


Leveraging gamification to enhance motivation and engagement among EFL learners


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ABSTRACT

In recent years, gamification has appeared to be an enjoyable and appealing instructional approach in educational settings. This paper reports the implementation and evaluation of gamified instruction to support learners of English as a foreign language in a linguistics course. Several gamification elements, such as experience points, badges, leaderboard and competition, were deployed on a Moodle course management system. A comparison of the results of the survey on learning motivation revealed that the experimental group had greater learning motivation than did the control group after the instruction, particularly in the dimensions of relevance and satisfaction, suggesting that gamification can increase learners' interest and satisfaction. To illustrate learning engagement, the data of online activities in the course management system were analyzed and compared between groups. The outcomes were encouraging, showing that students in the gamified group were more likely to submit quizzes and posts on discussion forums than were those in the nongamified group. The analysis of the relationships between gamified learning activities and motivation revealed that learning motivation was significantly correlated with discussion forums, WordWall games and badges. The findings indicate that gamification elements can effectively promote students' motivation and engagement in learning English as a foreign language context.



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1. Introduction

Acquiring proficiency in English as a foreign language (EFL) is essential for engaging in international communication in global educational communities (Dehghanzadeh et al., 2021). The requirement to learn English to interact with students from other countries has increased dramatically as a consequence of the development of new digital technologies (Bouchrika et al., 2021). The sudden increase in demand for EFL necessitates a transformation from conventional to innovative teaching approaches (Huang et al., 2020). This change is particularly crucial, as students frequently lament that learning EFL is demanding, stressful, and struggling (Majuri et al., 2018).

Several factors that may affect learning EFL processes and results include motivation, engagement, aptitude, and anxiety (Barata, et al., 2013). For example, students may become less confident when they struggle with learning linguistics, which might lead to a loss of drive and enthusiasm and disengagement from learning. Previous studies have suggested that gamified learning environments for EFL learning may increase students' motivation (Dehghanzadeh et al., 2021), engagement (Huang,

et al., 2019) and satisfaction (Metwally, et al., 2021) through the learning process. One of the frequently mentioned advantages of gamification is the positive impact it can have on engagement and learning motivation (Buckley & Doyle, 2016). However, learner engagement and motivation are intrinsically linked, with each serving as a critical factor in boosting students' academic performance and deeper commitment (Albrecht & Karabenick, 2018). Motivation is characterized as a collection of interwoven ideas and emotions that drive students' learning behaviors (Martin & Dowson, 2009). Both intrinsic and extrinsic motivations have been employed in gamification research to increase the success of learning (Alsawaier, 2018; Buckley & Doyle, 2016; Sailer & Homner, 2020). It has also been proven that gamified teaching can promote student engagement in language learning (Looyestyn, et al., 2017; Xi & Hamari, 2020). In this context, it is important to explore the attitudes and emotions of learners toward gamification in EFL education. As a result, instructional tactics and methods should be created with the experiences of the students in mind to increase their interest and motivation in satisfying the needs of the growing number of students who are engaged in learning EFL.

Gamification, which is most widely defined as a design process through which game elements are added to existing nongame systems (Deterding et al., 2011), has become an increasingly popular pedagogical approach in educational contexts (Bouchrika et al., 2021). To overcome motivational issues and encourage active learning, this process involves the integration of gaming elements and design features into nongame settings (Buckley & Doyle, 2016; Landers & Landers, 2014; Looyestyn, et al., 2017). Research indicates that gaming elements such as points, badges, leaderboards, and immediate feedback are frequently employed to promote learner engagement and motivation in gamified learning environments.

A study conducted by Bouchrika et al. (2021) revealed that gamified settings significantly increased student interaction with e-learning platforms, as leaderboards and badges were encouraged to compete while collaborating with their peers. This aligns with Baah et al.'s (2023) research, which provided insightful findings with the framework of self-determination theory and the attention, relevance, confidence, and satisfaction (ARCS) model, highlighting satisfaction as the key component in gamifying student motivation. Their study demonstrated that extrinsic rewards, such as points and badges, might gradually transform into intrinsic motivation. Specifically, Huang et al. (2019) explored how gamification elements affect undergraduate students' learning engagement and reported that gamified flipped instruction significantly increased activity completion rates and accuracy, indicating improved behavioral and cognitive engagement.

In the context of EFL education, gamification has proven to have notable potential in improving student motivation, engagement and language proficiency. One well-known application of incorporating gamification in language learning is Duolingo (<https://www.duolingo.com/>). By featuring skill trees, leaderboards, level-ups, and in-app rewards, Duolingo enhances motivation by establishing an enjoyable and dynamic environment that stimulates engagement and reduces anxiety for language learners (Amin, 2021, Lahji, 2024; Loewen et al., 2019).

