Article / 論文

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The Effects of Gamification on Japanese English Language Learner's Motivation Through Classcraft

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Abstract

Gamification has garnered increasing attention as a tool for enhancing student motivation. However, its effects on Japanese EFL learners are still underexplored. There is still disagreement amongst researchers about the effects of gamification on intrinsic and extrinsic motivation. Thus, this paper aims to discover whether these two forms of motivation are influenced by gamification through the Classcraft application and to what extent. Two student groups from Kyushu Sangyo University comprising 50 students of varying English proficiency levels participated in this study. To measure changes in intrinsic and extrinsic motivation, the authors used pre- and post-surveys that were assessed in a previous study on gamification. t-tests were conducted to assess the significance of the results for both groups. The results of this study suggest that gamification via Classcraft may have a more significant effect on lower-level students regarding both intrinsic and extrinsic motivation.

ゲーミフィケーションは、学生のモチベーション向上の手法としてますます注目を集めている。しかし、日本の EFL 学習者に対するその影響については、依然として十分に研究されていない。さらに、ゲーミフィケーションが内発的および外発的モチベーションに及ぼす影響については、研究者の間でも意見が分かれている。そこで、本研究では、Classcraft アプリケーションを通じたゲーミフィケーションがこれら二つのモチベーションに影響を与えるか、またその程度を明らかにすることを目的とする。 本研究には、九州産業大学の英語習熟度が異なる 50 名の学生が参加し、2 つの学生グループに分けられた。内発的および外発的モチベーションの変化を測定するために、ゲーミフィケーションに関する先行研究で使用された事前・事後調査を用いた。得られたデータの有意性を検証するために t-test を実施した。 本研究の結果から、Classcraft を活用したゲーミフィケーション

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は、内発的・外発的モチベーションの両方において、特に英語習熟度が低い学生に対してより大きな影響を与える可能性が示唆された。

Background

In every corner of the world, one can find instructors who are experimenting with novel pedagogical methods to boost student engagement and motivation; both of which are seen as major issues regardless of the curriculum (Lee & Hammer, 2011, Ball & Edelman 2018). Basic Psychological Needs Theory (BPNT) identifies three psychological needs—autonomy, competence, and relatedness—that need to be satisfied in order for motivation to develop (Martela et al., 2020). BPNT is just one of several theories focused on motivation that fall under the umbrella of the wider ranging framework for motivation known as Self-Determination Theory (SDT). The two primary forms of motivation identified by SDT, and the forms on which the focus of this research will be placed, are intrinsic and extrinsic motivation. Ryan and Deci (2000b) defined the former, intrinsic motivation, as the "doing of an activity for its inherent satisfaction rather than for some separable consequence," and stated that if one is intrinsically motivated, one is "moved to act for the fun or challenge entailed rather than because of external products, pressures or reward" (p. 56). Ryan and Deci (2020) explained that extrinsic motivation differs from intrinsic motivation in that it deals with behaviors that are not done for their inherent satisfaction, e.g. ones that are done for rewards.

Gamification

One strategy to address motivational issues that started gaining traction around 2010 is gamification (Toda et al., 2019). As the moniker implies, a curriculum is considered 'gamified' when it incorporates game-like characteristics, e.g. badges, point-tracking for competition rather than grading, leaderboards, and rewards for performance (Hakulinen, Auvinen, & Korhonen, 2015). Research has shown that even when rewards are not offered, games have an exceptional capacity to motivate based on the intrinsic enjoyment participants derive from them (Dicheva, et al., 2015). Thus, amidst the unceasing search for methods to increase motivation in the classroom, the integration of gamified elements into curricula was perhaps an eventuality. However, as the term gamification encompasses a diverse range of approaches, it is unsurprising that the findings have heretofore been a mixed bag. Some studies have shown that gamification is beneficial to the learning experience as it successfully

leveraged students' competitive instincts (Arnold, 2014). Moreover, Setyoadi and Patmanthara's (2023) literature review on gamification proposed that it may have an influence on students' goal orientation as it provides "structures that support mastery-approach goals" (p.399). Adzmi et. al (2024) suggested that the well-defined goals and incentives provided by some forms of gamification (like the one that is discussed in this study) are more beneficial to lower-level learners who are perhaps not as engaged as their high-level peers due to hurdles like anxiety and lack of confidence. Still, other researchers like Xiao (2022), Hanus and Fox (2015), and Almeida et al. (2023) have claimed that it can negatively affect students' motivation levels.

Gamification's Effects on Intrinsic Motivation

A lack of evidence exists regarding the influence gamification has on this form of motivation. However, the evidence that is available tends to point toward it having a negative impact with the primary support for this conclusion being that the rewards gamification often offers hamper feelings of autonomy, which is essential to intrinsic motivation (Dahlstrøm, 2012). This was the case in a study by Hanus and Fox (2015) in which they concluded that rewards are one gamification mechanic educators should take care in incorporating due to their adverse effect on intrinsic motivation. Nevertheless, Lieberoth's (2015) study showed that gamification had a moderately positive effect on intrinsic motivation as did other researchers like Camacho-Sanchez et al. (2022).

