The Impact of Using Gamification on English language learning in increasing Learning Motivation

Muhammad Kharizmi[1] , Tri Pratiwi Handayani [2] , Dina Amaliyah Mushthoza[3] , Yuli Rohmiyati[4] , Satrio Binusa Suryadi [5]

[1]Universitas Akmuslim Bireuen Aceh, Indonesia

[2] Universitas Muhammadiyah Gorontalo, Indonesia

[3]Universitas Qomaruddin Gresik, Indonesia

[4]Universitas Bina Bangsa Serang Banten, Indonesia

[5] Politeknik Negeri Malang, Indonesia

ABSTRACT

Background. 21st century education demands changes in learning methods to increase students' learning motivation. Gamification, or the use of game elements in a learning context, has been recognized as an effective tool to increase student engagement and motivation. However, more in-depth research is still needed to evaluate the effectiveness of gamification in increasing the motivation to learn English among English Language Education students.

Purpose. The main purpose of this research is to evaluate the effectiveness of using gamification in increasing the motivation of students in learning English.

Method. Through a quantitative approach and survey method, this research aims to investigate the experience, perception, and level of student learning motivation related to the use of gamification in English language learning. English Education. The survey was conducted by distributing questionnaires compiled based on related literature and previous research on gamification. The survey steps are voluntary and the confidentiality of the data is strictly maintained.

Results. Based on the results of the analysis of the sixth questionnaire, gamification proved to have a positive impact on increasing students' learning motivation in learning English. The majority of respondents feel effective or enthusiastic about the use of gamification. However, there are a small number of respondents who feel neutral towards the concept of gamification. Further evaluation and efforts to expand the understanding and application of gamification need to be done.

Conclusion. This research shows that the use of gamification in English language learning promises to increase students' learning motivation. However, continuous evaluation and improvement is required to maximize its potential use. Thus, gamification can be considered as an effective learning strategy in the context of learning English in the 21st century education era.

INTRODUCTION

Education is an important foundation in individual and societal development (Chankseliani et al., 2021). In the current era of globalization and technological progress,

education needs to continue to develop and adapt to changing times. One aspect that needs to be considered in this context is effective and relevant learning (Guangul et al., 2020). In an effort to improve the quality of learning, various concepts and approaches have been introduced, including learning as a solution, learning media, 21st century learning, and the use of gamification as an attractive solution (Bencsik et al., 2021).

It is important to understand that learning is not only about transferring knowledge from teachers to students, but it is also about building deep understanding and relevant skills for students (Mora et al., 2020). In today's information age, where knowledge can be easily accessed via the internet, the role of teachers has changed to become more than just a transmitter of information. Teachers now play more of a role as learning facilitators who help students understand, analyze and apply the knowledge they gain (Gibbons et al., 2021). The concept of learning as a solution emphasizes the importance of a collaborative, critical and creative learning approach to prepare students to face real world challenges.

Then learning plays an important role in supporting an effective learning process. With the development of digital technology, learning media has developed rapidly from traditional textbooks to various forms of interactive multimedia, such as learning videos, simulations and educational games. Interesting and relevant learning media can increase student interest and motivation and facilitate better understanding of the subject matter. The use of learning media also allows for variations in teaching methods, so that it can accommodate different learning styles among students.

In addition, the concept of 21st century learning highlights the skills and competencies needed for individuals to succeed in the 21st century, such as critical thinking skills , creativity, communication, collaboration, and digital literacy (González-Pérez & Ramírez-Montoya, 2022). 21st century learning emphasizes the importance of preparing students with relevant skills and being able to adapt quickly to changes in the social and technological environment. The 21st century learning approach emphasizes the use of technology, team work, problem-based projects, and authentic and meaningful learning experiences for students.

Although these learning concepts have great potential in improving the quality of learning, there are still challenges in implementing them effectively in classroom (Al-Samarraie et al., 2020). One of the main challenges is students' low learning motivation, especially when they are faced with material that is considered difficult or boring (Pawlak et al., 2020). This is where the concept of gamification can be an interesting solution.

Gamification is an approach that adapts game elements to non-game contexts, including learning (Zourmpakis et al., 2023). By leveraging principles such as points, levels, challenges, and rewards, gamification can create engaging, competitive, and motivating learning experiences for students. In the context of English learning, for example, gamification can be applied by giving students points for each task completed, setting a skill level that must be achieved, and providing specific challenges or missions that must be completed within a certain time period (Pingmuang & Koraneekij, 2022).

One of the main advantages of using Gamification in learning is its ability to increase student engagement and motivation (Rivera & Garden, 2021). By presenting learning as a game or challenge, students become more motivated to actively participate in the learning process and achieve set goals. Apart from that, gamification can also increase collaboration and interaction between students through features such as leaderboards or contestable points systems (Universität Hamburg et al., 2021).

Thus, using gamification as a solution in learning can bring various benefits to students, teachers and the education system as a whole. For students, gamification can increase learning

motivation, engagement, and understanding of lesson material (Rahayu et al., 2022). For teachers, gamification can help manage the classroom more effectively, increase student participation, and facilitate differential learning. For the education system, the use of gamification can improve the overall quality of learning and prepare students with relevant skills to face future challenges (Lamrani & Abdelwahed, 2020). Therefore, the use of gamification can be an interesting and effective solution in overcoming learning challenges in this digital era.