Previous studies have shown that game-based learning is an important and novel teaching strategy in the field of learning and that it can help students improve their language learning performance, cooperate more, and make learning more active (Belkhouche et al., 2014; Mei et al. 2018). Game-based learning, as opposed to entertainment-oriented games, is a type of gaming with educational goals (Shu, 2018). It is a type of game with specific learning goals (Plass et al., 2015). Gamification is a relatively recent phrase that refers to the use of game aspects in nongame contexts to provide learners with engaging, interesting, and inspiring learning experiences (Baptista & Oliveira, 2018; Werbach & Hunter, 2015). Gamified learning environments bring game concepts and dynamics to nongame contexts to boost learners' deep learning and critical thinking (Kapp, 2012) and lead them to adopt specified behaviors (Rachels & Rockinson-Szapkiw, 2018; Werbach & Hunter, 2015). According to Landers & Landers (2014), introducing gamification approaches can motivate learners' time on tasks, and more time at work is associated with greater student accomplishment. Games have been recognized as one of the most important contributions to the creation of interactive, motivating, and engaging learning environments during this change. Furthermore, introducing game aspects into learning settings is one way to increase motivation and engagement (Rowe et al., 2011). Several studies have indicated that students' reactions to participation in gamified EFL settings are entertaining, fun, appealing, interactive, and intriguing (Baldauf et al., 2017; Gaikwad & Jain, 2017; Homer et al., 2018; Sun & Hsieh, 2018; Zhou, Yu, & Shi, 2017).

Dehghanzadeh et al.'s (2021) systematic review of 22 studies on gamification revealed consistent positive impacts on EFL learner motivation, engagement and various language skills in several key areas. Among the most well-documented outcomes, vocabulary acquisition has demonstrated substantial improvement through gamification, which was found in fifteen out of the 22 studies reviewed by Dehghanzadeh et al. (2021). Tools such as Kahoot and Quizizz have been shown to be remarkably effective in providing instant feedback and reinforcement of correct answers (Demirbilek et al., 2022; Zhang, & Crawford, 2024). Gamification also enhances speaking skills by creating a less intimidating atmosphere, resulting in greater student engagement in speaking activities when presented with gamified instruction (Arnold, 2014). It has been argued that gamified environments offer psychologically safe spaces for language learners, who report feeling more in control of their learning process, contributing to reduced anxiety levels and increased engagement with language learning (Dehghanzadeh et al., 2021).

Looyestyn et al. (2017) noted that although gamification generally facilitates engagement and motivation, the long-term effects are still inconsistent. To ascertain how gamification can be successfully implemented to sustain motivation over time and across diverse learner profiles, more solid empirical research is needed. As suggested by Baah et al. (2023), the effectiveness of gamification relies on precisely leveraging intrinsic and extrinsic incentives, adapting strategies to the learners' background and dynamically developing gaming mechanics to maintain long-term interest.

To date, most studies in EFL fields have investigated how gamified instruction affects language abilities in oral or written forms (Alvia González, 2022; Muthukumar & Neelakandan, 2019), yet the correlation between gamification and EFL learner motivation or engagement remains understudied (Zhang & Crawford, 2024). To further investigate the unsolved issues mentioned in previous studies, this paper intends to explore the impact of gamified instruction on EFL students' learning motivation and engagement. It specifically demonstrates the relationships between gamification elements and motivation. Hence, the following research questions are raised:

1. What are the possible effects of gamified instruction on EFL learners' motivation?
2. What are the possible effects of gamified instruction on EFL learners' engagement?
3. What are the relationships between gamification elements and learning motivation?

2. Method

2.1. Participants

The participants of the present study were recruited from two groups of undergraduates learning English as a foreign language (EFL) at a university in southern Taiwan. The data were collected from two consecutive semesters in two English linguistics courses. In the first year, the students, serving as the control group (CG, $n = 37$), received nongamified instruction, whereas in the second year, a gamified version of the course was given to the participants, serving as the experimental group (EG, $n = 43$). The classes were taught using the same instructional materials. Both the CG and the EG used the University's Moodle course management system (CMS) to host the learning materials. All the participants had studied English for more than ten years. Each class was delivered for 18 weeks. Ethical approval for data collection and student consent were obtained before its implementation.

2.2. Instructional design

The course of the EG was implemented in a computer lab with the support of Moodle, which is constructed by the school and offered to all courses on campus. To enhance student motivation and engagement, blended gamified instruction integrated learning activities implemented in the classroom and on Moodle, which were carefully designed with gamification elements. Students engaged in an organized three-period session each week, including a lecture using teacher-made PowerPoints materials and collaborative problem-solving on Q&A worksheets, followed by Moodle-based activities, such as online quizzes, discussion forums, and Wordwall game group competitions. Based on the framework of gamification and the literature review, the most suitable gaming elements were selected and integrated to meet the purpose of the study (as shown in Table 1), as illustrated below:

Badges. Badges are visual logos presented as awards for completing a task or achieving educational goals. It serves as a demonstration of behavioral engagement in the learning environment, which is a feedback mechanism displayed by the system. Two types of badges were used in the EG:

early bird badges and completion badges. An early bird badge was offered to the earliest 3 groups to submit assignments. The groups who submitted an assignment completely earned a completion badge. The top 3 groups for earning badges were rewarded with prizes by the end of the course. Teams with good-quality postings may earn hidden badges, such as movie coupons, coffee coupons, and stationary coupons.

