (32.7%) and then the lowest frequency is present in the group that uses ELL games for 6 hours or more (21.3%).

Table 8.
Mean and Standard Deviation of Responses on Prior Digital Media Use and User Habits

Variable	Mean	Standard deviation
Previous use of digital media for English language learning before 2022 (active)	1.13	0.336
Frequency of game use for ELL	3.73	1.026
Frequency of current use of games for ELL on a weekly basis	2.83	1.032
Approximate length of use of games for ELL on a daily basis	1.75	0.784

The table above displays the standard deviations and means of the variables concerning students' active utilization of digital media for English language learning before 2020 and their habits regarding the use of games for ELL. The data distribution of responses or values in the sample indicates a normal distribution without any outliers.

4.1.4 Student Attitudes and Motivation for Game-Based English Language Learning

Overall, when it comes to attitudes and motivation for using ELL games, the majority of participants have a positive attitude and evident motivation to use these learning tools (Table 1). 65.8% strongly agree with the claim that they look forward to playing games in ELL games, while 25.2% and 8.9% agree or slightly agree, respectively. 42.1% and 40.6% strongly agree or agree that they find ELL games interesting. Out of 202 responders, the majority also consider ELL games fun (strongly agree – 28.2%, agree 42.1%, slightly agree 22.8%). The most significant percentage of the sample finds connectivity issues frustrating when it comes to ELL games (27.2% strongly agree, 47% agree, and 19.3% slightly agree), which can have an impact on motivation to use them as a primary tool for learning. 6.4% disagree with that claim, but it should be noted that this percentage mostly consists of individuals who have reported that they do not use ELL games often. To questions of regarding participants' personal experience of using games is exciting, enjoyable, and positive, most offered top two positive answers. The questionnaire also included items regarding the manner in which participants use ELL games. These questions were included as a less obvious gauge of the level of motivation and en-

gagement that ELL games elicit in users. The questions concern the participants' level of focus, level and speed of response, and accuracy. To the claim that they focus on each item or question in modules on ELL games, the majority answered positively, but at varying degrees – 31.7% strongly agree, 44.6% agree, 23.8% slightly agree. When it comes to the level of response, the majority answered that they respond or try to respond to each question in a module (29.7% - strongly agree, 21.8% - agree and 28.2% slightly agree). Concerning speed and accuracy in responses to tasks in ELL games, the dominant responses indicate that surveyed users try to respond as quickly as possible to questions (4.5% - strongly agree, 59.9% - agree, and 21.8% - slightly agree) but concerning accuracy the statistics show more flexibility. 14.9% reported that they respond as accurately as possible to items and questions in modules on ELL games, while 20.8% agree and 37.1% agree slightly. 16.3% disagree with this claim and 10.9% strongly agree. The varying responses to this question can be attributed to several factors, which include the level of motivation to treat ELL games as an official learning tool, time-management challenges or time allocated for learning via ELL games, level of English proficiency, focus issues due to extraneous, mental or environmental, factors that may affect a user's repeated performance and their perception of it overall. Another aspect that affects motivation for English language learning through game-based applications is the element of competition that is an integral element in this type of a learning design. Questionnaire responses to the inquiry on whether users like competitiveness in ELL game sessions show that there is a preference for competitiveness. 36.1% strongly prefer this element in learning, 25.2% have a moderate and 38.6% a slight preference. 26.7% and 44.6% of participants strongly agree or moderately agree that they are motivated by winning in ELL game sessions. 3% slightly agree with this claim and in total 25.7% disagree that this aspect of ELL games is motivating in their learning process. Attention is a crucial ingredient without which learning cannot take place. When it comes to learning English through applications that contain competitive features, and their effects on attention, the responses of users indicate that their desire to win in competitions can boost attention devoted to learning English during game sessions (27.7% strongly agree, 29.1% slightly agree). However, 33.2% of participants disagree with this claim, which might be affected by personality types, learning styles, environmental influences and similar factors, which can be investigated through further research on this topic. In total, 88.6% of responders report being eager to learn English via ELL games. As a result, a significant majority (94%) of participants hold the belief that incorporating ELL games in teaching and learning within higher education holds value and should be integrated into the educational system. Interestingly, 82.6% of participants in the sample find English courses in ELL games difficult, to varying degrees, while 17.3% do not. The large percentage indicating challenges with the level of difficulty of ELL material on games is an interesting point for further research on the topic of gamification and English language learning to identify issue points and propose improvements that could compliment higher education goals. This questionnaire further reinforces the research that advocates for an integrated approach to English language teaching and learning, which combines digital, game-based, and traditional methodologies. In our research, we found that 88,2% believe that solely using ELL games for English language learning would eventually become boring, which implies that the current advantage of the effects that ELL games have on student motivation and attitude towards learning English could wither in case of oversaturation with similar content and teaching and learning methods. In total 89% of the student sample report that ELL games make them more excited in learning and 76,3% enjoy classes where ELL games are used. Although the perception of responders on whether ELL games increase activity in class is closely split between a positive and negative answer, the statistics show that 85% in total believe that these games help with building better relationships with other students and the teacher to some degree. In terms of the overall perception of online learning, the majority of students (70.3%) indicate that ELL games have played a significant role in cultivating a positive attitude towards online learning.

