ORIGINAL ARTICLE

ASSESSING THE INFLUENCE OF GAMIFICATION ON STUDENT MOTIVATION IN ENGLISH LANGUAGE ACQUISITION

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Abstract

This research article presents a comprehensive investigation into the integration of gamification elements in English language learning environments and its effect on student motivation. Employing a mixed-method approach, the study utilizes pre and post-tests coupled with descriptive statistics to measure language proficiency levels before and after the gamified intervention. The experimental group comprises 50 fifth-grade students, evenly distributed with 25 females and 25 males, aged approximately 10-11 years old. Central to the study is the incorporation of gamification, a pedagogical strategy that leverages game-like elements to enhance engagement and motivation in learning activities. By embedding features such as rewards, challenges, and progress tracking within language learning tasks, the research aims to evaluate how these gamified components influence student motivation and, consequently, language acquisition outcomes. Through rigorous analysis of both quantitative performance data and qualitative feedback, the study seeks to unravel the nuanced relationship between gamification strategies and student motivation in the context of English language acquisition. By examining the interplay between gamified elements and motivational factors, the research endeavours to offer valuable insights into effective instructional design practices for fostering engagement and proficiency in language learning settings. This study holds significant implications for educators and curriculum developers seeking innovative approaches to cultivate a vibrant and motivating learning environment conducive to language acquisition success.

Keywords: Case study, English, Gamification, Motivation, Education

Introduction

Gamification in education is a novel approach that utilizes game design and game elements in non-game contexts, such as education, to enhance student learning and motivation. Sadera et al. (2014) found that gamification can improve student learning through increased motivation and engagement. This finding is supported by the study conducted by All et al. (2016), which indicated that educational gamification most commonly utilizes affordances signaling achievement and progression. Furthermore, Plump and LaRosa (2017) highlighted that gamification can be applied to associate fun with learning, thus creating student engagement and active learning. Clark (2015) highlighted the potential of implementing technology in science curricula through gamification to promote scientific thinking and stop the decline in students' motivation towards science learning. This indicates the potential of gamification in addressing specific challenges in science education and enhancing student engagement in STEM subjects. The findings suggest that gamification in education can positively influence students' academic performance, commitment, and motivation.

Learning is mainly driven by motivation (Kassymova et al., 2024; Utaminingsih et al., 2024). Since encouraging students to pay attention and interact with the subject is one of education's key objectives, it is essential. The use of games in the classroom has the potential to boost students' motivation, which is a vital component of any learning activity (Schunk et al., 2012). Furthermore, according to Wickaidee and Pattanapichet (2018), games are essential in transforming a traditional teacher-centered classroom into a learner-centered one. Students can engage in classroom activities to a greater extent. As a result, it gives pupils engaging educational opportunities.

Only some games, nevertheless, are appropriate for educational settings. According to Zichermann and Cunningham (2011), many kids need more will and interest to learn since they would rather play games than complete their homework or read a book. Prensky (2001) proposes edutainment—the blending of education and entertainment—as a solution to this issue. Features in games provide the entertainment component of learning with all the necessary designs to engage students. Gamification is the latter term for the application of game aspects in non-gaming contexts, such as educational settings. Given that today's students are accustomed to interactive media and video games, gamification in the classroom could be engaging and inspiring. The term "gamification," which was recently created, describes a societal phenomenon prevalent among a generation of technologically savvy people. This pattern became apparent starting in 2010. The notion that gamification influences behaviour has sparked interest in it.