Gamification's Effects on Extrinsic Motivation

Research has shown that extrinsic motivation is derived from rewards that are "extrinsic to the activity itself" (Ball & Edelman, 2018, p.14). While the same cannot be said about intrinsic motivation, most studies have found that gamification has a positive effect on extrinsic motivation (Ryan & Deci, 2020; Wu & Santana, 2022; Lopez-Navarro et al., 2023). As a large number of studies based on gamification include some form of reward system, it is unsurprising that gamification has largely proven to be an effective way to increase extrinsic motivation. The impact that gamification has on both of these forms of motivation are discussed below.

Classcraft

Classcraft is a digital gamification platform that is available in both browser and mobile application formats. It was created in 2013 with the goal of infusing role-playing

game (RPG) elements into classrooms as a means to increase student engagement and motivation. According to Simkins (2014), an RPG is a game in which "the player portrays a character in a setting," and has a portrayal with three requisite features: "immersion, experiencing the character; acting, performing in character; and gaming, obeying and manipulating rules and goals in character" (p.27). Classcraft qualifies as an RPG experience as it requires students to create and "level-up" their own avatar – which can be viewed by the students or teachers at any point through the Classcraft application – through experience points they earn through positive in-class behaviors, e.g. submitting assignments on time, answering questions in class, and helping peers.

As Classcraft is still a relatively new gamification platform, there is a lack of research on its effects on motivation. However, research in the past has shown that it can improve reading comprehension (Armanda & Indriani, 2023), grammar performance (Witari et al., 2021), and have an overall positive effect on learning and motivation (Lirola & Daniel, 2018). As this study focuses on Classcraft's effect on motivation rather than reading comprehension or grammar, an in-depth exploration of the first two of the aforementioned studies would, perhaps, not be pertinent. However, it may be worth examining how Classcraft was incorporated into the curricula of those classrooms.

In the Armanda & Indriani (2023) study, Classcraft was used to teach reading comprehension for a mere two weeks, and the effectiveness of the platform was assessed using pre- and post-tests. The study also focused nearly solely on Classcraft's Quests feature (a feature that was not used in this study) as Quests allow instructors to conduct digital storytelling and control the pace at which students move through narratives. Based on the differences in the mean scores between the pre- and post-tests, the authors concluded that Classcraft had helped the students improve their reading comprehension. In the Witari et al. (2021) study, participants were divided into control and experimental groups, and pre- and post-tests were employed to gauge the effectiveness of the intervention on grammar performance. In this case, Classcraft was integrated into the lessons for three weeks, with the feature applied being "Boss Battles." With this feature, instructors can create questions, e.g. fill-in-the-blank grammar questions in which students choose the correct form of a verb and then defeat the boss by depleting the bosses' HP (health points). In their conclusion, Witari et al. claim that the competitive nature of Boss Battles made potentially mundane grammar exercises more rousing, leading to the improvements observed on the post-test results.

Regarding the Lirola & Daniel (2018) study, Classcraft was utilized for three weeks and data on changes in motivation levels was collected via pre- and post-study surveys. As

with the Armanda & Indriani (2023) study, the primary Classcraft feature used was Quests (students were asked to complete various types of homework assignments through Quests), but students were also allowed to accrue experience points through the Boss Battle feature. The authors created a custom story that students could advance through by completing their homework assignments via Quests, with the goal being to appraise the efficacy of Classcraft as a motivational tool. Some issues emerged with the study's analysis and findings, however, as the authors' terminology showed some inconsistencies, e.g. the study seemed to replace the term "motivation" with "interest," and the findings were not explicitly stated. In the conclusion, the authors simply stated that "overall, the impact of gamification on both groups was positive" (Armanda & Indriani, 2023, p.52). Unfortunately, it is difficult to discern which specific element, motivation, interest, or learning in general, was impacted positively.

Classcraft in the EFL Classroom

The impetus for this study stems from the research carried out by Rivera-Trigueros and Sánchez-Pérez (2020) in an EFL classroom in Spain. Rivera-Trigueros and Sánchez-Pérez explored the effects of gamification on EFL students' motivation through Classcraft. The subjects in the study were 43 secondary school students between 15 and 16 years old. To measure changes in the students' motivation levels, Rivera-Trigueros and Sánchez-Pérez required the students to complete a survey pre- and post-intervention. It should be noted that the survey was taken from another study by Barrera-Cueva et al. (2014) that focused on assessing intrinsic and extrinsic motivation within an EFL learning environment, and its reliability was confirmed using Cronbach's Alpha. The first seven of the fourteen items of the survey measured intrinsic motivation, and the last seven times measured extrinsic motivation.