This previous research is a systematic review that explores the main trends and findings related to the use of gamification in foreign language learning over the last 11 years. Through an analysis of 28 articles from databases such as Web of Science, ERIC, and Scopus, it was found that the use of gamification began to gain popularity after 2015, with a significant increase in the number of field studies in the following years. Quantitative research methods are dominantly used, while vocabulary and grammar skills are the main focus. The study also highlights the challenges and advantages of using gamification, and shows that gamification-based learning tends to provide positive benefits. This research provides valuable guidance for researchers and practitioners interested in the field of foreign language learning with a gamification approach (Dehganzadeh & Dehganzadeh, 2020).

Previous research further aims to examine the effects of game-based learning on language anxiety and learning motivation of English as a foreign language students in Iran. Quantitative research methods were used involving 58 participants studying intermediate level English from Iran, who were divided into two groups: control and experimental. After carrying out a pretest using the Foreign Language Classroom Anxiety Scale (FLCAS) questionnaire and the Motivation Test Battery (AMTB), participants from both groups then underwent learning. The experimental group received game-based learning while the control group received traditional learning. After learning, a post-test was carried out using the same questionnaire. The analysis results show that the implementation of game-based learning has the potential to reduce students' language anxiety and increase their motivation to learn English (Ahmed et al., 2022).

The latest previous research aimed to investigate the role of gamification in children's English learning in Hong Kong through a gamified e-learning system. A quasi-experiment with a pre-test/post-test design was conducted on elementary level 3 students for one semester. Quantitative and qualitative data were collected through academic tests, questionnaires, and interviews to provide comprehensive insight into the research questions. Key findings enable the identification of: (1) students' self-directed learning interest and academic performance derived from gamified learning systems; (2) independent learning strategies developed by students; and (3) the relationship between gamification and student independent learning. These findings have implications for e-learning designers and educators regarding gamified learning practices to enhance students' self-directed learning and second language learning (Li et al., 2022).

The conclusions of the three previous studies discussed indicate that the use of gamification in language learning, both at secondary and university levels, has the potential to reduce language anxiety, increase learning motivation, and enrich students' learning experiences. A quantitative approach using survey methods succeeded in bringing a better understanding of the impact of the use of gamification on language learning, as well as providing insight into more effective teaching strategies in the future. The results of this research encourage more attention to the integration of gamification in language learning design, with the aim of increasing student engagement and overall learning outcomes.

The main problem faced in English language learning is low student learning motivation. Many students have difficulty motivating themselves to learn English, which is often considered a

difficult and boring subject. This low level of motivation can hinder the learning process and cause failure to achieve the desired language competency. Low motivation to learn English not only affects students' academic achievement, but also impacts the development of their communication skills. English is an important international language in global communication, and the inability to master it well can limit a student's career opportunities and personal growth.

This research was conducted to answer questions about the effectiveness of using gamification in increasing motivation to learn English. By identifying factors that influence student motivation and exploring ways in which gamification can increase learning motivation, this research can provide valuable insights for educational practitioners. It is hoped that this research can fill the gap in the literature regarding the use of gamification in English language learning, especially in the context of student learning motivation. By providing empirical evidence about the effectiveness of this strategy, this research can provide a strong foundation for the development of more innovative and student-oriented learning practices.

The innovation in this research is the integration of gamification into English language learning in a systematic and planned manner. By designing gamification strategies that are relevant to English language learning objectives, this research will try to maximize the potential of using gamification in increasing students' learning motivation. The main aim of this research is to evaluate the effectiveness of using gamification in increasing students' learning motivation in the context of English learning. Apart from that, this research also aims to understand students' perceptions of the use of gamification strategies and the factors that influence their success.

RESEARCH METHODOLOGY

This research methodology takes a quantitative approach and utilizes survey methods to explore the impact of using gamification in increasing motivation to learn English (Zourmpakis et al., 2023). The population who were the subjects of this research were 30 students who were taking part in an English language education program. To obtain representative data, a survey will be conducted by distributing a questionnaire that has been prepared based on a review of related literature and previous research on gamification in the context of English learning. This questionnaire is designed to evaluate students' experiences, perceptions, and level of learning motivation related to the use of gamification in English language learning.

The initial step in the research procedure is the preparation of a well-structured survey questionnaire. This questionnaire will include a variety of questions designed to gain an in-depth understanding of how the use of gamification affects student learning motivation. After the questionnaire is prepared, the next step is to distribute it to students via lecture groups on the WhatsApp platform. Students will be asked to fill out a questionnaire within a specified time, which will then be returned via the same platform. Participation in the survey is voluntary, and data confidentiality will be strictly maintained to ensure the security of students' personal information.