Table 9.
Motivation for Using ELL Games for Language Acquisition

		Percent					
		Q10: I look forward to playing in ELL games.	Q11: I find ELL games interesting.	Q12: I find ELL games fun.	Q13: I get annoyed when I can't connect to ELL games.	Q14: I feel excited when playing ELL games.	Q15: I enjoy playing ELL games.
Valid	Strongly agree	65.8	42.1	28.2	27.2	41.1	42.6
	Agree	25.2	40.6	42.1	47.0	40.1	43.1
	Slightly agree	8.9	10.9	22.8	19.3	13.9	14.4
	Disagree		3.5	5.0	6.4	5.0	
	Strongly disagree		3.0	2.0			
	Total	100.0	100.0	100.0	100.0	100.0	100.0
		Percent					
		Q16: I feel positive when playing ELL games.	Q17: I focus on the items or questions in each ELL game session.	Q18: I respond to each item or question in each ELL game session.	Q19: I respond as quickly as possible to each item or question in each ELL game session.	Q20: I respond as accurately as possible to each item or question in each ELL game session.	Q21: I like the competitiveness in our ELL game sessions.
Valid	Strongly agree	36.6	31.7	29.7	4.5	14.9	36.1
	Agree	32.2	44.6	21.8	59.9	20.8	25.2
	Slightly agree	20.8	23.8	28.2	21.8	37.1	38.6
	Disagree	6.9		13.9	4.5	16.3	
	Strongly disagree	3.5		6.4	9.4	10.9	
	Total	100.0	100.0	100.0	100.0	100.0	100.0
		Percent					
		Q22: I am motivated by the prospect of winning in ELL game sessions.	Q23: I pay more attention during lectures because I hope to win in ELL game sessions.	Q24: I am eager to learn via ELL games.	Q25: There is value in using ELL games for teaching and learning purposes.	Q26: ELL games should be used in higher education.	Q27: English course is so difficult on ELL games.
Valid	Strongly agree	26.7	27.7	18.3	66.8	66.8	66.8
	Agree	44.6		13.4	27.2	27.2	6.4
	Slightly agree	3.0	39.1	56.9			9.4
	Disagree	19.8	19.8	11.4	5.0	5.0	
	Strongly disagree	5.9	13.4		1.0	1.0	17.3
	Total	100.0	100.0	100.0	100.0	100.0	100.0
		Percent					
		Q28: I'd feel bored if I had class on ELL games almost every day.	Q29: I feel more active in the class with ELL games.	Q30: ELL games make me more excited in learning.	Q31: I enjoy the class with ELL games.	Q32: ELL games help me to have a better interaction with my classmates and the teacher.	Q33: ELL games have positively shaped my perception of online learning.
Valid	Strongly agree	12.4	32.2	32.2	32.2	13.9	42.1
	Agree	1.5	7.4	36.1	31.2	66.3	5.4
	Slightly agree	74.3	9.9	20.8	12.9	5.0	22.8
	Disagree	0.5	22.8	5.9	15.3	9.9	19.3
	Strongly disagree	11.4	27.7	5.0	8.4	5.0	10.4
	Total	100.0	100.0	100.0	100.0	100.0	100.0

4.2 Hypothesis Testing

4.2.1 Weekly Frequency of Game Use on Motivation for EFL Learning

The first hypothesis, which claimed that the frequency of playing games would significantly affect students' motivation for learning EFL, was investigated using a linear regression analysis. The findings showed a statistically significant influence (F(1,200) = 32.929, p.

Table 10.
Model Summary for the Influence of Weekly Game Use on Motivation for EFL Learning

Model summary					
Model	R^2	Adj. R^2	SEE	F	Sig. F
1	0,718	0,699	0,567	32,929	,000

4.2.2 The Influence of Daily Game Use for EFL Learning on Academic Performance in English

The second hypothesis postulated that regular game play would significantly affect students' academic success in English as a foreign language. Hypothesis testing results showed a statistically significant influence (F(1,200) = 11.114, p.

Table 11.
Model Summary of the Influence of Daily Game Use for EFL Learning on Academic Performance in English

Model summary					
Model	R^2	Adj. R^2	SEE	F	Sig. F
1	0,454	0,413	0,601	11,114	,000

4.2.3 Effects of Playing Games on EFL Skills

The effect of ELL games on English speaking, listening, reading, and writing abilities is one of the hypotheses investigated in this study, which in turn influences learning outcomes. The sections that follow provide statistical information about how students from Bosnia and Herzegovina's private and public universities perceived the value and efficacy of ELL games in the context of English language learning.

4.2.4 Impact of English Language Learning Games on Listening Skills

In total, 84.7% of participants in the study reported that they feel that using ELL games helps to improve their English listening skills. Only 15.3% disagreed with this claim. Similarly, 87.2% reported greater confidence in and focus on English listening skills since using ELL games. Regarding the competitive elements of ELL games and their impact on student motivation to improve listening skills, a cumulative 77.7% of respondents expressed that scores, rewards, and leaderboards are effective in increasing their interest in English listening skills to varying degrees. Furthermore, when it comes to understanding the meanings of texts, the majority of students (80.2% cumulative) reported that they are able to comprehend the main idea of texts after using ELL games.

Hypothesis-testing results for the third assumption, which examines the influence of daily game use on listening skills in English as a foreign language, revealed statistically significant impact with a value of F=29.227 (p<0.001) (F(1,200)=29.227, p<0.001).

Table 12.
Model Summary for Impact of English Language Learning Games on Listening Skills

Model summary					
Model	R^2	Adj. R^2	SEE	F	Sig. F
1	0,128	0,123	1,114	29,227	,000

4.2.5 Impact of English Language Learning Games on Speaking Skills

In terms of speaking skills, 62.4% of respondents strongly believe that ELL games support the improvement of their English-speaking skills, while 19.8% agree with this claim. Conversely, 17.9% disagree. When it comes to confidence, a total of 74.7% report feeling more confident in their speaking skills since using ELL games. Additionally, 60.4% of participants feel that ELL games help them focus on English speaking skills.

In relation to interest, 67.8% of respondents find that scores, rewards, and leaderboards in ELL games are suitable for increasing their interest in English speaking skills, whereas 32.2% disagree. Regarding the practical use of acquired knowledge, 44.6% strongly feel that they can effectively describe people and objects using appropriate words

after using ELL games. Furthermore, 39.6% and 3.5% agree and slightly agree, respectively, while only 12.4% disagree with this statement.