The findings of the Rivera-Trigueros and Sánchez-Pérez (2020) suggested that the implementation of Classcraft had a positive, however limited, impact on the students' intrinsic and extrinsic motivation. In particular, Classcraft had a greater effect on students with higher grades (note that grades were based on a ten-point scale with scores of 7 and above being regarded as "high" and anything below that point being regarded as "low"). In all but two of the items on the survey (items 13 "I think that learning English is important to have a good job in the future" and 14 "I think that learning English is necessary to travel abroad"), a moderate increase in the post-test values was observed. The findings were similar regarding students with lower grades. However, the increase in values was not as great, and items 1 ("I work hard in English classes because I am interested in learning"), 2 ("I do all the tasks and activities proposed by the teacher because I think it fosters learning"), and 5 ("I ask

questions after the explanations in order to foster my learning") showed no change in motivation. Moreover, the values for items 2 and 7 ("I am aware of my difficulties and challenges and I work hard to foster my learning") actually decreased. Based on the survey results, they concluded that Classcraft had a limited impact on students' efforts to pass exams and their perceptions of the importance of English for their futures and a slightly negative impact on their perceptions about the usefulness of English. The greatest positive effects were seen in the students' willingness to participate in class and their levels of interest in the course. It is worth noting that the Rivera-Trigueros and Sánchez-Pérez (2020) study did have numerous limitations. The most significant of which was the length of the Classcraft-based intervention, which lasted only three weeks. As Classcraft is an RPG, it takes time for participants to earn points and level up their avatars and earn rewards., so a significantly longer study length was deemed necessary. The authors aimed to address this limitation by extending the study by nine weeks (twelve total).

Aims

In this study, the authors wish to investigate whether Classcraft can be used to positively impact the intrinsic and extrinsic motivation of Japanese EFL university students. Based on the Rivera-Trigueros and Sánchez-Pérez findings, the authors hypothesize that Classcraft will have a positive effect on both of these forms of motivation. Understanding whether gamification influences student motivation could be advantageous to EFL instructors of Japanese students. Thus, the authors intend to address the question below:

> Does gamification through Classcraft positively influence the intrinsic and extrinsic motivation of Japanese EFL university students, and if so, in what ways and to what extent?

Sampling and Methods

Student Groups

Fifty second-year students (24 male, 26 female) at Kyushu Sangyo University were selected to participate in this study. Group One, which was taught by this study's primary author, was placed in the university's 'Level 2' Listening and Speaking course, which correlates to the Common European Framework of Reference for Languages' (CEFR) A2 level. Students placed at this level have elementary or pre-intermediate-level English

abilities. Their skills are regarded as being adequate for basic exchanges or tourism, but not sufficient for academic purposes or the consumption of English-language media such as TV shows, newspapers, or magazines. The sample in Group Two consisted of 15 students (11 male, four female). The students were placed in the university's 'Level 4' Listening and Speaking course, which correlates to CEFR A1. At this level, students can do basic things, such as write simple isolated phrases and sentences, introduce themselves and others, and use basic greetings.

Surveys on Intrinsic and Extrinsic Motivation and Classcraft

Please note that the pre-study survey was taken from the Rivera-Trigueros and Sánchez-Pérez (2020) study. However, seven items geared toward gathering student attitudes toward Classcraft were added to the post-study survey. The reader should also be informed that the response choices for the Classcraft items differed from the motivational items in the original survey. While all responses for the motivational items were labeled as the following: never, rarely, sometimes, frequently, always; the responses for the Classcraft items were as follows: I strongly disagree, I somewhat disagree, I neither agree nor disagree, I somewhat agree, and I strongly agree. Only the post-study survey included questions focused on gathering data regarding students' opinions toward Classcraft. The answers for all survey questions were converted to numerical values so they could be more easily analyzed and discussed, i.e. "Never" and "I strongly disagree" correlate to 1 while "Always" and "I strongly agree" correlate to 5.

Classcraft Intervention

After the first survey round was conducted, Classcraft was implemented in three separate classrooms with the primary author of this study assuming responsibility for two classes and the secondary author assuming responsibility for one class. The primary author taught level A2 (these two classes were combined to create Group One) while the secondary author taught level A1 (Group Two). In each of the three classes, the Classcraft intervention was introduced in week three and remained in use until week fourteen (the final week of the semester). During the first two weeks of the intervention, the students were introduced to the Classcraft platform's functions, rules, desired behaviors, and rewards. They were also asked to create their Classcraft avatars and name their teams (the team members were chosen by the authors). Each week, the authors checked in with the students to ensure they grasped the

features of Classcraft and had an awareness of their experience points and what behaviors had earned them points.