After the data is collected, analysis will be carried out to explore significant findings from the survey. Relevant analytical methods will be applied to analyze the quantitative data obtained from the questionnaire (Munteanu & Apetrei, 2021). It is hoped that the results of this analysis will provide deeper insight into the effectiveness of using gamification in increasing motivation to learn English among students. Thus, this research methodology will provide a better understanding of the impact of gamification in the English language learning context, as well as provide a foundation for the development of more effective learning strategies in the future.

RESULT AND DISCUSSION

Student Learning Motivation

Student learning motivation is a very important factor in learning English, because high motivation can increase student involvement in the learning process and ultimately improve their learning outcomes (Subakthiasih & Putri, 2020). However, students' levels of learning motivation often vary and can be influenced by various factors, such as interest in the subject, their perception of the difficulty of the material, or previous experience in learning English. In situations where students' learning motivation decreases, the use of gamification can be an effective strategy to increase their learning motivation again. Gamification creates fun and engaging learning experiences, which can increase students' intrinsic motivation (Alt, 2023). Through game elements such as challenges, rewards, and recognition of achievements, gamification provides additional encouragement for students to be actively involved in learning English (Chen et al., 2023).

In addition, students' learning motivation can also be influenced by the learning environment they experience. A supportive, interactive and fun environment can increase students' interest and motivation to learn. In this case, the use of gamification in English learning creates a dynamic and interesting learning environment (Dehghanzadeh et al., 2021). Students feel more motivated to participate in learning activities, because they feel satisfaction and pleasure in completing assignments or achieving achievements in games. Thus, gamification provides additional encouragement for students to maintain their learning motivation and continuously strive to achieve their learning goals (Rohan et al., 2021).

It should be noted that student learning motivation is not only related to intrinsic aspects, but also extrinsic. Apart from motivation that arises from within students, such as interest and satisfaction in learning, there is also extrinsic motivation that comes from external factors, such as awards or recognition for student achievements (King & Bunce, 2020). In the context of using gamification, both types of motivation can be activated. Game elements such as points, levels, and rewards create extrinsic motivation for students, while the challenge and excitement of completing learning tasks helps maintain their intrinsic motivation (Calderón et al., 2020). Thus, gamification provides a holistic framework for increasing students' learning motivation in English language learning.

Gamification

Gamification is an approach that utilizes game elements in a non-game context to increase motivation, involvement, and performance in various fields, including English language learning (Zourmpakis et al., 2023). In the context of education, gamification uses elements such as points, levels, challenges, and rewards to create an interesting and enjoyable learning experience for students (Manzano-León et al., 2021). This approach has been proven to be effective in increasing learning motivation, involvement, and student performance at various levels of education.

The use of gamification in English language learning has several significant advantages (Azzouz Boudadi & Gutiérrez-Colón, 2020, pp. 2011–2019). First of all, gamification creates an interesting and interactive learning environment, which can increase student involvement in the learning process. Through challenges, missions, and appreciation, students feel more motivated to participate actively in learning English and achieve their learning goals (Aguilar Cruz & Álvarez Guayara, 2021). In addition, gamification also provides instant feedback on student achievement, which can increase their learning motivation and speed up the learning process.

Next, the use of gamification in English language learning can increase information retention and student understanding. By presenting the subject matter in the form of an interesting game, students tend to be more focused and eager to learn (Makri et al., 2021). This can strengthen their

learning experience and help them understand English concepts better. Thus, gamification not only increases student learning motivation, but is also effective in improving their learning outcomes.

Apart from that, gamification also creates a competitive learning environment, where students can compete in a healthy manner to achieve the highest score or certain achievements. This encourages cooperation between students and motivates them to reach their maximum learning potential. With healthy competition, students feel motivated to improve their performance in English learning and achieve better results.

Thus, gamification is not only an effective tool for increasing students' learning motivation in English learning, but also an innovative learning strategy and interesting. Through the use of game elements, gamification creates a fun and engaging learning experience for students, while increasing their engagement, understanding, and achievement in English language learning. Therefore, gamification is a suitable approach to be applied in the context of English language learning, especially in an effort to increase learning motivation and overall student learning outcomes.

Based on the results of a questionnaire that was distributed to 30 English Language Education students with the first question, How much Have you often experienced the use of gamification in English learning before? With the following answer options: Never, Rarely, Sometimes, Often and Always. With the analysis results it was found that:
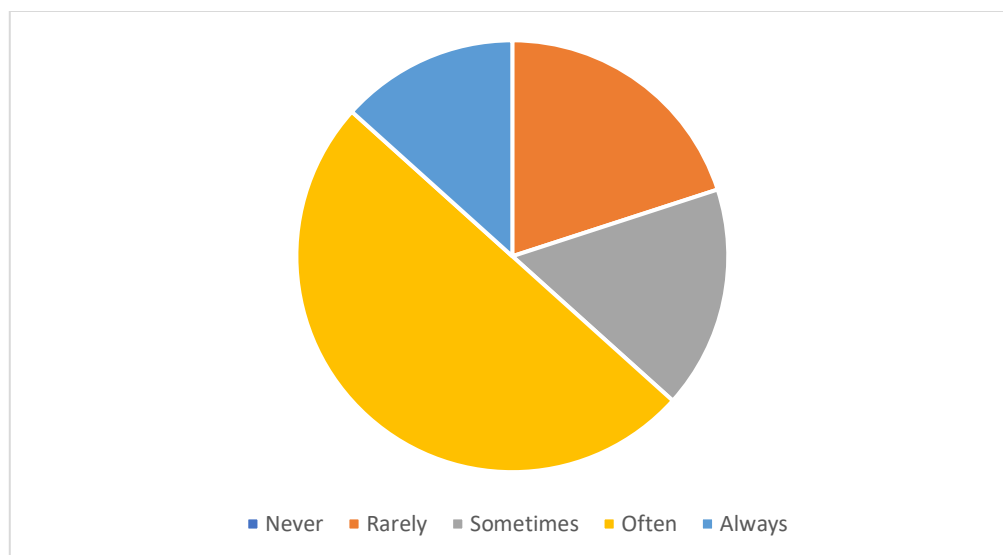