Competition. To enhance the sense of achievement by creating an atmosphere of competition, a contest of group project presentation was arranged. Each team should sound record their PowerPoint presentation and upload it to Moodle for peer evaluation. Each group receives an average score from peer groups and the instructor. The top three groups receiving the highest scores will be awarded a trophy.

Leaderboards. This special page lists the top-scoring students with their awards so that visitors can view, compare and recognize their achievements. Specific rules were set for the students' engagement in the online learning activities. There were ten levels in total. The students were upgraded to the next level at a rate of 300 experience points (XP) per level. The leaderboard webpage (see [Figure 1](#)) is publicly accessible through Moodle and displays students shown in descending order by level and XP.

Games. To stimulate students' interest in learning, the test of linguistics knowledge was integrated with Wordwall games (<https://wordwall.net/>). The games were designed based on the content of instruction on a weekly basis. The students played the games by the end of each session. The winners earned bonuses as encouragement. A screenshot of a Wordwall game is shown in [Figure 2](#).

Table 1. Motivating elements, gamification elements and rules in the EG

Motivating elements	Gamification elements	Specification
Long-term goal; access; challenge; collaboration	The 1 st place trophy	The team with highest votes in the group presentation earns the 1 st place trophy.
Long-term goal; access; challenge; collaboration	The 2 nd place trophy	The team with the second highest votes in the group presentation earns the 2 nd place trophy.
Long-term goal; access; challenge; collaboration	The 3 rd place trophy	The team with the third highest votes in the group presentation earns the 3 rd place trophy.
Short-term goal; feedback; challenge	Movie badge; Coffee badge; Stationery badge	Teams with good quality postings may earn badges, such as movie coupons, coffee coupons, and stationery coupons.
Short-term goal; feedback; challenge	Wordwall games	The winners may earn bonuses on weekly bases.
Long-term goal; access; feedback; challenge	Level up; progress tracker; leaderboard	Level 1: Completing 5 online activities Level 2: Completing 10 online activities Level 3: Completing 15 online activities

To evaluate students' learning engagement, rules for collecting experience points (X-points) were created on Moodle. Students may acquire experience points for different learning activities, such as viewing teaching materials or submitting assignments. The rules for collecting X-points are listed in [Table 2](#).

Table 2. Rules of earning experience points on Moodle

Activity description	Number of experience points
Quiz submitted	10 points
I want to ask questions(Post created)	10 points
Feedback: Response submitted (1-12)	10 points
Forum: Discussion created	10 points
Forum: Post created	10 points
Course: course viewed	5 points
Course module viewed/wiki page updated	5 points
Questionnaire (EG-posttest)	5 points
Course: Course viewed	2 points

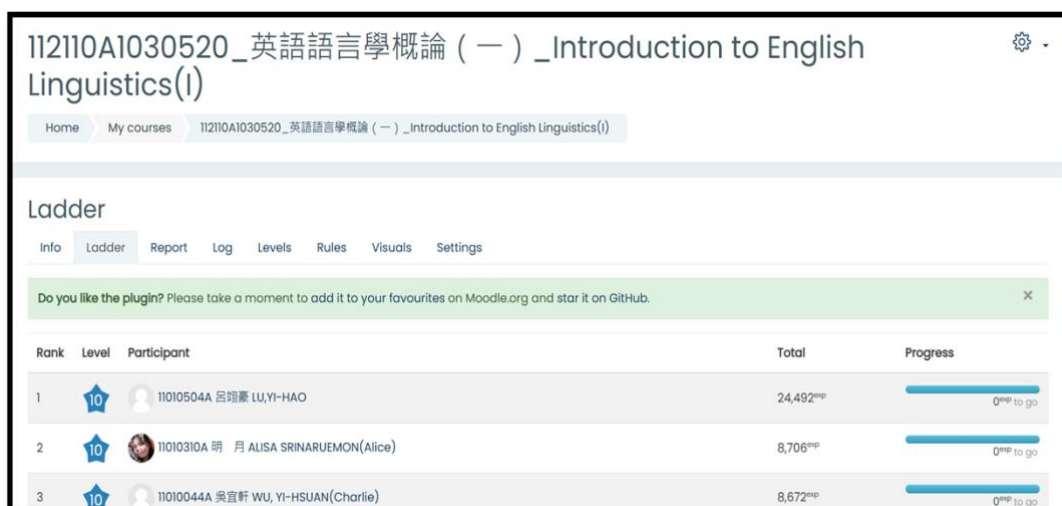


Fig. 1. Screenshot of the leaderboard.