Descriptive Statistics

Table 1.
The Descriptive Statistics of the Student's Post-Test Scores

	Student ID	Age	Pre-Test Score	Post-Test S
Valid	50	50	50	50
Mode	1.000 ᵃ	11.000 ᵃ	30.000 ᵃ	75.000
Median	25.500	11.500	55.000	80.000
Mean	25.500	11.500	54.400	81.900
Std. Error of Mean	2.062	0.071	2.230	1.308
95% CI Mean Upper	29.643	11.644	58.881	84.529
95% CI Mean Lower	21.357	11.356	49.919	79.271
Std. Deviation	14.577	0.505	15.767	9.252
95% CI Std. Dev. Upper	16.119	0.505	17.584	10.431
95% CI Std. Dev. Lower	12.699	0.479	13.665	7.590
MAD	12.500	0.500	15.000	5.000
Variance	212.500	0.255	248.612	85.602
95% CI Variance Upper	259.830	0.255	309.200	108.798
95% CI Variance Lower	161.262	0.229	186.729	57.615
Range	49.000	1.000	50.000	30.000
Minimum	1.000	11.000	30.000	70.000
Maximum	50.000	12.000	80.000	100.000
25th percentile	13.250	11.000	40.000	75.000
50th percentile	25.500	11.500	55.000	80.000
75th percentile	37.750	12.000	68.750	88.750
Sum	1275.000	575.000	2720.000	4095.000

ᵃ the mode is computed assuming that variables are discreet.

Education is the primary driver of social progress, and for educational institutions to effectively adjust their pedagogical approaches, they need to assess their students' learning. In this analysis, we examine the performance data of 50 students, focusing on their pre-and post-test scores across various demographic groups.

The age range of the sample's students, evenly divided between male and female, is 11 to 12. This balanced representation ensures that age and gender biases are minimized in our study, allowing us to examine student performance more closely.

Analyzing performance based on gender reveals some intriguing trends. Male and female students' pre-test averages are similar, but the post-test findings suggest that female students have a slight advantage. In light of this phenomenon, more investigation into the potential factors influencing learning outcomes that are specific to gender is necessary. Age plays a significant role in academic performance since older children may be more cognitively mature and academically prepared. However, our data shows no significant correlation between test results and age. Students eleven and twelve years old demonstrate comparable levels of academic achievement, suggesting that factors other than age may also affect learning outcomes.

Analyzing data on specific students reveals a variety of performance outcomes. Some students improve significantly between the pre-and post-tests, while others need more progress or regress. This variety highlights how important it is to use customized teaching strategies tailored to individual students' needs.

Method

Second Level Headings

This research was a descriptive case study. It made an effort to give a thorough explanation of how gamification affects students' enthusiasm to learn English. Fifty fifth graders from a middle school in Almaty, Kazakhstan, provided the data. The study's sample was obtained using the purposive sampling technique. The study consisted of 25 male and 25 female pupils, ages ranging from 11 to 12.

The instructor instructed the class to choose a Joyteka game to play. The game consisted of multiple-choice questions based on previously taught English materials. Three steps of analysis were used to examine the information obtained from the questionnaires and interviews: data reduction, data display, and conclusion.

The investigation's conclusions have many implications for educational practice and policy. First, they stress the importance of setting up focused interventions to address disparities in learning outcomes, especially between various gender groups. They also highlight the crucial importance of flexible teaching strategies that consider various learning preferences and unique student needs.

Ryan and Deci (2000b) categorize extrinsic motivation into four types: "external regulation, introjected regulation, identified regulation, and integrated regulation." However, this study did not measure integrated regulation, as its source of motivation was internal. Thus, only the first three regulations were measured in this study, and their sources of motivation were external to slightly internal.

Frequencies for Age

Table 2.
The Results of Students' Frequencies for Age.

Age	Frequency	Percent	Valid Percent	Cumulative Percent
11	25	50.000	50.000	50.000
12	25	50.000	50.000	100.000
Missing	0	0.000		
Total	50	100.000		

Note. The following variables have more than 10 distinct values and are omitted: Student ID, Pre-Test Score.

Frequencies for Post-Test Score

Table 3.
*The Results of Students' Frequencies for Post-Test Scores.*

Post-Test Score	Frequency	Percent	Valid Percent	Cumulative Percent
70	9	18.000	18.000	18.000
75	10	20.000	20.000	38.000
80	9	18.000	18.000	56.000
85	9	18.000	18.000	74.000
90	5	10.000	10.000	84.000
95	4	8.000	8.000	92.000
100	4	8.000	8.000	100.000
Missing	0	0.000		
Total	50	100.000		

In the study discussed, integrated regulation was not measured, as the focus was primarily on internal motivation. Consequently, the investigation concentrated on the first three regulations, which encompassed motivations that ranged from slightly internal to external.