Figure 1. How much Have you often experienced the use of gamification in English learning before?

The results of the questionnaire analysis showed that the majority of respondents (70%) from 30 English Language Education students experienced the use of gamification in English language learning with high frequency, namely often and always. This indicates that gamification has played an important role in their English learning experience. However, there was a small number of respondents (20%) who admitted that they had rarely or even never experienced the use of gamification before. This shows that there is a gap in the implementation of this learning method among English Language Education students. Therefore, there needs to be further efforts to spread understanding and encourage the use of gamification more evenly to ensure that all students can experience its benefits in increasing learning motivation and learning outcomes.

Even though the majority of respondents have experienced the use of gamification in English language learning, there are still room for improvement in this regard. Continuous evaluation of the

effectiveness of gamification implementation, as well as providing training to teachers to effectively integrate this method in English language learning, can help increase the use of gamification in the future. Thus, all students will be able to benefit from the use of gamification in increasing their learning motivation and learning outcomes.

The next question is, How familiar are you with the concept of gamification in learning? With the following answer options: Very unfamiliar, Not very familiar, So-so, Fairly familiar and Very familiar. With the following analysis results:
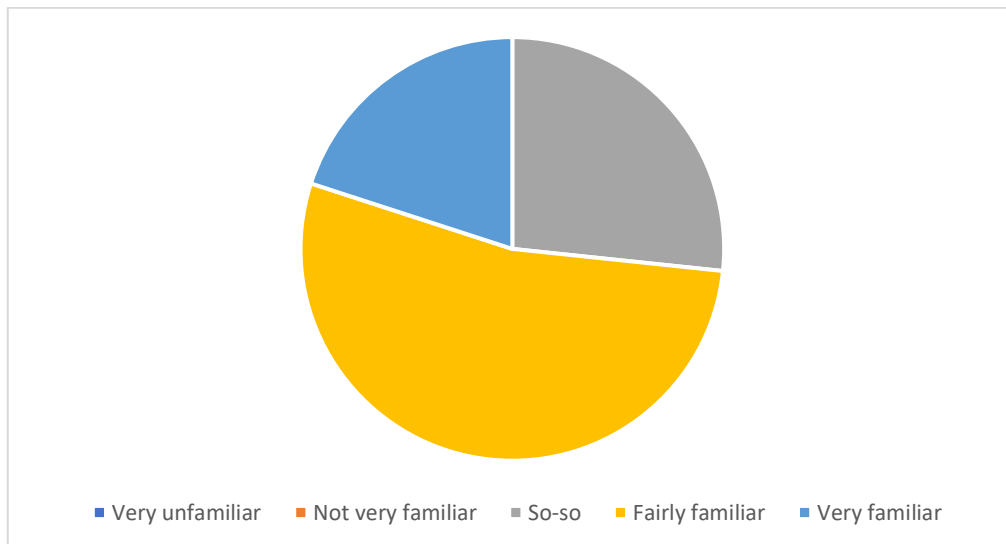

Figure 2. How familiar are you with the concept of gamification in learning?

Based on the analysis results, the majority of respondents (53.3%) showed a sufficient level of understanding of the concept of gamification in learning, stating that they were quite familiar (16 people) or even very familiar (6 people). However, a small number of respondents (26.7%) admitted that they only had a casual understanding of the concept of gamification. This shows that there are variations in the level of respondents' understanding of the concept of gamification. Even though the majority of respondents are quite or very familiar with this concept, attention still needs to be paid to minority groups who only have a casual understanding.

With some respondents who only have a casual understanding of the concept of gamification, efforts need to be made to increase their understanding of the concept. This. More in-depth training and information on gamification concepts can help improve their understanding and encourage more effective implementation in English language learning contexts. Thus, all students can gain maximum benefit from the use of gamification in increasing their learning motivation and learning outcomes.