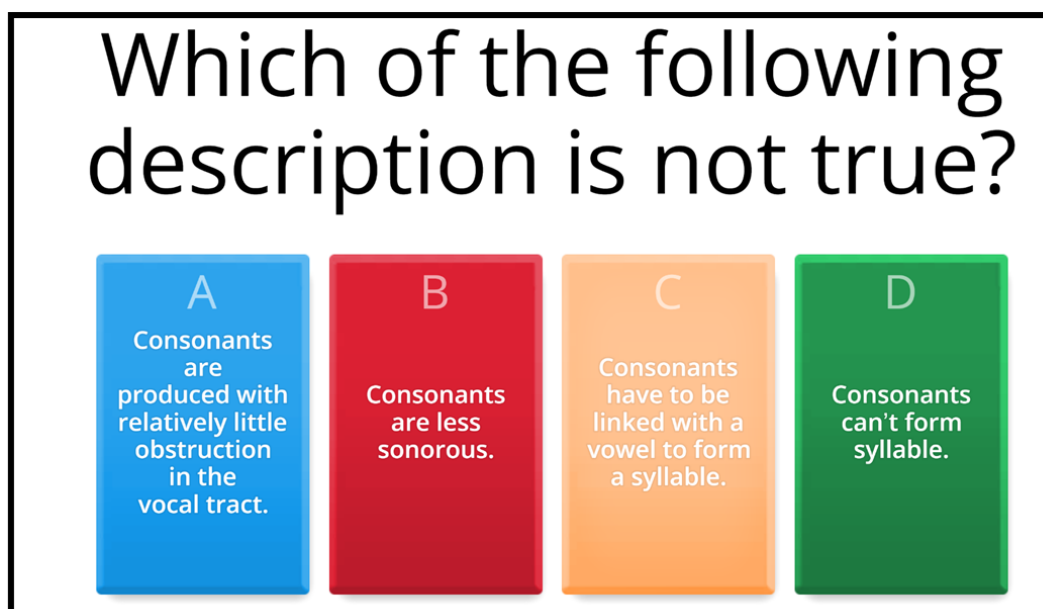


Fig. 2. Screenshot of a Wordwall game.

In contrast, the CG received a lecture-based instruction with the same textbook (O'Grady & Archibald, 2021) and teaching materials as scheduled in the EG. Using the same login and password as their university webmails, students could access the course materials, including PowerPoints and other online resources, on the Moodle course management system (CMS). The major difference between the EG and CG was that the students in the EG received the learning materials and activities constructed to integrate gamification theory, while the CG received a nongamified instruction, which was conducted face-to-face in a traditional classroom. No gamification element was integrated into the instruction offered to the CG.

2.3. Procedure and data collection

The study was conducted at one linguistics course offered at a university in southern Taiwan. The subjects received gamified instructions implemented in the CMS. The system provided detailed log reports of individual students' participation time and online activities. The course was offered three hours per week and lasted for 18 weeks. After the first week of course introduction, the pretest of the questionnaire on learning motivation was conducted in week three. The same post-test was administered again during week 17. A consent form was provided to all the participants.

To investigate whether there was any change in students' learning motivation after the intervention, a questionnaire adapted from the version used in Keller (2010) was used. The original version contains 36 items in four dimensions: attention, relevance, confidence and satisfaction. To meet the purpose of this study, the revised version will contain 26 items. Prior to the actual test administration, the tests will be piloted for content by the students ($n = 10$) who are not attending the experimental course. All the problematic questions were removed or revised according to the students' given feedback in the pilot study. Using a five-point Likert scale (code 1: not true; 2: slightly true; 3: moderately true; 4: mostly true; 5: very true), the questionnaire elicited students' perceptions of their learning interest or motivation. The same survey will be administered twice to the EG and CG before and after the course, respectively.

The CMS automatically records students' log data, which are collected for analysis. The log analysis provides further information about students' behavior engagement, which cannot be clearly observed in class. The following variables were selected for analysis of the students' online learning activities.

- Discussion forum and post: The number of posts submitted to the discussion forum.
- Online quizzes: The number of submission rates of online quizzes.
- Q & A worksheets: The accuracy rates of the Q&A worksheets.
- Wordwall games: The accuracy rates of weekly Wordwall games on linguistic concepts.
- Badges: The number of badges the students had acquired.
- Online resources view: The total number of viewed online resources/teaching materials prepared for the course.

3. Findings and Discussion

3.1. Effects on learning motivation

To investigate whether the EG participants had a higher level of perceived learning interest following the intervention, the pre- and post-questionnaire on motivation were compared using independent samples t-tests. The results of the t-tests are provided in Table 3. Both groups of students showed an increase in learning interest after the instruction. In the pre- and post-questionnaires, the EG's mean perceived learning interest increased from 3.48 (SD =0.91) to 3.93 (SD =0.87), whereas the CG's mean score improved from 3.56 (SD = 0.52) to 3.57 (SD = 0.46). The t-tests indicated that there was no difference between the groups prior to instruction ($t = 1.479$, $p = 0.439$, n.s.), but there was a significant difference after instruction between the EG and CG ($t = 5.434$, $p < 0.001$). Significant differences were also found in the post-test between the EG and CG in each subsection of attention ($t = 0.956$, $p < 0.05$), relevance ($t = 3.517$, $p < 0.01$), confidence ($t = 1.249$, $p < 0.05$), and satisfaction ($t = 4.217$, $p < 0.001$).