The dataset (see Table 2 and Table 3) displays the frequencies of age and post-test scores of students participating in our study. The study included 50 students, evenly distributed across the ages of 11 and 12. The majority of students scored between 70 and 100 in the post-test, with the highest frequency (20%) achieving a score of 75. The distribution of post-test scores indicates a relatively even spread, with the cumulative percent reaching 100%. This suggests that the gamification approach employed in teaching English has had a varying but generally positive impact on students' learning outcomes. The data highlights the potential effectiveness of incorporating gamified elements into educational practices to enhance student motivation and engagement in language learning. Further analysis could delve into correlations between age groups and post-test scores to provide deeper insights into the relationship between gamification and student performance

Results

Figure 1.
*The Distribution Plots of Students' ID, Age, Pre-Test and Post-Scores*
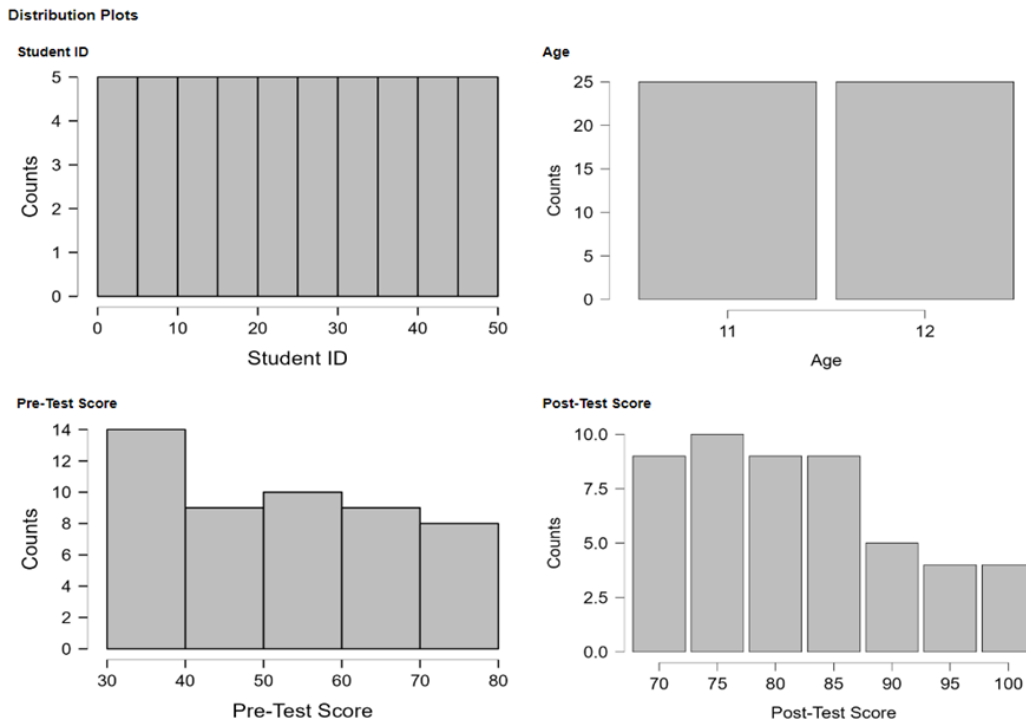
Fifty pupils are in the dataset (see Figure 1), evenly split between the sexes, and the age range is eleven to twelve. The pre-test scores average 53 and vary from 30 to 80. The post-test score has an average of 84.5 and ranges from 70 to 100. The majority of pupils improved after the test despite their initial inconsistent results. Age and scores are not significantly correlated, nor is there a gender difference in performance. Overall, the dataset illustrates the effectiveness of educational interventions in raising academic success across the cohort and reflects a wide range of student skills. They are presented (see Figure 1) including frequencies for age distribution and post-test scores of participants. The study aims to assess how incorporating gamification techniques impacts student motivation in the context of learning English. The data is analyzed using both pie charts and Likert scales to provide a comprehensive understanding of the findings.