The next question is, what do you think about the effectiveness of using gamification in increasing motivation to learn English? With the following answer options: Very ineffective, Not very effective, Neutral, Fairly effective and Very effective. With the following answer results:
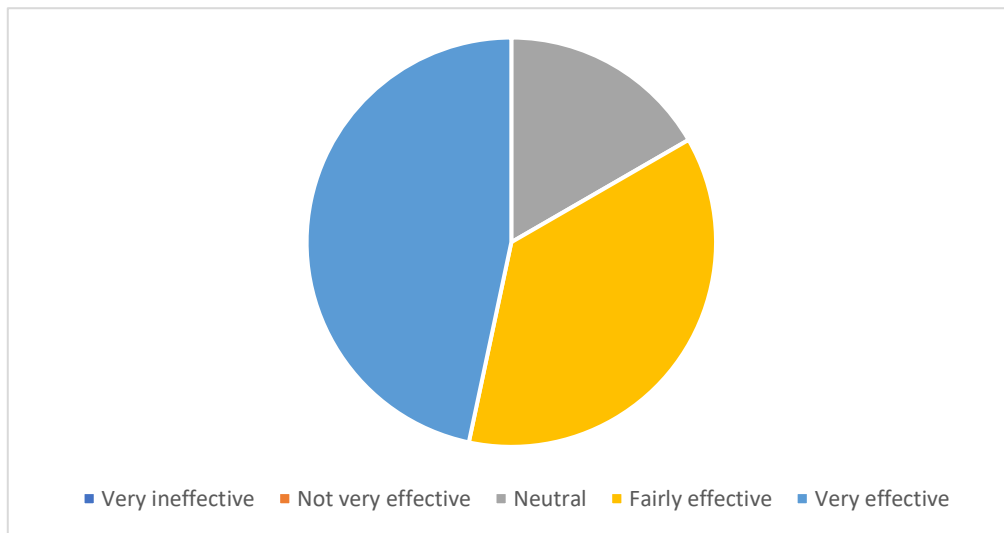
Very ineffective ■ Not very effective ■ Neutral ■ Fairly effective ■ Very effective

Figure 3. What do you think about the effectiveness of using gamification in increasing motivation to learn English?

Based on the results of the answers, the majority of respondents (46.7%) considered the use of gamification in increasing motivation to learn English to be very effective, while 36.7% of respondents thought it was quite effective. Only a small portion of respondents (16.7%) answered neutral regarding the effectiveness of using gamification, while none thought it was not very effective or very ineffective. This shows that there is a strong agreement among respondents that the use of gamification has a positive impact in increasing motivation to learn English. Thus, these results show the great potential of using gamification as a tool to increase students' learning motivation in English language learning.

Next question, Do you feel more motivated to learn English when using learning methods that involve game elements? With the following answer options: Very not motivated, Not very motivated, Neutral, Somewhat motivated and Very motivated. With the following answer results:
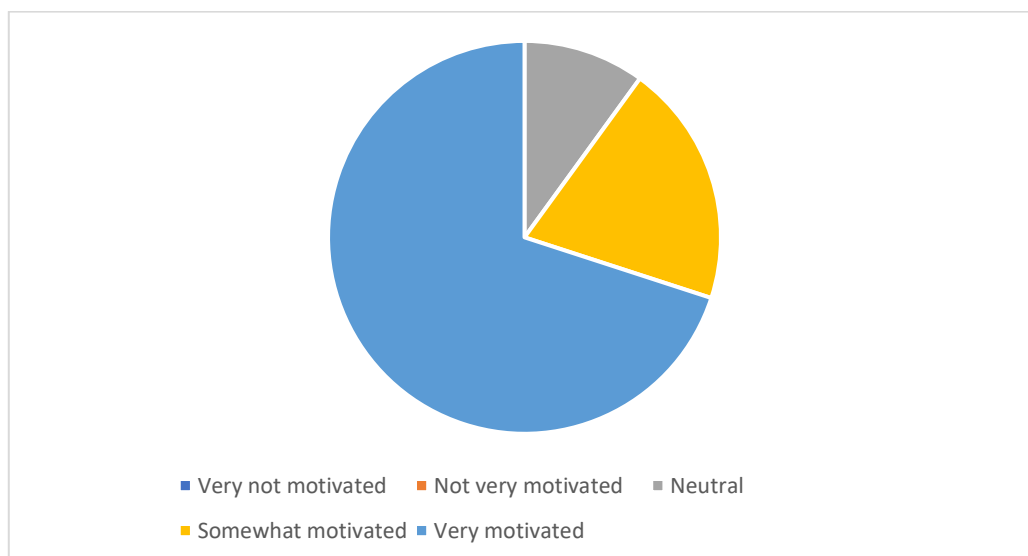

■ Very not motivated   ■ Not very motivated   ■ Neutral
■ Somewhat motivated   ■ Very motivated

Figure 4. Do you feel more motivated to learn English when using learning methods that involve game elements?

Based on the results of the answers, the majority of respondents (70%) stated that they were very motivated to learn English when using learning methods that involved game elements. As

many as 20% of respondents felt quite motivated, while only a small portion (10%) answered neutral regarding the motivational influence of using this learning method. No one feels less or very unmotivated. These results indicate that the use of game elements in English language learning, as done through gamification, is effective in increasing students' learning motivation. Thus, gamification can be considered a successful learning strategy in generating students' interest and enthusiasm for learning English.