The results of the SLI appear optimistic overall, as they reveal a positive effect on all four dimensions. The variables of satisfaction ($M=4.35$; $SD= 0.81$) and relevance ($M=4.12$; $SD=0.63$) were scored higher than the other two. The students were highly satisfied with the course, which was reflected in item 26: "It was a pleasure to work on such a well-designed lesson" ($M = 4.56$, $SD = 0.87$). Among the most crucial elements, attention is needed to empower and engage students in educational activities (Barata et al., 2013). The attention level of the pupils significantly increased in this study as they completed their gamified assignments. Students' engagement in and completion of online assignments can be positively impacted by the use of gamification elements such as badges, leaderboard, and points (Majuri et al., 2018). However, it seems that the growth of students' confidence is limited. Most of the students did not have the impression that the course was easy for them when they first saw the course (item 16, $M = 2.18$, $SD = 1.16$). How to increase student confidence in learning, especially in linguistics, remains a challenge for instructors. This result mostly corroborates the findings of prior research in this field that associated gamification with learning motivation and engagement (Baah et al., 2023; Bouchrika, et al., 2021; García-López, et al., 2023). The relatively strong association shown between gamification design and the cognitive theory of language learning could be attributed to these variables. On the one hand, gamification design

concepts include assisting learners in choosing pertinent words and visuals, minimizing the burden on a single processing channel, and presenting coherent verbal and pictorial information (Kapp, 2012).

Table 3. Rules of earning experience points on Moodle

Motivation categories	CG (n = 37)		EG (n = 43)		t-test for equality of means	
	Mean	SD	Mean	SD	t	Sig. (2-tailed)
Pre-Attention	3.73	0.53	3.55	1.22	0.112	0.370
Post-Attention	3.67	0.66	3.91	0.76	0.956	0.026*
Pre-Relevance	3.41	0.81	3.54	1.17	0.813	0.478
Post-Relevance	3.05	0.71	4.12	0.63	3.817	0.001***
Pre-Confidence	3.56	0.71	3.48	1.08	0.623	0.581
Post-Confidence	3.53	0.61	3.67	0.86	1.249	0.015*
Pre-Satisfaction	3.53	0.62	3.33	1.12	0.937	0.482
Post-Satisfaction	3.51	0.73	4.35	0.81	4.217	0.000***
Pre-overall	3.56	0.52	3.48	0.91	1.479	0.439
Post-overall	3.57	0.46	3.93	0.87	5.434	0.000***

Note: * $p < .05$, ** $p < 0.01$, *** $P < .001$.

3.2. Effects on learning engagement

Students' participation in online activities was taken as an indicator of learning engagement. Online quizzes were given to evaluate students' comprehension of the material covered in that specific week. Learners' recollection of basic concepts and information was assessed through online multiple-choice questions. The weekly post-class quiz submission rate and scores served as gauges for the level of cognitive engagement among the students. Figure 3 shows the submission rates of weekly quizzes between the groups. Moreover, both the CG and EG scores were tallied and examined. Mann–Whitney tests were performed to determine whether there were statistically significant differences between the quiz scores for the CG and EG. Significant differences were found between the groups on quizzes 3, 4, 6 and 7. The results indicated that the EG (n = 43) significantly outperformed the CG (n = 37) in quiz 3 ($U = 132$, $r = 0.34$, $p < 0.01$), quiz 4 ($U = 276$, $r = 0.27$, $p < 0.05$), quiz 6 ($U = 105$, $r = 46$, $p < 0.001$) and quiz 7 ($U = 281$, $r = 41$, $p < 0.01$). No differences were found on quizzes 1, 2, 5, and 8.

The discussion forum was created on a weekly basis for students to raise their questions about learning content or reflection on learning linguistics. It is intended to increase students' engagement and student–student or teacher–student interactions. The data were collected from 8 discussion forums. Out of 43 students in the EG, a total of 634 actions (including posting questions or responding to questions) were submitted over the course. This represents an average of 63 submissions per week and 14 actions per student. For all of the examined weeks, comparisons of submissions to the discussion forum were made between the CG and EG. As shown in Figure 4, in the first four discussions, the submission rates were similar for both groups; however, from discussions 5 to 8, the differences in the submission rates became more obvious. For example, in discussion 6, only 24% of the CGs posted or responded to the discussion, whereas 66% of the EGs did. At the end of this course, only 18% of the CGs submitted responses, whereas 56% of the EGs did. This indicates that whereas the number of students who raised questions in the CG gradually decreased over time, the submission rate was reasonably high and steady in the EG.