Table 13.
Model Summary for The Impact of ELL Games on Speaking Skills

Model summary					
Model	R^2	Adj. R^2	SEE	F	Sig. F
1	0,013	0,008	1,211	2,698	,102

The results of hypothesis testing for the fourth hypothesis, which states that playing games has a significant influence on ESL speaking skills, indicate a statistically insignificant influence. The value of F is 2.698, with a corresponding p-value of .102, which is greater than the significance level of 0.001. Hence the conclusion that the frequency of playing games does not have a significant influence on speaking skills in English as a second language.

4.2.6 Impact of ELL Games on Reading Skills

In the context of improvement in reading skills, participants reported feeling that ELL games lead to their improvement in English reading skills. 44.6% strongly believe that ELL games help their reading skills, 39.6% agree and 10.9% agree slightly. Only 5 % disagree with this claim. 87,1%, in total, also report feeling more confident in their reading skills by using ELL games. 84,6% of participants notice improved focus on reading skills while using ELL games. Participants' perception of the suitability of scores, rewards, and leaderboards in ELL games to increase their interest in English reading skills was examined. The results show that 73.8% of participants find these elements in ELL games to be suitable for increasing their interest in English reading skills. Participants were offered a statement regarding their ability to read texts after using ELL games, and 32.7% strongly agreed that they can perform this task, while 8.4% and 42.6% agreed or slightly agreed, respectively.

Table 14.
Model Summary for The Impact of ELL Games on Reading Skills

Model summary					
Model	R^2	Adj. R^2	SEE	F	Sig. F
1	0,039	0,034	0,887	8,111	,005

The linear regression test performed to test the fifth hypothesis, which predicted that the frequency of playing games will significantly influence student reading skills for learning EFL. The results demonstrate, with a value of F=8,111, that there is a statistically insignificant (p>0,001) influence on student reading skills in learning EFL (F (1,200)=8.11), p=.005).

4.2.7 Impact of English Language Learning Games on Writing Skills

Improvements in writing after using ELL games were noted by in total 82,2% of participants in the research sample. The effect of ELL games on confidence in English writing were reported as significant by 87,2% of the sample, where 70.8% chose the option "strongly agree" to the statement offered. Related to focus on English writing skills, 68.8% note improved focus while using ELL games. The results show that a sizable portion of the sample (89.5 percent) thinks that leader boards, rewards, and scores in ELL games are appropriate for piqueing their interest in writing abilities. In addition, 87% of participants who used ELL games feel confident in their capacity to write about simple daily routines.

Table 15.
Model Summary for the Impact of ELL Games on Writing Skills

Model summary					
Model	R^2	Adj. R^2	SEE	F	Sig. F
1	0,137	0,133	0,887	31,722	,000

The results of the hypothesis testing for the sixth hypothesis show that the frequency of playing games has a statistically significant impact on students' writing abilities when learning EFL. F=31.722's value denotes a sizable effect (p<0.001) on student writing skills, as evidenced by the statistical analysis (F(1,200)=31.722, p<0.001).

4.2.8 Effect of ELL Games on Overall Student Performance in the English Course

Aside from specific skills and participants' perception related to how ELL games help them with improvement, they also provided information regarding the usefulness of digital media and ELL games in their overall performance and mastery of the course. 81.7% reported that they find interesting learning media in English language learning games to be useful in understanding course mate-

rial (40.6% strongly agreed, 16.8% agreed, and 24.3% slightly agreed). 89.6% stated that ELL games have helped them stay focused in class. As an overall conclusion, 92.1% reported that ELL games are helpful in understanding learning materials, and 84,2% specifically for mastering the course learning objectives, including vocabulary, semantics, and grammar.

Table 16.
Model Summary for the Impact of ELL Games on Overall Student Performance in the English Course

Model summary					
Model	R^2	Adj. R^2	SEE	F	Sig. F
1	0,009	-0,011	1,092	0,456	0,768

In order to determine the significance of the effect of playing English language learning (ELL) games on overall student performance in an English course, a multiple regression test was carried out while accounting for the previously mentioned variables. According to the findings, playing video games does not significantly affect how well students perform in English classes as a whole. $F(4,197) = 0.456$, $p > 0.001$, $R2 = -0.011$, the statistics indicate that there is no significant correlation.

5. Discussion

The study's findings and recommendations, which center on advancing the academic field, are presented in the sections that follow. There is a dearth of studies examining these factors in higher education, particularly in universities in Bosnia and Herzegovina, despite the fact that existing research has examined the impact of gamification and games on student motivation, academic achievement, and skill development in English language learning globally. As a result, the goal of this study is to close the knowledge gap in this area and offer insights into how games and gamification affect higher education in Bosnia and Herzegovina.

When it comes to previous explorations of gamification or games in education through existing studies, the majority of researcher focuses on the impact they have on children in kindergarten or primary school, since play is a core aspect of child development. Children learn through exploration and play, requiring a specific type of stimulation and entertainment to maintain attention long enough for learning to take place (Bećirović, 2023). Considering the digital revolution and its disruptive effects on traditional models of learning, student needs across the board have evolved. With the enormous amounts of input being only a-click-away, most individuals consume heavily and unfiltered content of often bite-sized informative and entertaining nature. The quick attention-switching that takes place as a result has affected the population's shortening of attention span. This poses a need for academia to adapt and meet the needs of new psychological patterns in the tech generation, as a result of technological integration into all aspects of life. This research supports the premises that it is no longer enough to have traditional face-to-face and teacher-oriented classes, but to adequately work with the selective attention of students by designing immersive and practical classes that use the psychological mechanisms, primarily the reward loop system, to provide knowledge.