Once the participants in this study accumulated enough experience points, their avatars leveled up, and they received a crystal that could be redeemed immediately for a minor reward or retained and stockpiled for greater rewards. When students earned enough points to level up and receive a crystal, they were informed by the authors and reminded of how their crystals could be used for personal gain or the betterment of the team. Students were also periodically asked to meet with their team members to discuss how they wished to use their crystals and show off the latest gear they had acquired for their avatars. As the participants worked in 'parties' (the RPG term for 'team'), most of the larger rewards also benefited their party members. In addition to experience points, students received gold each time they carried out a desired behavior. The gold they received could be redeemed for digital cosmetic rewards that could be applied to their avatars, e.g. new clothing, armor, or even pets if entire gear sets were collected.

The minor rewards the participants received were based on the avatars' "universal powers" – rewards that every student's character could redeem – or class-specific powers. Three classes were made available to the students at the beginning of the semester: guardians who specialized in preventing party members from losing crystals; healers who could assist their party members in various ways, e.g. working with a party member on an assignment; and mages who could replace party members' crystals. Each party was required to have a member of each class, and as each party in the study comprised four to five members, at least one role was played by two different students within the same party. The minor universal powers available to every student were: a. the ability to skip the weekly vocabulary crosswords (students were still required to study vocabulary and complete mastery sentence assignments), or b. redo an assignment regardless of the initial score. The greater universal power, which required a party to accumulate eight crystals (a task that took most teams several weeks to complete), provided students with a box of various snacks and candies that could be shared among the respective party's members. Some of the minor, class-specific powers led to rewards like receiving an extra day to complete an assignment, skipping part of an assignment, or having a score on a single assignment raised by a full letter grade. In the final week of class, the last Classcraft session was held, and the final survey was conducted.

Analytical Methods

The findings of this study's surveys were assessed using paired t-tests to determine significant change in the means for each item. This particular statistical test was chosen as it was designed to analyze dependent data sets, e.g. the surveys in this study in which the same participants provided responses at multiple points in time. The threshold for significance was set at $p < 0.05$, which means that changes that had less than a 5% probability of being due to random chance were considered statistically significant. Effect sizes, represented through Cohen's d values, were also calculated to complement the t-tests. An investigation into the intrinsic and extrinsic items with significance can be found in the Discussion section. The exploration present in that section includes potential explanations for the changes.

Analysis

Intrinsic Motivation Items

Classcraft had differing effects between Group One and Group Two. Generally speaking, Classcraft appeared to have a mixed, albeit minor, impact on the intrinsic motivation levels of Group One. Of the seven items referenced in Table 1.1, three items showed a decrease, and four showed an increase. Item 2 had the biggest decrease of -0.26, while item 6 had the biggest increase of 0.25. As for the Group Two data seen in Table 1.2, all items showed an increase. Items 3 and 6 showed especially big increases of 0.73 and 0.69 respectively. Items 1 and 7 also showed a notable increase of 0.46 and 0.47 respectively.

Table 1.1

Pre- and Post-Study Variations for Intrinsic Motivation: Group One

Survey Item	1. I work hard in English classes because I am interested in learning.	2. I do all the tasks and activities proposed by the teacher because I think it fosters learning.	3. I work hard in learning English because I think it would help me in my future studies.	4. I try to participate in class because I am interested in the subject.	5. I ask questions after the explanations in order to foster my learning.	6. I practice and review at home in order to foster my learning.	7. I am aware of my difficulties and challenges and I work hard to foster my learning.

	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Never	1	0	1	2	0	0	1	0	1	0	2	0	1	0
Rarely	1	0	0	0	1	0	2	3	0	0	6	6	2	5
Sometimes	3	6	1	1	1	3	3	4	6	5	12	10	6	8
Frequently	19	14	14	19	9	14	14	17	18	19	11	14	17	12
Always	11	15	19	13	24	18	15	11	10	11	4	5	9	10
Mean	4.09	4.26	4.43	4.17	4.60	4.43	4.14	4.03	4.03	4.17	3.26	3.51	3.89	3.77
Variation	0.17		-0.26		-0.17		-0.11		0.14		0.25		-0.12	

Table 1.2

Pre- and Post-Study Variations for Intrinsic Motivation: Group Two

Items of the Survey	1. I work hard in English classes because I am interested in learning.		2. I do all the tasks and activities proposed by the teacher because I think it fosters learning.		3. I work hard in learning English because I think it would help me in my future studies.		4. I try to participate in class because I am interested in the subject.		5. I ask questions after the explanations in order to foster my learning.		6. I practice and review at home in order to foster my learning.		7. I am aware of my difficulties and challenges and I work hard to foster my learning.	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Never	0	0	0	0	0	0	0	0	0	0	1	1	1	0
Rarely	2	0	1	1	1	0	1	1	0	0	5	1	2	1
Sometimes	7	5	3	1	5	1	9	7	4	3	7	5	5	2
Frequently	3	6	3	4	8	8	3	3	8	5	2	8	5	11
Always	3	4	8	9	1	6	2	4	3	7	0	0	2	1
Mean	3.47	3.93	4.20	4.40	3.60	4.33	3.40	3.67	3.93	4.27	2.67	3.33	3.33	3.80
Variation	0.46		0.2		0.73		0.24		0.34		0.69		0.47	