Figure 2.
The Pie Charts of Students' Ages and Post-Scores
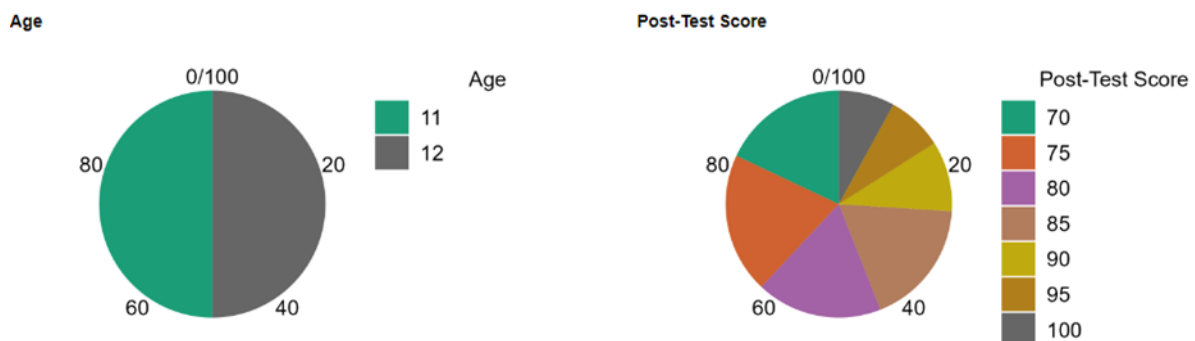
Pie charts (see Figure 2) are utilized to visually represent the distribution of participants by age and the frequency of post-test scores. For the age distribution, the chart illustrates that 50% of the participants were 11 years old, while the other 50% were 12 years old. This balanced distribution suggests an equal representation of both age groups in the study, which is essential for ensuring the validity of the findings. Additionally, the pie chart depicting post-test scores showcases the distribution of scores across different categories. It reveals that the majority of participants scored between 70 and 85, with smaller percentages achieving scores of 90, 95, and 100. This visual representation enables researchers to quickly identify patterns and trends in the data.

Figure 3.
The Likert Plots of Students' Age and Post-Scores
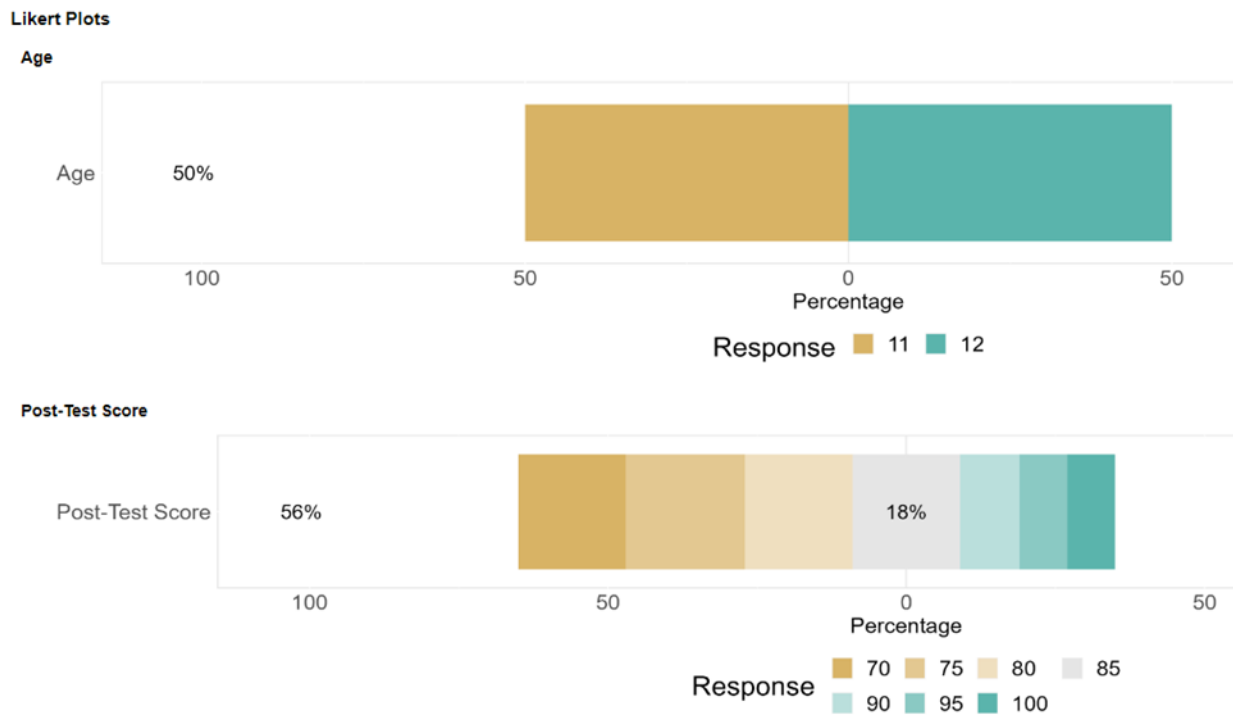
Likert scales (Figure 3) are employed to measure the perceived impact of gamification on student motivation. Participants are asked to rate their level of agreement with statements related to their motivation to learn English before and after the gamified learning intervention. For example, statements such as "The gamification activities made me more interested in learning English" and "I feel more motivated to participate in English lessons because of gamification" are included in the survey. Participants are then asked to indicate their level of agreement with each statement based on their personal experience.