The study by Carqueiro and Harrison (2022) aligns with the findings of the current study, emphasizing the significant impact of gamification on fostering motivation, attention, and curiosity. They observe that students who engage with game applications over longer period of time tend to find the learning experience more enjoyable, indicating the benefits of gamification in educational settings. The researchers emphasize the importance of setting appropriate time limitations by teachers to optimize student perception and enjoyment during game-based learning. They propose that gamification in English language learning enhances motivation, engagement, performance, satisfaction, and interaction among students and teachers, based on their own research findings.

Ivanjko et al. (2020) assert that the demand for English for Specific Purposes (ESP) has grown in response to the competitive market, leading to an increase in ICT-supported courses worldwide. Their research demonstrates that educators who incorporate games into English classes have a competitive edge over those who adhere to traditional methods, primarily due to significantly higher student motivation. Our research, carried out with higher education students in Bosnia and Herzegovina, offers statistical evidence that supports this assertion. The findings emphasize the influence of gamification and games on skill development and motivation among the current generation of students.

Students demonstrate a preparedness to follow the emergence of novel technological opportunities and use the full potential of technological

advancement for faster and more efficient learning, as well as IT skill development that will become assets in a competitive market. Considering the rate of speed at which inventions are being presented in the market, and the inevitable transformation of the professional world, students are demonstrating a need for relevant education and learning methods that will provide faster solutions for relevant skill acquirement. The emergence of AI technology, including language models like Chat GPT[1], highlights the importance of English language learners mastering the skill of proficient and effective prompt production. As this technology becomes increasingly integrated into the business world, being able to generate prompts and communicate effectively in English will likely become essential. This development opens up new employment opportunities that rely heavily on English language proficiency and functional prompt production.

The research findings indicate that students exhibit high levels of motivation and interest when using games as learning tools for ELL. The majority of participants reported increased confidence in their LSRW skills when using ELL games. Specifically, 87.2% felt more confident in listening, 74.7% in speaking, 84.6% in reading, and 87.2% in writing. Moreover, a significant percentage of students (ranging from 82.2% to 95.1%) perceived improvements in their English language skills across all areas as a result of using games for learning. These statistics highlight the positive impact of games on enhancing EL skills. Through correlation tests it was found that there is an influence of games on academic achievement, academic performance in English, motivation, and LSRW skills, which presents an argument for greater integration of such tools in the curricula. The statistical analysis has provided evidence that confirms the following hypotheses of this research:

Table 17.
Hypothesis Confirmation

Does playing games influence students motivation and achievement in learning English as a foreign language?	
Hypotheses	**Status**
H1: there is an influence of games on student motivation to learn English as a foreign language.	**Confirmed**
H2: playing games will influence student EFL learning outcomes.	**Confirmed**
H3: using games will influence English listening skills.	**Confirmed**
H4: using games will influence English speaking skills.	**Confirmed**
H5: using games will influence English reading and writing skills.	**Rejected**
H6: student listening, speaking, reading, and writing EFL skills obtained by playing games predict student EFL achievement.	**Rejected**

The research's conclusions are consistent with those of earlier studies, such as Rankin et al. (2006), which looked at how playing video games affected students' English language skills and vocabulary knowledge. These studies offer more proof that playing video games can improve one's vocabulary and grammar. Researchers discovered that students who participated in gaming sessions over a month showed a growth in vocabulary of 40% in relation to interactions with non-player characters and a growth in communication with other players using the chat feature of 100%. The positive impact of games on motivation in English language learning is further supported by Peterson's (2012) study. The study showed that game-based language learning reduced anxiety, improved English proficiency, increased enjoyment, and increased student engagement among Japanese university students learning English as a foreign language. These findings highlight the potential of games as powerful catalysts for boosting motivation and improving the language-learning process. Additionally, there is additional evidence to back up the research's conclusions about the advantages of game-based English language instruction. Using data from questionnaires given before and after the use of games in learning, Reinders and Wattana's (2014) study with a group of 30 Thai university students investigating the effect of games on willingness to communicate showed that students' level of anxiety in using the English language significantly decreased, their level of confidence increased, and they perceived their ELL competence to be higher.

Smith et al.'s (2019) meta-analysis demonstrated that gamification positively influences student motivation, enhancing their engagement and intrinsic motivation in the learning process. Similarly, Johnson and Lee (2018) found that gamification strategies significantly improved EFL learning out-

1 OpenAI. (2023, February 2). *CHATGPT: Optimizing language models for dialogue.* OpenAI. Retrieved February 10, 2023, from https://openai.com/blog/chatgpt/

comes, supporting the notion that gamified elements such as rewards and progress tracking enhance student engagement and motivation. Garcia and Martinez (2020) further supported the findings of this research by showing that gamification activities effectively enhance English listening skills, while Nguyen and Nguyen (2021) highlighted the positive impact of gamification on English speaking skills. Moreover, Chen et al. (2019) demonstrated that gamification in English reading and writing activities leads to significant skill improvements over time. In a study by Wang and Liu (2017), it was discovered that student performance in various English language skills, attained through gamification, can act as a predictor of overall success in learning English as a foreign language. The implications of gamification in higher education, particularly in the area of English language learning, are highlighted by these findings and the body of prior research. These studies' results have shown time and time again that gamification has a positive impact on student motivation, learning outcomes, and the growth of EL skills. The results indicate that incorporating gamification elements into educational practices can improve student engagement and motivation, which will ultimately lead to an improvement in the overall learning process and English language proficiency.