Note that Figures 1.1 and 1.2 below provide line chart comparisons between the pre- and post-study survey results for both groups. In these figures, the variations between the pre- and post-study survey's intrinsic items (items 1 through 7) can be found. Figure 1.1 focuses on Group One, while Figure 1.2 focuses on Group Two. Note the decreases in items 2, 3, and 4 and increases in items 1, 5, and 6 in Figure 1.1, which indicate a varied response to the Classcraft intervention. Figure 1.2 displays a similar pattern, but with larger increases in items 1, 2, and 5. This trend shows that Group Two experienced a greater positive shift in intrinsic motivation in comparison to Group One.

Figure 1.1

Pre- and Post-Study Intrinsic Survey Results for Group One

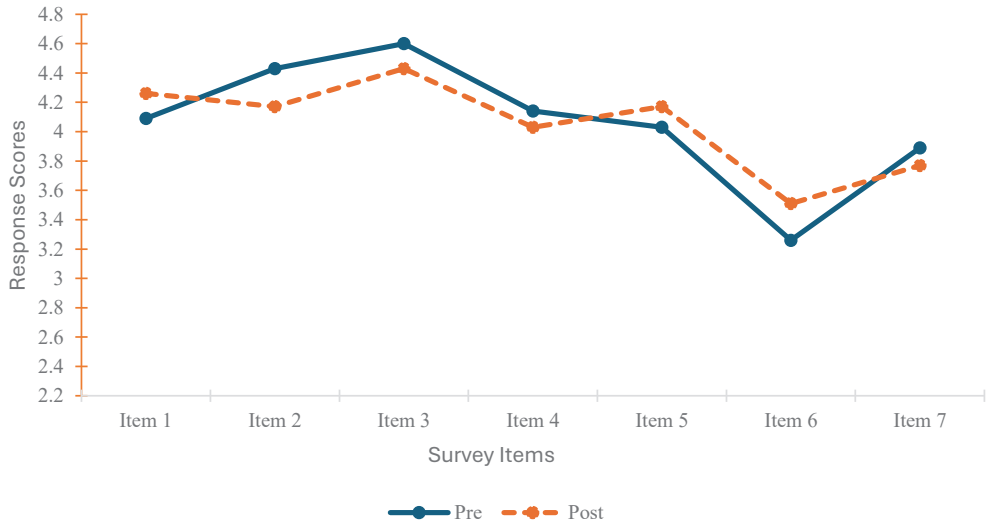
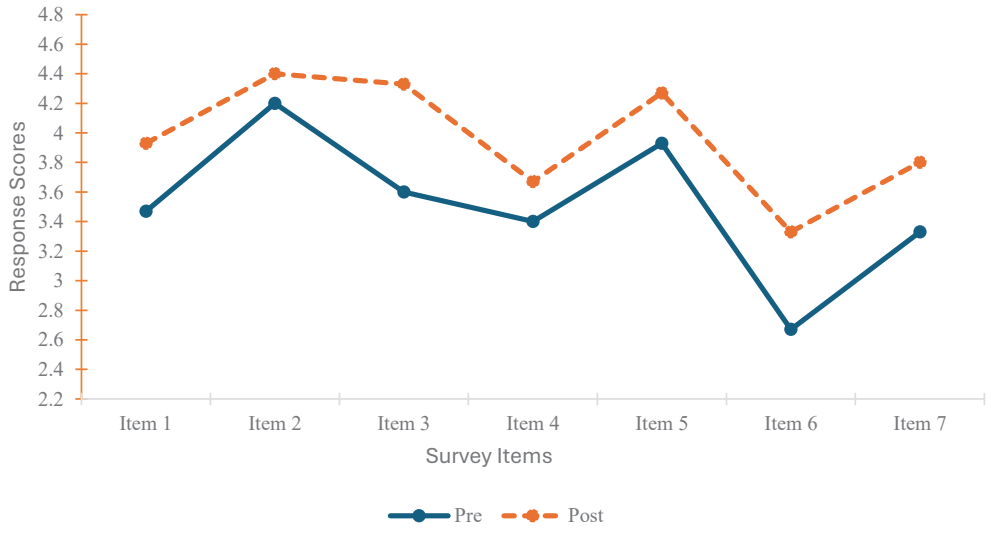


Figure 1.2

Pre- and Post-Study Intrinsic Survey Results for Group Two



Extrinsic Motivation Items

The data for the extrinsic motivation items were similar to that of the intrinsic motivation items. In Group One, the data had a mix of 4 positive and 3 negative results. Of the positive results, item 11 had the biggest increase at 0.20 while item 10 had the biggest

decrease at -0.37. In Group Two, all but one item had positive results. Items 9 and 13 had the highest increase at 0.67 while item 14 had a decrease of -0.27.