Next question, what is your experience when using English learning applications that use gamification? With the following answer options: Very bad, Bad, Fair, Good and Very good. With the following answer results:
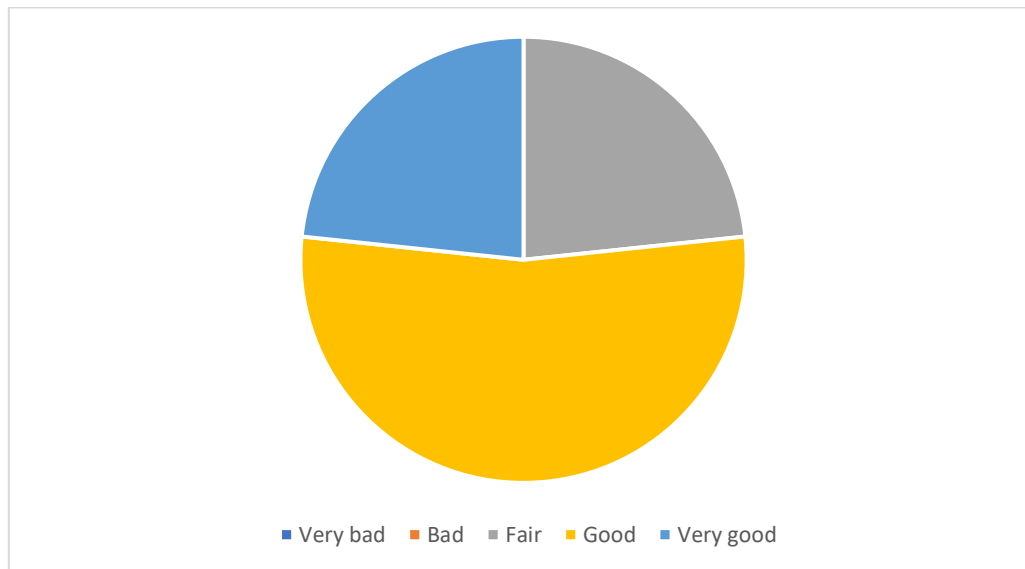

Figure 5. What is your experience when using English learning applications that use gamification?

Based on the results of the answers, the majority of respondents (70%) stated that their experience when using English learning applications that use gamification was good to very good. A total of 23.3% of respondents felt that their experience was average, while no one felt that their experience was very bad or bad. This shows that English learning applications that adopt gamification tend to provide a positive experience for their users. However, there was a small portion of respondents (23.3%) who considered their experience to be just ordinary. Further evaluation can be conducted to understand the factors that lead to this perception and to improve the quality of the user experience in the future. Thus, these results illustrate that the implementation of gamification in English learning applications tends to provide a good to excellent experience for its users, which can support increased learning motivation and learning outcomes.

Next question, Do you feel more enthusiastic about participating in English learning when gamification is used? With answer options: Very not enthusiastic, Not very enthusiastic, Neutral, Quite enthusiastic and Very enthusiastic. With the following answer results:
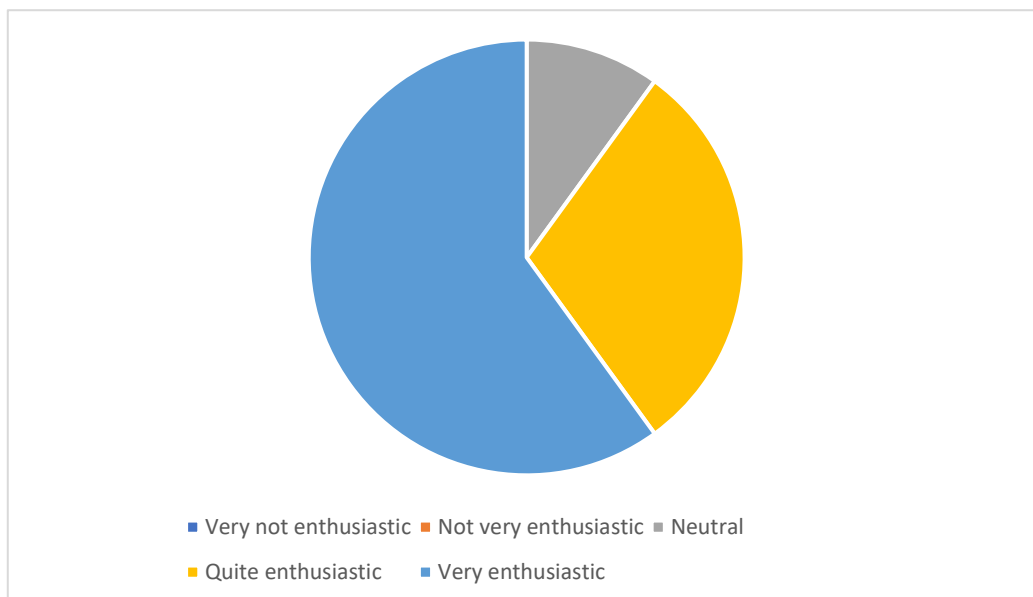
Figure 6. Do you feel more enthusiastic about participating in English learning when gamification is used?