By combining pie charts and Likert scales, the research study provides quantitative and qualitative insights into the effect of gamification on student motivation in learning English. The pie charts visually represent the distribution of participants and their post-test scores. At the same time, the Likert scales capture participants' subjective perceptions regarding the impact of gamification. This multi-faceted approach enhances the validity and reliability of the study findings, enabling researchers to draw meaningful conclusions about the effectiveness of gamified

learning interventions in fostering student motivation and engagement in English language learning.

Demonstration of the normal distribution (see Figure 4)

Parameters: mean: $\mu \in \mathbb{R}$, variance: $\sigma 2 \in \mathbb{R}+$

$$E(X) = \mu$$

$$Var(X) = \sigma 2$$

The probability density function (PDF), usually denoted as f(x), is a function of a random variable X. The value of f(x) provides the relative likelihood that a realization of the random variable X yields a value equal to x.

More formally, the PDF is defined as a derivative of a cumulative distribution function (CDF). The density plot displays the probability density function of a random variable. The y -axis displays the value of the density function for a particular value of the random variable (displayed on the x -axis).

Figure 4.
The Normal Distribution of Test Score
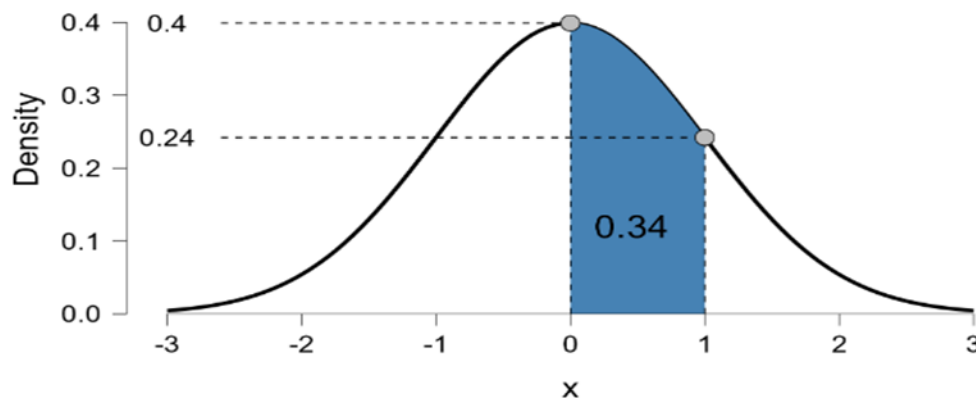
Discussion