Table 2.1

Pre- and Post-Study Variations for Extrinsic Motivation: Group One

Items of the Survey	8. I study hard because I want to pass the exams.		9. I try to participate in class because I can improve my grades and my effort is recognized.		10. I do all the tasks and activities in order not to have a bad grade.		11. I ask questions after the explanations in order to be able to pass the exams.		12. I think that learning English is important for my future.		13. I think that learning English is important to have a good job in the future.		14. I think that learning English is necessary to travel abroad.	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Never	1	0	0	0	0	2	8	6	0	0	1	0	2	0
Rarely	3	3	1	3	4	5	9	14	1	0	0	2	0	2
Sometimes	7	5	9	6	3	5	12	7	2	0	3	1	3	1
Frequently	11	15	12	14	12	10	3	5	11	12	11	15	1	16
Always	13	12	13	12	16	13	3	3	21	23	20	17	18	16
Mean	3.91	4.03	4.06	4.00	4.14	3.77	2.37	2.57	4.51	4.66	4.40	4.34	4.29	4.31
Variation	0.12		-0.06		-0.37		0.20		0.15		-0.06		0.05	

Table 2.2

Pre- and Post-Study Variations for Extrinsic Motivation: Group Two

Items of the Survey	8. I study hard because I want to pass the exams.		9. I try to participate in class because I can improve my grades and my effort is recognized.		10. I do all the tasks and activities in order not to have a bad grade.		11. I ask questions after the explanations in order to be able to pass the exams.		12. I think that learning English is important for my future.		13. I think that learning English is important to have a good job in the future.		14. I think that learning English is necessary to travel abroad.	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Never	1	0	0	0	0	0	2	2	0	0	0	0	0	0
Rarely	2	1	0	1	0	1	3	1	0	0	1	0	0	1
Sometimes	3	3	8	2	5	1	7	7	4	1	5	0	6	4

Frequently	3	3	3	2	3	4	3	3	8	5	2	5	3	8
Always	6	8	4	10	7	9	0	2	3	9	7	10	6	2
Mean	3.73	4.2	3.73	4.40	4.13	4.40	2.73	3.13	3.93	4.53	4	4.67	4	3.73
Variation	0.47		0.67		0.27		0.40		0.40		0.67		-0.27	

Again, Figures 2.1 and 2.2 below provide an easier way to view the variations. In these figures, the variations between the pre- and post-study survey's extrinsic items (items 8 through 14) can be found. Figure 2.1 focuses on Group One, while Figure 2.2 focuses on Group Two. Group One, seen in Figure 2.1, displays a fairly stable trend across most of the survey items. Figure 2.2 displays more pronounced increases, which indicates that Group Two were more responsive to extrinsic motivational factors.

Figure 2.1

Pre- and Post-Study Extrinsic Survey Results for Group One

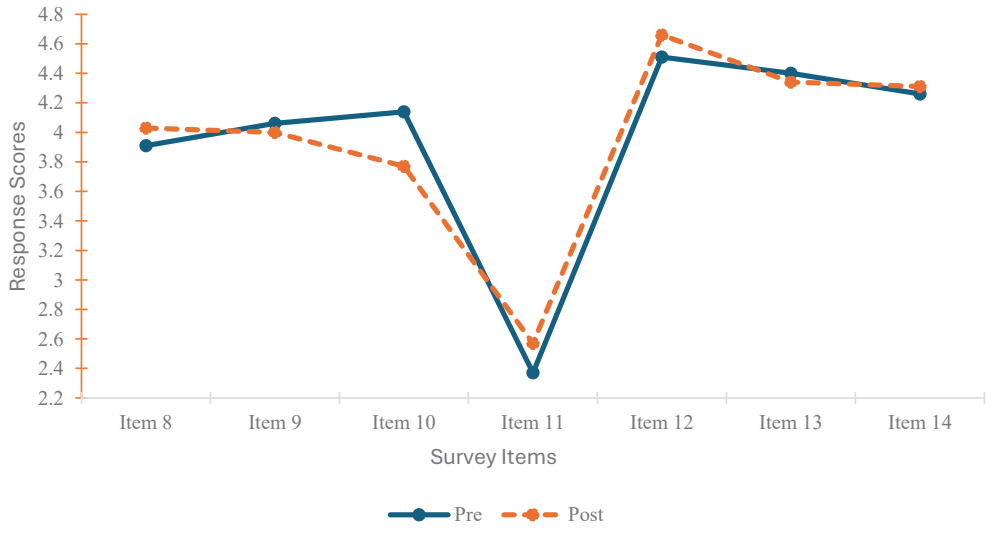
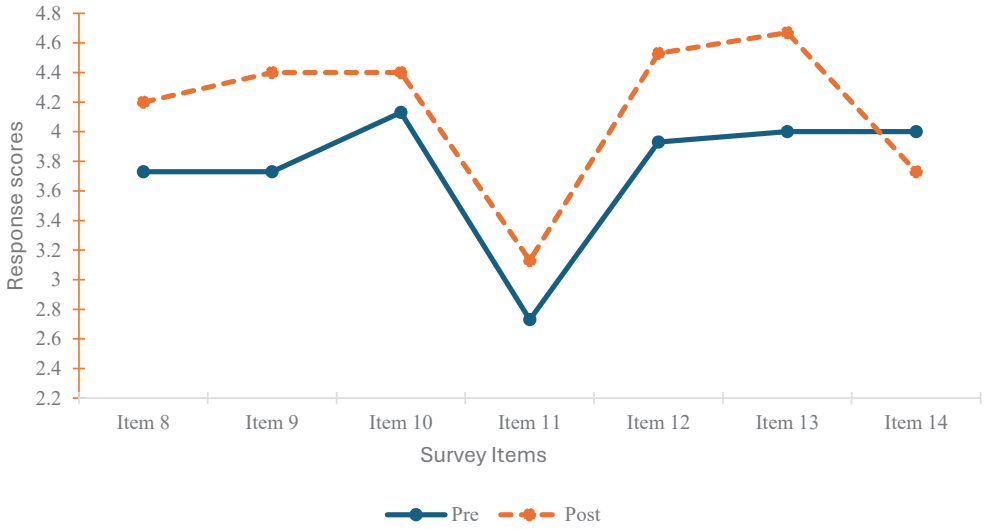