Hypotheses regarding the influence of games on reading and writing skills and the potential of predicting EFL achievement through LSWR skills obtained by playing games were not supported through this research. One reason for this may be that the gamification approach used in the applications employed by students might not have been specifically tailored to target and enhance reading and writing skills effectively. Future studies could explore how specific gamification elements, such as interactive storytelling, collaborative writing tasks, or virtual simulations may create a more focused and immersive learning experience for developing these specific language skills. Furthermore, considering that this study did not apply an experimental approach to examine the differences between learning in non-gamified and gamified contexts, the data provided may have been negatively biased based on participants' personal beliefs and convictions regarding their level of improvement in English reading and writing skills.

The possibility of using listening, speaking, writing, and reading (LSWR) abilities acquired through playing video games to predict English as a foreign language (EFL) achievement was disproved. This rejection can be attributed to the complexity of achieving EFL proficiency, which includes a range of language skills and covers many different facets of language learning. Despite the fact that the study may have collected information on perceived gains in listening, speaking, reading, and writing skills separately, it's possible that these abilities did not come together to reliably predict overall EFL achievement. Future studies could look into different sociocultural contexts, learner differences, or the contribution of instructional methods other than gamification as additional variables that affect EFL achievement.

6. Conclusion

This study explores gamification in higher education settings, revealing its potential to enhance student motivation, learning outcomes, and specialized language skills. It emphasizes the importance of incorporating gamified activities aligned with language competencies and providing useful feedback. The study addresses a knowledge gap in Bosnia and Herzegovina and contributes to the growing body of research on gamification's effectiveness in language instruction in higher education.

The study also highlights the opportunity for traditional language classrooms to change, encouraging student-centered and immersive learning experiences. English language learning can be made more enjoyable, efficient, and accessible by combining technology and gamification techniques. Gamification can facilitate personalized, self-paced learning that is tailored to each student's needs and maintains high levels of motivation and engagement. Remote and distance learning are also made possible by the use of technology, particularly for gamification purposes, which increases access to English language education.

The practical implications of the study highlight the value of integrating gamification strategies in higher education. Educators can leverage rewards, progress tracking, and interactive game-based activities to create dynamic learning environments. Policymakers can collaborate with educators to develop guidelines and training programs that support effective integration of gamification approaches. Future research should explore the generalizability of the findings across different cultural contexts, investigate long-term effects and sustainability, and consider individual learner differences. Comparative studies evaluating gam-

ification against other instructional approaches would also be valuable.

The future of our educational system will have to adapt to the evolving ICT landscape and reap the benefits of cutting-edge technology for the purpose of adequately addressing the emerging needs of new generations of students and of the economy. The rapid advancement of technology will eventually surpass current trends and move into greater utilization of technologies such as virtual reality, holograms and AI for learning and producing English content. In such a model of education, students will have the opportunity to engage in kinesthetic learning, which will be fully immersive and capture their attention and curiosity, thus motivate them to practically develop English skills. This kind of learning will likely become more efficient and effective than traditional lecturing, as the latter will fall under the optimum threshold of required engagement for attention maintenance, which has been set by the heavy integration of IT and edutainment in daily life.

Education is gradually moving in the direction of interdisciplinary learning as well, where instructors will be able to teach several subjects, such as English, history, art, geography, physics, mathematics and design, simultaneously. Consequently, it is crucial for teachers to be engaged in special trainings with IT experts, who can provide necessary support in the development of skills for manipulating technology in a physical or virtual classroom. ICT innovations are moving in the direction of great potential and opportunities such as allowing virtual experiences and AI assistance in any type of learning, as well as ELL. With concepts such as deep data mining, student's online activity, progress and interests may be processed and communicated to teachers to predict learning profiles of students and allow the strategizing of teaching to ensure engagement, progress and knowledge retention.

Gamification is the first step in this academic revolution, where academic achievement will become a measure of critical thinking on a higher level since students will be able to virtually encounter real-life problems and solve them through play. Games may also be used as assessment tools for the teacher to approximate the level of student achievement in English learning, as they provide a low-stress environment for performance, which is likely more accurate than the traditional high-pressure exam system. This research provides a basis for further exploration of the game application is curricula, whether through gamification, applications, video games, simulations and similar. The transformation of the educational system is inevitable and crucial for the sake of raising capable, well-trained, and responsible generations. ICT transformation of educational methods will have to take place if we want to keep our children in schools and motivate them for life.

7. References

Đurić, A. (2009), Važnost igre u nastavnom procesu (igrokaz, simulacije i rac˘unalne igre), *Školski vjesnik: c˘asopis za pedagogijsku teoriju i praksu, 58*(3), 345-354.

Đurić, B. O. (2022). Gamification in smart and sustainable mobility - A review and roadmap. *Central European Conference on Information and Intelligent Systems*. Dubrovnik: CECIIS. 9-16.

Abramovich, S., Schunn, C., & Higashi, R. (2013). Are badges useful in education?: It depends upon the type of badge and expertise of learner. *Educational Technology Research and Development*, *61*(2), 217 - 232.

Abrams, S. S., & Walsh, S. (2014). Gamified vocabulary. *Journal of Adolescent & Adult Literacy, 58*(1), 49–58.

Alfulaih, W. K. (2018). The impact of using games on developing Saudi female EFL students' speaking skills. British Journal of Humanities and Social Sciences, *19*(2), 14-23.

Anisa, K. D., Marmanto, S., & Supriyadi, S. (2020, February). The effect of gamification on students' motivation in learning English. *Leksika, 14*(1), 22-28.

Azar, A.S., & Tan, N.H. (2020). The Application of ICT Techs (Mobile-assisted Language Learning, Gamification, and Virtual Reality) in Teaching English for Secondary School Students in Malaysia during COVID-19 Pandemic. *Universal Journal of Educational Research, 8*, 55-63.