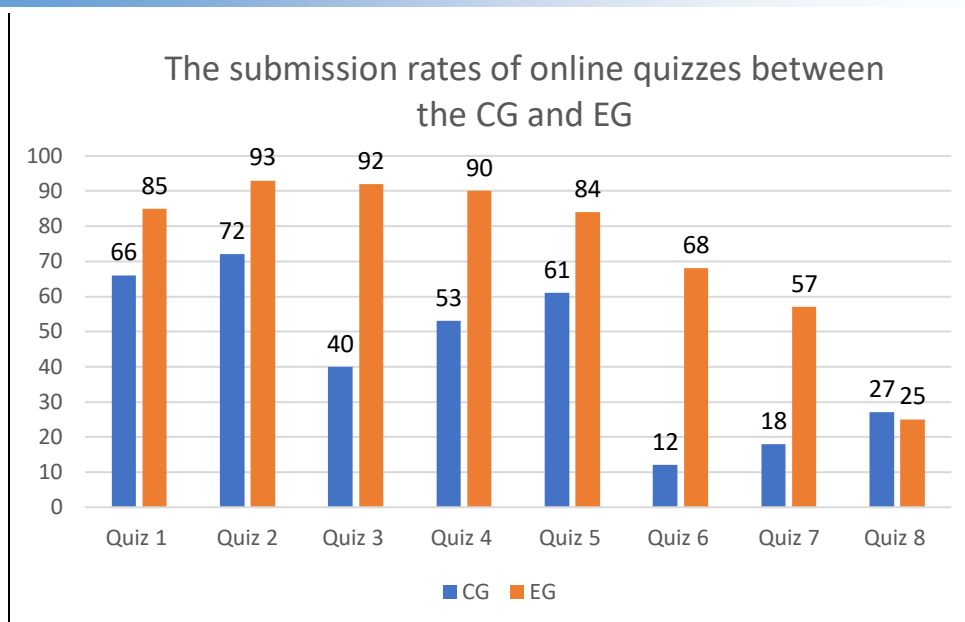


Fig. 3. Weekly post-class quiz submission rates between the groups.

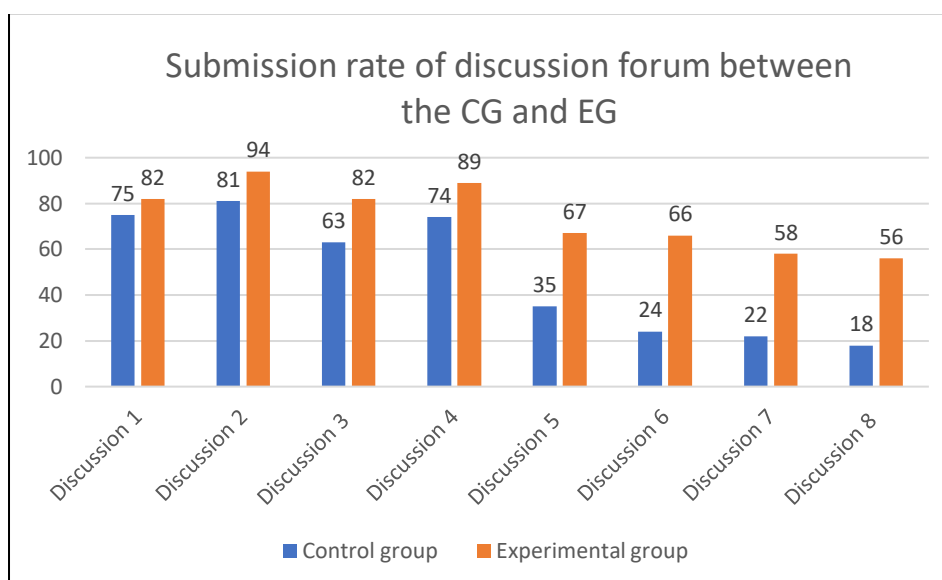


Fig. 4. Submission rates of the discussion forums between the groups.

Data collected from student participation in online activities revealed that gamification had a positive impact on students' engagement. Specifically, the students in the EG had a higher submission rate for quizzes (74.25%) and discussion forums (78%) than did those in the CG (43.63% for quizzes and 49% for the discussion forum). This suggests that the EG was more likely to engage in thinking of issues related to linguistics and that the students were more willing to interact with the instructor and peer students. According to the results of the Mann–Whitney tests, the scores of the EG were significantly better than those of the CG on four out of the eight quizzes. This provides evidence that the participants in the EG were involved in more cognitive activities in the gamified instructions.