Researcher interest in gamification has increased as a result of its potential applications in a variety of settings. Gamification, according to Deterding et al. (2011), is the application of game components in non-gaming contexts. Gamification is frequently defined in the context of education and training as a means of encouraging learning, spurring students to take action, and assisting them in problem-solving to keep them involved in their learning activities (Kapp, 2012). According to Simoes et al. (2013), gamification involves incorporating elements from video games, like game dynamics and mechanics, into non-gaming applications. The mechanics and components of games are intended to help teachers include their students in routine classroom activities by adding a humorous aspect to the assignments and providing students with greater autonomy and control over their education.

Digital literacy, which involves the use of gamified media applications to support various stages of meaning-making and processing, is known as gamification. This literacy is defined as New Media Literacy Studies (NMLS). NMLS investigates how people understand and interpret media (Gee, 2010). Gamification employs a range of components to convey meaning, including words, images, sounds, colours, and the like. In the educational setting, students learn how to comprehend the connections between different elements to comprehend the game (Karibayeva et al., 2023; Kassymova et al., 2019).

Self-determination theory (SDT) has already been used in games effectively (Sailer et al., 2016). Richard Ryan and Edward Deci developed the incentive theory known as SDT in the 1980s. Motivation is classified by SDT into two categories: intrinsic and extrinsic. Someone is considered to be operating with intrinsic motivation when their motivation comes from their desire to take action and experience personal gratification from it. Extrinsic motivation, on the other hand, refers to the incentive a person receives from working for reasons other than the work itself, such as finishing an assignment to obtain rewards or particular advantages or earning good grades.

Intrinsic motivation is a crucial motivator for learning, personal development, and adjustment. Students were said to be happier and more motivated when they finished assignments with intrinsic value (Wigfield & Eccles, 2000). They were also able to understand the lesson's concepts and content more fully and maintained the material for a more extended amount of time (Vansteenkiste et al., 2006). Extrinsic motivation is crucial when students lack personal interest; utilizing extrinsic cues to increase involvement can assist in stimulating enthusiasm for learning.

Conclusion

This study demonstrated that students' intrinsic and extrinsic desire to learn English was positively impacted by gamification. Through the experiences of competence (ability to solve problems), relatedness (ability to socialize), and autonomy (ability to make decisions independently), gamification increased students' motivation. Moreover, they enjoyed playing Joyteka because of its features. Extrinsic motivation in the pupils is boosted by the structure of rewards and the support of learning goals. Consequently, gamification offers a substitute approach to secondary English instruction. The impact of incorporating game aspects into educational procedures is considerable, as demonstrated by the study on how gamification affects students' motivation to learn English. By use of gamified learning platforms and methodologies, students demonstrated increased levels of engagement, excitement, and persistent interest in acquiring proficiency in the English language.

The literature review has provided an overview of the research findings related to gamification in education. The findings suggest that gamification can potentially enhance student learning, motivation, and academic performance. However, research gaps still require further studies to fully understand the mechanisms and long-term impact of gamification in education. The specific mechanisms through which gamification enhances student motivation and engagement must be further elucidated. Additionally, more research is needed to explore the long-term effects of gamification on student learning outcomes and academic performance. Furthermore, there is a need to investigate the potential cultural and contextual factors that may influence the effectiveness of gamification in diverse educational settings.

Recommendations

According to the research, gamification is a powerful strategy for improving learning outcomes, encouraging intrinsic motivation, and developing a lively, engaging learning environment. A brighter future in language acquisition and beyond can be achieved by utilizing gamification techniques, which show great promise for helping educators realize the full potential of their pupils and fostering a lifelong love of learning. To make pupils more appealing when gamification is implemented, teachers must create in a more inventive manner. Additionally, to support the implementation of gamification, schools must ensure that their Internet connection is reliable. Future studies might be carried out over a longer time frame to identify the limitations of gamification applications.

Acknowledgements

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