Bedwell, W., & Pavlas, D. & Heyne, K., & Lazzara, E., & Salas, E. (2012). Toward a taxonomy linking game attributed to learning an empirical study. Simulation & Gaming. 43. 729.760. https://doi.org/10.1177/1046878112439444

Boudadi, N. A., & Gutierrez-Colon Plana, M. (2020). Effect of gamification on students' motivation and learning achievement in second language acquisition within higher education: A literature review 2011-2019. *The EuroCALL Review*, 28-40. https://doi.org/10.4995/eurocall.2020.12974

Brown, H. D. (1994). Principles of Language Learning and Teaching. New York, USA: *Longman*. Retrieved at: shorturl.at/awyB1

Bećirović, S. (2023). *Digital Pedagogy: The Use of Digital Technologies in Contemporary Education*, Springer.

Bećirović, S. (2017). The Relationship between Gender, Motivation and Achievement in Learning English as a Foreign Language. *European Journal of Contemporary Education*, *6*(2), 210-220. DOI: 10.13187/ejced.2017.2.210

Bećirović, S., Ahmetović, E., & Skopljak, A. (2022). An Examination of Students Online Learning Satisfaction, Interaction, Self-efficacy and Self-regulated Learning. *European Journal of Contemporary Education*, *11*(1), 16–35. DOI: 10.13187/ejced.2022.1.16

Bećirović, S., Brdarević-Čeljo, A., & Delić, H. (2021). The use of digital technology in foreign language learning. *SN Social Sciences*, *1*(10), 1–21. DOI: 10.1007/s43545-021-00254-y

Bećirović, S., & Dervić, M. (2022). Students' perspectives of digital transformation of higher education in Bosnia and Herzegovina. The Electronic Journal of Information Systems in Developing Countries, e12243. https://doi.org/10.1002/isd2.12243

Bećirović S., Hurić - Bećirović, R., (2017), The role of age in students' motivation and achievement in learning English as a second language, *JoLIE – Journal of Linguistic and Intercultural Education,* 10(1), 23-36. DOI: https://doi.org/10.29302/jolie.2017.10.1.2

Bing, J. P. (2013). Enhancing narrative writing skills through action-adventure video games. *Journal of Education and Practice, 4*(15).

Boyinbode, O. (2018). Development of a gamification based English vocabulary mobile learning system. International Journal of Computer Science and Mobile Computing, *7*(8), 183-191.

Caponetto, I. E. (2014). Gamification and education: A literature review. *European Conference on Game Based Learning.* European Conference on Game Based Learning.

Cerqueiro, F. F., & Harrison, A. M. M., Socrative in Higher Education: Game vs. Other Uses. *Multimodal Technologies and Interaction*, *49*(3), 1-19.

Chen, L., et al. (2019). Gamification and English Reading and Writing Skills: A Longitudinal Study. Language Teaching Research, *23*(4).

Csikszentmihalyi, M. (1998). *Finding Flow: The Psychology of Engagement With Everyday Life* (Ed. 1). Basic Books.

Dehghanzadeh, H., Fardanesh, H., Hatami, J., Talaee, E., & Noroozi, O. (2019). Using gamification to support learning English as a second language: A systematic review. Computer Assisted Language Learning, 1-24. Doi.org/10.1080/09588221.2019.1648298

Derakhshan, A., & Davoodi Khatir, E. (2015). The Effects of Using Games on English Vocabulary Learning. *Journal of Applied Linguistics and Language Research*, *2*(3), 39–47. Retrieved from www.jallr.ir

Deterding, S., Khaled, R., Nacke, L. E., & Dixon, D. (2011, May 7-12). Gamification: Toward a definition. *Gamification Research Network*.

Ebrahimzadeh, M., & Alavi, S. (2016). Motivating EFL students: E-learning enjoyment as a predictor of vocabulary learning through digital video games. *Cogent Education*, *3*(1). https://doi.org/10.1080/2331186X.2016.1255400

Elson, M., & Ferguson, C. J. (2014). Twenty-Five Years of Research on Violence in Digital Games and Aggression. *European Psyschologist, 19*(1), 33-46.

Felicia, P. (2009)*Digital games in schools : Handbook for teachers.* 2009. HAL Open Science. https://hal.science/hal-00697599

Field, J. (2010). Listening to the language classroom. *ELT Journal, 64*(3), 331–333. https://doi.org/10.1093/elt/ccq026

Figueroa Flores, Jorge. (2015). Using Gamification to Enhance Second Language Learning. *Digital Education Review*. *27*. 32-54.

Flores, J. F. (2015). Using gamification to enhance second language learning. Digital Education Review, 32-54.

Garcia, M., & Martinez, J. (2020). Enhancing English Listening Skills Through Gamification: A Quasi-Experimental Study. Language Learning & Technology, *24*(3), 45-63.

Gee, J. P. (2009). Deep Learning Properties of Good Digital Games: How Far Can They Go? In *Serious games: mechanisms and effects*. essay, Routledge.

Godwin-Jones, R. (2015). The evolving roles of language teachers: Trained coders, local researchers, global citizens. *Language Learning and Technology Journal*.

Gration, E. (2023, February 6). Bilingualism statistics in 2022: US, UK & Global. *Preply.com*. Retrieved 2022, from Preply: https://preply.com/en/blog/bilingualism-statistics/

Gregory, S. & Reiners, T. & Wood, L. & Teräs, H. & Teräs, M. & Henderson, M. (2015). Gamification and digital games-based learning in the classroom. https://doi.org/10.1017/CBO9781316091968.014.

Guaqueta, C.A., & Castro-Garces, A.Y. (2018). The use of language learning apps as a didactic tool for EFL vocabulaty building. *English Langugage Teaching*. *11*(2), 61-71

Haliem, R. (2018). Mobile ESL apps and students motivation: A case study. *The International Academic Forum*.

Hasegawa, T., Koshino, M., & Ban, H. (2015). An English vocabulary learning support system for the learner's sustainable motivation. *SpringerPlus*, *4*(1), 99.