Figure 2.2

Pre- and Post-Study Extrinsic Survey Results for Group Two



Classcraft Items

Item 18 scored particularly low for Group Two at 3.07 (a difference of -0.52 compared to Group One). Group Two also scored considerably lower than Group One for item 21 at 3.07 (-0.25). In Group One, the students generally had a positive outlook towards Classcraft (item 15), with a mean score of 3.82. No students strongly disagreed with the item "I like Classcraft," while 11 of the 34 (32%) students strongly agreed to said item. The data suggests that Classcraft didn't change their motivation to answer questions in class (item 17). However, students generally enjoyed earning rewards (item 20) for Classcraft through other behaviors, e.g. submitting assignments on time. The students in Group Two also generally liked Classcraft (see item 15's mean 3.33), with 3 of 15 (20%) students answering, "strongly agree." Looking at item 16, it appears students felt that Classcraft should play a bigger role (3.73), with 3 (20%) students strongly agreeing and none strongly disagreeing. In terms of Classcraft motivating the students to complete their tasks and participation (items 17 to 21), the students generally neither agreed nor disagreed.

Table 3

Pre- and Post-Study Variations for Classcraft Items between Group One and Group Two

Items of the Survey	15. I liked Classcraft.		16. I think Classcraft should play a bigger role in the class.		17. I felt motivated to answer questions in class in order to earn Classcraft points.		18. I felt motivated to win the class games in order to earn Classcraft points.		19. I felt motivated to complete classwork on time in order to earn Classcraft points.		20. I enjoyed earning rewards from Classcraft.		21. I liked being able to improve my homework grades with Classcraft.	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Strongly Disagree	0	1	2	0	5	0	5	0	4	1	3	1	2	0
Somewhat Disagree	3	1	2	0	6	1	2	3	2	2	0	0	5	4
Neither Agree nor Disagree	11	8	8	7	8	10	3	8	13	5	10	6	12	7
Somewhat Agree	9	2	18	5	13	4	16	4	9	7	13	6	10	3
Strongly Agree	11	3	4	3	2	0	8	0	6	0	8	2	5	1
Mean	3.82	3.33	3.59	3.73	3.03	3.2	3.59	3.07	3.32	3.2	3.68	3.53	3.32	3.07
Variation	-0.49		0.14		0.17		-0.52		-0.12		-0.15		-0.25	

Intrinsic Questions t-test Results Group One

Unfortunately, as Table 4.1 below details, the t-test showed that none of the results of the intrinsic items (items 1-7) were significant according to the p-values ($p < 0.05$ suggests statistical significance). The Cohen's d values for items 1 through 3 and 6 suggest that there were small to moderate effect sizes, but the overall results indicate that any observed changes were not large enough to be considered statistically meaningful.