To explore possible causes that might have influenced student engagement in the EG, we consulted the participants for their in-depth comments. Ten participants agreed to be interviewed. The majority of the participants responded positively to the effects of gamification on learning linguistics. Concerning the key question about the most interesting activities that would increase their learning engagement in the course, the most intriguing activity was the Wordwall games of linguistics knowledge. The students commented that the atmosphere of the group competition reduced their anxiety in answering the questions because group members could support each other; thus, they could

learn linguistics without feeling stressed. Next, bonuses were regarded as a motivating element to engage in the learning activities since collecting bonuses could help them pass the course, which was the most important motivation of learning for many students. Furthermore, points and leaderboard were equally vital for participation. For some students, the sense of achievement accompanied by earning badges and advancing on the leaderboard was their driving force of learning, which was similar to the context of playing games.

3.3. Relationships between gamified learning activities and motivation

Pearson correlation coefficients were used to examine the relationships between motivation and learning activities, including discussion forums, after-class online quizzes, Q&A worksheets, WordWall games and badges. These activities were performed on a weekly basis for 12 weeks in total. To run the correlation tests, the accuracy rates for the online quizzes and Q&A worksheets were calculated. Since there were no correct answers for the posts on the discussion forum, students' submission rates, including asking and responding to questions, were collected. For WordWall games and badges, students' attempts to play the games and the number of badges were recorded. The results of the correlation tests revealed that learning motivation was significantly correlated with discussion forum ($r = 0.427$, $p = 0.017$), badge ($r = 0.437$, $p = 0.029$) and WordWall games ($r = 0.581$, $p = 0.003$). However, no significant correlation existed between quizzes ($r = 0.284$, $p = 0.085$) and Q&A worksheets ($r = 0.227$, $p = 0.062$).

Multiple regression analysis was performed to assess the extent to which learning activities could predict learning motivation. A significant regression was found ($F(4, 41) = 5.307$, $p = 0.004$). The R^2 was 0.515, suggesting that learning activities explained approximately 51.5% of the variance in learning motivation. Only the variables of discussion forum ($\beta = 0.518$, $t = 3.058$, $p = 0.003$), WordWall games ($\beta = 0.426$, $t = 2.52$, $p = 0.012$) and badges ($\beta = 0.707$, $t = 4.792$, $p = 0.000$) were entered into the regression model. The discussion forum explained 32.5% of the variance in learning motivation ($R^2 = 0.325$, Cohen's $f^2 = 0.47$), the WordWall games explained 41.8% of the variance in learning motivation ($R^2 = 0.418$, Cohen's $f^2 = 0.51$), and the badges explained 51.3% of the variance in learning motivation ($R^2 = 0.513$, Cohen's $f^2 = 0.49$). However, no significant regression was found between quizzes, Q&A worksheets and learning motivation.

The structural model was used to investigate the relationships between learning activities and learning motivation in four dimensions. Examining the path coefficients, the paths from the discussion forum to attention ($\beta = 0.596$, $t = 3.564$, $p = 0.002$), confidence ($\beta = 0.462$, $t = 3.497$, $p = 0.019$), satisfaction ($\beta = 0.563$, $t = 3.291$, $p = 0.003$), and learning motivation overall ($\beta = 0.480$, $t = 3.213$, $p = 0.015$) were significantly positive. Significant positive coefficients were also found for the paths from WordWall games to satisfaction ($\beta = 0.362$, $t = 2.115$, $p = 0.026$) and learning motivation overall ($\beta = 0.548$, $t = 4.196$, $p = 0.002$). Moreover, the paths (see [Figure 5](#)) from badges to attention ($\beta = 0.564$, $t = 3.278$, $p = 0.003$), relevance ($\beta = 0.542$, $t = 3.089$, $p = 0.005$), confidence ($\beta = 0.506$, $t = 2.813$, $p = 0.010$), satisfaction ($\beta = 0.707$, $t = 4.792$, $p = 0.000$), and overall learning motivation ($\beta = 0.437$, $t = 2.331$, $p = 0.029$) were significantly positive. The results indicated that discussion forums, WordWall games and badges were significantly correlated with learning motivation, especially in the dimension of satisfaction.

To answer the third research question, the relationships between gamified learning activities and EFL students' learning motivation were analyzed. The learning activities implemented in gamified instruction significantly influenced EFL students' motivation. Pearson correlation tests revealed that learning motivation was significantly correlated with discussion forums, WordWall games and badges. Multiple regression analysis revealed that discussion forums, WordWall games and badges were significant predictors of learning motivation, explaining 32.5%, 41.8% and 51.3% of the variance in learning motivation, respectively. These findings suggest that interactive and gamification activities such as discussion forums, badges and educational games are particularly effective in boosting various dimensions of motivation, especially satisfaction.