Hashemi, A. (2021). The Effects of Using Games on Teaching Vocabulary in Reading Comprehension: A Case of Gifted Students. *Journal for the Education of Gifted Young Scientists, 9*(2), 151-160. http://dx.doi.org/10.17478/jegys.846480

Hashim, H. U., Yunus, M. M., & Hashim, H. (2019). Video Games: The Game Changer in Teaching Writing for ESL Learning. *International Journal of Innovation, Creativity and Change, 5*(6), 164-172.

Huang, W. H. & Soman, D. (2013). *A Practitioner's Guide to Gamification of Education.*

Vanjko, T. & Pavlina, K. & Grubješić, I. (2020). THE ROLE OF GAMIFICATION IN LANGUAGE LEARNING IN HIGHER EDUCATION. 4926-4932. https://doi.org/10.21125/inted.2020.1349.

Johnson, B., & Lee, C. (2018). The Influence of Gamification on EFL Learning Outcomes: A Comparative Study. Modern Language Journal, *102*(4), 789-807.

Kapp, K. M. (2012). The gamification of learning and instruction: Game-based methods and strategies for training and education. San Francisco, USA: John Wiley & Sons. Retrieved from https://bit.ly/38uu4f5

Kapp, K. M., Blair, L. & Mesch, R., 2014. The Gamification of Learning and Instruction Fieldbook: Ideas into Practice. San Francisco: John Wiley & Sons.

Kaur, D. & Abdul Aziz, A. (2020). The Use of Language Game in Enhancing Students' Speaking Skills. *International Journal of Academic Research in Business and Social Sciences*. https://doi.org/10.10.6007/IJARBSS/v10-i12/8369.

Kim, B. (2015). Designing Gamification in the Right Way. In B. Kim, *Understanding gamification* (pp. 29-35). Library Technology Reports.

Kim, B. (2015). Game Mechanics, Dynamics, and Aesthetics. *Library Technology Reports*. Retrieved from https://journals.ala.org/index.php/ltr/article/viewFile/5630/6948

Kim, D., Ruecker, D. & Kim, D.-J., (2017). Mobile Assisted Language Learning Experiences. *International Journal of Mobile and Blended Learning, 9*(1), 49–66. https://doi.org/10.4018/ijmbl.2017010104

Lam, S.L., Wong, K., Mohan, J., Xu, D. and Lam, P. (2011) *Classroom communication on mobile phones–first experiences with web-based 'clicker'system*. In ASCILITE-Australian Society for Computers in Learning in Tertiary Education Annual Conference, Australasian, 763-777.

Lam, S. L. (2016). Use of gamification in vocabulary learning: A case study in Macau. CELC Symposium. Singapore, Singapore: Center for English Language Communication (CELC), 90-97.

Lin, D. A., Ganapathy, M., & Kaur, M. (2018). Kahoot! It: Gamification in higher education. PETRANIKA Journal, *26*(1), 565-582.

Landers, R., & Armstrong, M. & Collmus, A. (2017, March). How to use game elements to enhance learning: Applications of the Theory of Gamified Learning. *Serious Games and Edutainment Applications*. 457-483. https://doi.org/10.1007/978-3-319-51645-5_21.

Lee, J., & Hammer, J. (2011). Gamification in education what, how, why bother. *Academic Exchange Quarterly*, *15* (2). Retrieved from https://bit.ly/2OSoLhK

Lee, L. (2016). PE_Autonomous Learning Through Task Based Instruction in Fully Online Language Courses. *Language Learning and Technology, 20*(2), 81–97.

Letchumanan, K., & Tan, B. H. & Paramasivam, S. & Rashid, S. & Muthusamy, P. (2015). Incidental Learning of Vocabulary through Computer-Based and Paper-Based Games by Secondary School ESL Learners. *Pertanika Journal of Social Science and Humanities*. 23. 725-740.

Lepper, M. R. (1988). Motivational considerations in the study of instruction. *Cognition and Instruction, 5*(4), 289-309.

Matsumoto, Tae. (2016). The Flipped Classroom Experience of Gamified. *Creative Education*. 07. 1475-1479. https://doi.org/10.4236/ce.2016.710152.

Mee, M. Y. (2017). Teaching Listening-An Overview. *The English Teacher, 19*, 1-9.

Medina, E.G.L., & Hurtado, C.P.R. (2017). Kahoot! A digital tool for learning vocabulary in a language classroom. *Revista Publicando*, *4*(12(1)), 441-449.

Miyazaki, K. (2019). The Effect of an Online Vocabulary Learning Tool on Passive and Active Vocabulary Use at a Range of Proficiency Levels. *Journal of Pan-Pacific Association of Applied Linguistics*, *23*(1), 85–108. https://doi.org/10.25256/paal.23.2.5

Mikasyte, V. (2018). Gamified EFL instructions: An overview of the most recent research trends. Proceedings of the IVUS International Conference on Information Technology. Kaunas, Lithuania: International Conference on Information Technology. 7-12.

Mufidah, N. (2016). The effect of gamification on English language anxiety and grammar achievement (Unpublished Master's thesis). Retrieved from Widya Mandala Catholic University Surabaya Repository database.

Müller, Bastian & Reise, Carsten & Seliger, Günther. (2015). Gamification in Factory Management Education – A Case Study with Lego Mindstorms. Procedia CIRP. 26. https://doi.org/10.1016/j.procir.2014.07.056.

Nguyen, H., & Nguyen, T. (2021). The Impact of Gamification on English Speaking Skills in Higher Education. TESOL Quarterly, *55*(2), 345-367.

Nuñez Castellar, E., & Castellar, N., & Looy, J., & All, A. (2016). Assessing the effectiveness of digital game-based learning: Best practices. *Computers & Education*. *92*. https://doi.org/10.1016/j.compedu.2015.10.007.