Based on the results of the answers, the large majority of respondents (78%) stated that they felt very or quite enthusiastic about participating in English learning when gamification was used. This reflects that the use of gamification is effective in stimulating students' interest and enthusiasm to be actively involved in the English language learning process. However, a small portion of respondents (22%) admitted that they felt neutral about the use of gamification to increase their enthusiasm. Further evaluation can be carried out to understand the factors that lead to this neutral perception, and to improve the quality of students' learning experiences in the future.

These results indicate that the use of gamification in English learning contexts is likely to have a positive impact in increasing students' enthusiasm for learning . This success highlights the potential of gamification as an effective tool for creating dynamic and motivating learning environments, which can help increase student engagement and overall achievement in English language learning. Therefore, implementing this learning strategy can provide significant benefits for educational practitioners in achieving more effective and meaningful learning goals.

CONCLUSION

Based on the results of the analysis of the six questionnaires conducted regarding learning motivation, gamification, and experience of using gamification in English language learning, it can be concluded that gamification has a positive impact in increasing students' learning motivation. The majority of respondents felt that it was very effective or quite effective in increasing motivation to learn English when gamification was used. These results show that the use of game elements in learning can be the main driver in creating a fun and motivating learning environment.

Apart from that, gamification has also been proven to stimulate students' interest and enthusiasm for learning English. The large majority of respondents felt very or quite enthusiastic about participating in English learning when gamification was used. This shows that gamification is able to create an interesting and entertaining learning experience for students, thereby increasing their involvement in the learning process.

However, there is still a small number of respondents who feel neutral towards the concept of gamification and its use in learning English. Further evaluation is needed to understand their

perceptions and identify factors influencing this neutral attitude. In addition, efforts need to be made to broaden understanding and encourage a more even application of gamification among English Language Education students. Thus, gamification can be considered a promising learning strategy in increasing learning motivation and English learning outcomes, but it needs continuous evaluation and improvement to maximize its potential use.

AUTHORS' CONTRIBUTION

Look this example below:
Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.
Author 2: Conceptualization; Data curation; In-vestigation.
Author 3: Data curation; Investigation.
Author 4: Formal analysis; Methodology; Writing - original draft.
Author 5: Supervision; Validation.

REFERENCES

Aguilar Cruz, P. J., & Álvarez Guayara, H. A. (2021). A Serious Game to learn English: The case of Bethe1Challenge. *International Journal of Serious Games*, *8*(4), 65–80. https://doi.org/10.17083/ijsg.v8i4.448

Ahmed, A. A. A., Ampry, E. S., Komariah, A., Hassan, I., Thahir, I., Hussein Ali, M., Fawzi Faisal, A., & Zafarani, P. (2022). Investigating the Effect of Using Game-Based Learning on EFL Learners' Motivation and Anxiety. *Education Research International*, *2022*, 1–9. https://doi.org/10.1155/2022/6503139

Al-Samarraie, H., Shamsuddin, A., & Alzahrani, A. I. (2020). A flipped classroom model in higher education: A review of the evidence across disciplines. *Educational Technology Research and Development*, *68*(3), 1017–1051. https://doi.org/10.1007/s11423-019-09718-8

Alt, D. (2023). Assessing the benefits of gamification in mathematics for student gameful experience and gaming motivation. *Computers & Education*, *200*, 104806. https://doi.org/10.1016/j.compedu.2023.104806

Azzouz Boudadi, N., & Gutiérrez-Colón, 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*(1), 40. https://doi.org/10.4995/eurocall.2020.12974

Bencsik, A., Mezeiova, A., & Samu, B. O. (2021). Gamification in Higher Education (Case Study on a Management Subject). *International Journal of Learning, Teaching and Educational Research*, *20*(5), 211–231. https://doi.org/10.26803/ijlter.20.5.12

Calderón, A., Meroño, L., & MacPhail, A. (2020). A student-centred digital technology approach: The relationship between intrinsic motivation, learning climate and academic achievement of physical education pre-service teachers. *European Physical Education Review*, *26*(1), 241–262. https://doi.org/10.1177/1356336X19850852

Chankseliani, M., Qoraboyev, I., & Gimranova, D. (2021). Higher education contributing to local, national, and global development: New empirical and conceptual insights. *Higher Education*, *81*(1), 109–127. https://doi.org/10.1007/s10734-020-00565-8

Chen, C.-M., Ming-Chaun, L., & Kuo, C.-P. (2023). A game-based learning system based on octalysis gamification framework to promote employees' Japanese learning. *Computers & Education*, *205*, 104899. https://doi.org/10.1016/j.compedu.2023.104899

Dehganzadeh, H., & Dehganzadeh, H. (2020). Investigating effects of digital gamification-based language learning: A systematic review. مجله مطالعات آموزش و فراگیری زبان انگلیسی دانشگاه تبریز, ۱۲(25). https://doi.org/10.22034/elt.2020.10676

Dehghanzadeh, H., Fardanesh, H., Hatami, J., Talaee, E., & Noroozi, O. (2021). Using gamification to support learning English as a second language: A systematic review. *Computer Assisted Language Learning*, *34*(7), 934–957. https://doi.org/10.1080/09588221.2019.1648298