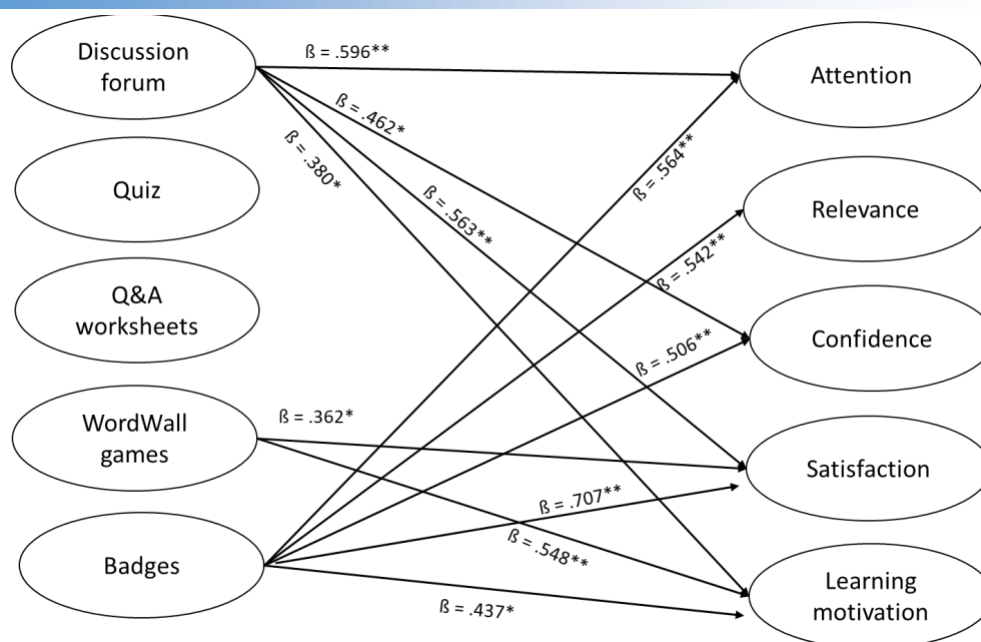


Fig. 5. Path model of the relationships between learning activities and motivation.

Regarding the choice of gamification elements, the results of the study indicate that discussion forums, WordWall games and badges were the learning activities that considerably enhanced learners' motivation. In particular, the students made many positive comments in the discussion forum. The significance of feedback has been documented in prior studies. According to Dehghanzadeh et al. (2021), the most frequently applied gamification elements for learning ESL are "feedback, challenge, point, reward, leaderboard, and level" (p. 945). In their study, the motivational communication strategies used by Ucar and Kumtepe (2020) were mainly messages, emails, and videos sent to learners through the learning management system, which successfully increased students' motivation to learn English. This finding is not surprising since feedback is a promising gamification element that is regularly used to improve students' critical thinking, reasoning and argumentation skills (Noroozi, et al., 2020).

Based on the results of the present study, three major findings are yielded. First, the empirical data support the positive effects of gamification on learning interest and engagement among EFL students, which suggests that motivational and gamification elements are a strong combination in instructional design. Second, the technical support from the CMS makes the operation and maintenance of the course considerably manageable for the instructors. For example, diverse options for activities and flexible time are vital for learners' willingness to participate in a course. Additionally, the automatic presentation of the leaderboard can allow students to view the current status of their experience value and easily make comparisons with others. Third, in gamified instruction, individual and cooperative activities should be well balanced. In this course, we set up group activities (e.g., Wordwall games, group Q&A worksheets, and group presentations) and individual activities (e.g., online quizzes and discussion forums). These learning activities were designed and arranged with the weighing of difficulty level and duration, since frustration and challenge might affect commitment. Despite the abundance of research on the advantages of gamification in encouraging students in education, it is yet not clear how long such an effect might be retained. Earlier research (Hanus & Fox, 2015; Koivisto & Hamari, 2014) revealed that learners' curiosity about new technology will eventually weaken. Bouchrika et al. (2021) reported that the novel effect of introducing an innovation to the university community might account for an increase in active users and contributions, which may be influenced by the platform and construction of gamification.

4. Conclusion

In this study, we applied gamification-enhanced instruction in linguistics to examine whether this approach can help enhance EFL students' learning interest and engagement. Various gamification elements are incorporated, including badges, leaderboard, points and competition. The learning

experiences of gamified and nongamified instruction, on students in two consecutive years were compared and analyzed from various aspects. The results were promising. A comparison of the questionnaires on learning motivation before and after the instruction revealed that there was no difference between the EG and CG in the pre-test; however, a significant difference was confirmed between groups in the post-test, indicating that the gamified instruction helped enhance students' learning interest in different dimensions. Furthermore, the EG had higher submission rates in online quizzes and discussion forums than did the CG, which demonstrates that the gamified model has a positive effect on students' engagement. Although the comparison of the final exam scores revealed that the EG significantly outperformed the CG, further evidence is needed to demonstrate that gamification can facilitate students' performance. It is therefore suggested that future research focus more on sophisticated assessments of learning outcomes and the retention of learning interest and engagement. This research highlights the potential of gamification-enhanced instruction to transform EFL learning by fostering greater interest and engagement among students. While the enhanced performance in the final exam suggests the model's effectiveness, the need for more comprehensive assessments underscores the importance of refining this approach. These findings provide valuable insights for educators aiming to adopt innovative teaching strategies and emphasize the importance of designing gamified learning experiences that sustain long-term interest and deepen learning outcomes.

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