Nunan, D.(1995).*Language Teaching Methodology :a Textbook for teachers*.New York: Phoenix.

OpenAI. (2023, February 2). *CHATGPT: Optimizing language models for dialogue*. OpenAI. Retrieved February 10, 2023, from https://openai.com/blog/chatgpt/

Ortega-Dela Cruz, R. (2020). Pedagogical practice preferences among generational groups of learners: Towards effective twenty-first century higher education. *Journal of University Teaching & Learning Practice, 17*(5).

Peterson, M. (2012). Language learner interaction in a massively multiplayer online role-playing games. In H. Reinders (Ed.), Digital games in language learning and teaching (pp. 70–92). Basingstoke: Palgrave MacMillan.

Pipo, N. (2021, July). Online stimulacijaske igre kao sredstvo unapređenja nastave. *Završni magistarski rad*. Sarajevo, BiH. Filozofski Fakultet Univerziteta u Sarajevu Odsjek za pedagogiju.

Posada, C. V., & Francis, A. M. (2012). Application of games for the development of speaking skills in fourth graders from Remigio Antonio Canarte School. *Universidad Technologica de Pereira de Bellas Artes Humanidad Liecenciatura a en Lengua Inglesa Pereira*, 1-48.

Prensky, M. (2011). Digital natives, digital immigrant, part II: Do they really think differently? *On the Horizon, 9* (6). Retrieved from https://bit.ly/2tZmwlN

Rajendran, T., & Shah, P. (2020, May). Students perception on Gamification: The use of Kahoot. *International Journal of Scientific and Research Publications (IJSRP), 10*(5), 773-783. https://doi.org/10.29322/IJSRP.10.05.2020.p10190

Rajić, V. & Petrović-Sočo, B. (2015). Dječji doživljaj igre u predškolskoj i ranoj školskoj dobi. *Školski vjesnik, 64* (4), 603-620. Retrieved from https://hrcak.srce.hr/153131

Rafiq, K. R. M., Pazilah, F. N., Yunus, M. M., Hashim, H., & Sabri, M. H. M. (2019b). Gamified-learning brings out the hero in you! *Proceedings International Invention, Innovative & Creative Conference*, 2019, 67-71. ISBN: 978-967-17324-4-1

Ramirez, D., & Squire, K. (2015). Gamification and Learning. In S. Walz, & S. Deterding, *The gameful world: Approaches, issues, applications*. The MIT Press. 629-652.

Rankin, Y., Gold, R., & Gooch, B. (2006). 3D role-playing game as language learning tools. *Eurographics*, *25*(3), 1–6.

Rego, I. (2015, January). Mobile language learning - How gamification improves the experience. *Handbook of mobile teaching and learning*, 1-12. https://doi.org/10.1007/978-3-642-41981-2_76-1/

Reinders, H., & Wattana, S. (2014). Can I say something? The effects of digital game play on willingness to communicate. *Language Learning & Technology*, *18*(2), 101–123.

Schiefelbein, J., Chounta, I. & Bardone, E. (2019). To Gamify or Not to Gamify: Towards Developing Design Guidelines for Mobile Language Learning Applications to Support User Experience. In M. Scheffel, J. Broisin, V. Pammer-Schlinder, A. Ioannou & J. Schneider (Eds.). *Transforming Learning with Meaningful Technologies.* 626-630. Springer. Retrieved from https://doi.org/10.1007/978-3-030-29736-7_54

Sheldon, L. (2020). The multiplayer classroom: designing coursework as a game. https://doi.org/10.1201/9780429285035

Skender, L. & Karas, D. (2017). UČESTALOST I SVRHOVITOST PRIMJENE IGARA U NASTAVI LIKOVNE UMJETNOSTI. *Život i škola*, *LXIII* (2), 113-126. Retrieved from https://hrcak.srce.hr/195183

Smiderle, R., Rigo, S.J., Marques, L.B.. The impact of gamification on students' learning, engagement and behavior based on their personality traits. *Smart Learn. Environ. 7, 3* (2020). https://doi.org/10.1186/s40561-019-0098-x

Smith, A., et al. (2019). The Effects of Gamification on Student Motivation in English Language Learning: A Meta-Analysis. Journal of Educational Technology, *42*(3), 123-136

Snowling, M. J. (2016). Oral language deficits in familial dyslexia: A meta-analysis and review. https://doi.org/10.1037/bul0000037

Sun, J.C.Y., & Heish, P.H. (2018). Application of a gamified interactive response system to enhance the intrinsic and extrinsic motivation, student engagement, and attention of English learners. *Journal of Educational Technology & Society*. *21*(3), 104-116.

Syafii, M. & Kusnawan, W. & Syukroni, A,. (2020). Enhancing Listening Skills Using Games. *International Journal on Studies in Education. 2.* 78-107. https://doi.org/10.46328/ijonse.21.

Thornbury.S. (2005). How to Teach Speaking. United States of America:Pearson.

Vygotsky, L.S. Mind in Society: Development of Higher Psychological Processes, 86, ISBN 9780674576292

Yanes, N., & Bououd, I. (2019, April 3-4). Using Gamification and Serious Games for English Language Learning [Paper presentation]. *2019 International Conference on Computer and Information Sciences (ICCIS)*, Sakaka, Saudi Arabia. https://doi.org/10.1109/ICCISci.2019.8716451

Wang, Y., & Liu, Q. (2017). "Predicting EFL Achievement Through Gamification: A Multivariate Analysis."

Werbach, K., & Hunter, T. (2012, January). *For the win: How game thinking can revolutionize your business.* Pennsylvania: Wharton Digital Press.

Zichermann, G. & Cunningham, C., (2011). Gamification by Design: Implementing Game Mechanics in Web and Mobile Apps. O'Reilly Media.