Gibbons, L. K., Lewis, R. M., Nieman, H., & Resnick, A. F. (2021). Conceptualizing the work of facilitating practice-embedded teacher learning. *Teaching and Teacher Education*, *101*, 103304. https://doi.org/10.1016/j.tate.2021.103304

González-Pérez, L. I., & Ramírez-Montoya, M. S. (2022). Components of Education 4.0 in 21st Century Skills Frameworks: Systematic Review. *Sustainability*, *14*(3), 1493. https://doi.org/10.3390/su14031493

Guangul, F. M., Suhail, A. H., Khalit, M. I., & Khidhir, B. A. (2020). Challenges of remote assessment in higher education in the context of COVID-19: A case study of Middle East College. *Educational Assessment, Evaluation and Accountability*, *32*(4), 519–535. https://doi.org/10.1007/s11092-020-09340-w

King, N., & Bunce, L. (2020). Academics' perceptions of students' motivation for learning and their own motivation for teaching in a marketized higher education context. *British Journal of Educational Psychology*, *90*(3), 790–808. https://doi.org/10.1111/bjep.12332

Lamrani, R., & Abdelwahed, E. (2020). Game-based learning and gamification to improve skills in early years education. *Computer Science and Information Systems*, *17*(1), 339–356. https://doi.org/10.2298/CSIS190511043L

Li, X., Xia, Q., Chu, S. K. W., & Yang, Y. (2022). Using Gamification to Facilitate Students' Self-Regulation in E-Learning: A Case Study on Students' L2 English Learning. *Sustainability*, *14*(12), 7008. https://doi.org/10.3390/su14127008

Makri, A., Vlachopoulos, D., & Martina, R. A. (2021). Digital Escape Rooms as Innovative Pedagogical Tools in Education: A Systematic Literature Review. *Sustainability*, *13*(8), 4587. https://doi.org/10.3390/su13084587

Manzano-León, A., Camacho-Lazarraga, P., Guerrero, M. A., Guerrero-Puerta, L., Aguilar-Parra, J. M., Trigueros, R., & Alias, A. (2021). Between Level Up and Game Over: A Systematic Literature Review of Gamification in Education. *Sustainability*, *13*(4), 2247. https://doi.org/10.3390/su13042247

Mora, H., Signes-Pont, M. T., Fuster-Guilló, A., & Pertegal-Felices, M. L. (2020). A collaborative working model for enhancing the learning process of science & engineering students. *Computers in Human Behavior*, *103*, 140–150. https://doi.org/10.1016/j.chb.2019.09.008

Munteanu, I. G., & Apetrei, C. (2021). Analytical Methods Used in Determining Antioxidant Activity: A Review. *International Journal of Molecular Sciences*, *22*(7), 3380. https://doi.org/10.3390/ijms22073380

Pawlak, M., Kruk, M., Zawodniak, J., & Pasikowski, S. (2020). Investigating factors responsible for boredom in English classes: The case of advanced learners. *System*, *91*, 102259. https://doi.org/10.1016/j.system.2020.102259

Pingmuang, P., & Koraneekij, P. (2022). Mobile-Assisted Language Learning using Task-Based Approach and Gamification for Enhancing Writing Skills in EFL Students. *Electronic Journal of E-Learning*, *20*(5), 623–638. https://doi.org/10.34190/ejel.20.5.2339

Rahayu, F. S., Nugroho, L. E., Ferdiana, R., & Setyohadi, D. B. (2022). Motivation and Engagement of Final-Year Students When Using E-learning: A Qualitative Study of Gamification in Pandemic Situation. *Sustainability*, *14*(14), 8906. https://doi.org/10.3390/su14148906

Rivera, E. S., & Garden, C. L. P. (2021). Gamification for student engagement: A framework. *Journal of Further and Higher Education*, *45*(7), 999–1012. https://doi.org/10.1080/0309877X.2021.1875201

Rohan, R., Pal, D., Funilkul, S., Chutimaskul, W., & Eamsinvattana, W. (2021). How Gamification Leads to Continued Usage of MOOCs? A Theoretical Perspective. *IEEE Access*, *9*, 108144–108161. https://doi.org/10.1109/ACCESS.2021.3102293

Subakthiasih, P., & Putri, I. G. A. V. W. (2020). An Analysis of Students' Motivation in Studying English During Covid-19 Pandemic. *Linguistic, English Education and Art (LEEA) Journal*, *4*(1), 126–141. https://doi.org/10.31539/leea.v4i1.1728

Universität Hamburg, Wiethof, C., Tavanapour, N., Universität Hamburg, Bittner, E. A. C., & Universität Hamburg. (2021). Designing and Evaluating a Collaborative Writing Process with Gamification Elements: Toward a Framework for Gamifying Collaboration Processes. *AIS Transactions on Human-Computer Interaction*, 38–61. https://doi.org/10.17705/1thci.00141

Zourmpakis, A.-I., Kalogiannakis, M., & Papadakis, S. (2023). Adaptive Gamification in Science Education: An Analysis of the Impact of Implementation and Adapted Game Elements on Students' Motivation. *Computers*, *12*(7), 143. https://doi.org/10.3390/computers12070143