Table 4.1

Group One Intrinsic Questions t-test Results

	Mean & Standard Deviation				
	Pre-Study	Post-Study	*t*	*p*	*Cohen's d*

Item 1	4.09(0.89)	4.26(0.74)	0.947	0.350	0.208
Item 2	4.43(0.81)	4.17(0.95)	1.656	0.107	0.295
Item 3	4.60(0.69)	4.43(0.65)	1.528	0.136	0.254
Item 4	4.14(1.00)	4.03(0.89)	0.813	0.422	0.116
Item 5	4.03(0.86)	4.17(0.66)	1.044	0.304	0.183
Item 6	3.26(1.07)	3.51(0.95)	1.391	0.173	0.247
Item 7	3.89(0.96)	3.77(1.03)	0.725	0.473	0.121

Intrinsic Questions t-test Results Group Two

While every post-study value resulted in increases, the t-tests that were run on Group Two's data indicated that only the results for items 3 and 6 were significant. Regarding item 3, a p-value of 0.003 suggests that the difference between the pre- and post-study surveys was highly significant. The Cohen's d value of 1.069 also suggests a strong practical significance and large effect size. With respect to item 6, while the result was not as impressive as item 3's, the p-value of 0.036 and Cohen's d value of 0.767 demonstrate that the results were still well within the statistically significant range and the effect size was large.

Table 4.2

Group Two Intrinsic Questions t-test Results

	Mean & Standard Deviation				
	Pre-Study	Post-Study	*t*	*p*	*Cohen's d*
Item 1	3.47(0.99)	3.93(0.80)	1.1331	0.204	0.511
Item 2	4.20(1.01)	4.40(0.91)	0.587	0.567	0.208
Item 3	3.60(0.74)	4.33(0.62)	3.556	0.003**	1.069
Item 4	3.40(0.83)	3.67(0.98)	0.673	0.512	0.297
Item 5	3.93(0.70)	4.27(0.80)	1.099	0.291	0.452
Item 6	2.67(0.82)	3.33(0.90)	2.321	0.036*	0.767
Item 7	3.33(1.11)	3.80(0.68)	1.606	0.131	0.511

* $p < 0.05$, ** $p < 0.005$

Extrinsic Questions t-test Results Group One

The results for the extrinsic items (8-14) for Group One were largely similar to the results for the intrinsic items (1-7) insofar as that they were, with one exception, statistically insignificant. The one significant result can be seen with item 10. While it is unfortunate that it showed a decrease in extrinsic motivation, the p-value of 0.030 and Cohen's d of 0.325 suggest that a significant drop and a moderate effect size were observed.

Table 4.3

Group One Extrinsic Questions t-test Results

	Mean & Standard Deviation				
	Pre-Study	Post-Study	*t*	*p*	*Cohen's d*
Item 8	3.91(1.09)	4.03(0.92)	0.720	0.488	0.181
Item 9	4.06(0.87)	4.00(0.94)	0.387	0.701	0.066
Item 10	4.14(1.00)	3.77(1.26)	2.259	0.030*	0.325
Item 11	2.37(1.06)	2.57(1.20)	1.069	0.292	0.177
Item 12	4.51(0.74)	4.66(0.48)	1.406	0.169	0.241
Item 13	4.40(0.88)	4.34(0.80)	0.529	0.600	0.071
Item 14	4.29(1.05)	4.31(0.80)	0.189	0.851	0.021

* $p < 0.05$

Extrinsic Questions t-test Results Group Two

Finally, the t-test results for Group Two's responses to the extrinsic items (8-14) can be found in Table 4.4 below. These were the most promising results as the t-tests showed that the increases found with items 9, 12, and 13 were statistically significant. Both items 9 and 12 had p-values of 0.045, suggesting moderate significance, while the Cohen's d values (0.715 and 0.895 respectively) indicated large effect sizes. Item 13's p-value of 0.036 and Cohen's d value of 0.805 suggest high significance and a large effect size.

Table 4.4

Group Two Extrinsic Questions t-test Results

	Mean & Standard Deviation				
	Pre-Study	Post-Study	*t*	*p*	*Cohen's d*
Item 8	3.73(1.33)	4.20(1.01)	1.073	0.302	0.398
Item 9	3.73(0.88)	4.40(0.99)	2.197	0.045*	0.715
Item 10	4.13(0.92)	4.40(0.91)	1.000	0.334	0.295
Item 11	2.73(0.96)	3.13(1.19)	0.898	0.384	0.369
Item 12	3.93(0.70)	4.53(0.64)	2.201	0.045*	0.895
Item 13	4.00(1.07)	4.67(0.49)	2.321	0.036*	0.805
Item 14	4.00(0.93)	3.73(0.80)	0.807	0.433	0.311

* $p < 0.05$

Discussion

Contrary to the original study, Group One's responses to the survey indicate that they did not feel that Classcraft fostered their learning. Looking at the intrinsic-focuses items first, Classcraft appears to have not had a significant effect on their intrinsic motivation levels.

Note that in the Rivera-Trigueros & Sánchez-Pérez (2020) study, all intrinsic items showed at least a slight increase and only two items (13 "I think that learning English is important to have a good job in the future" and 14 "I think that learning English is necessary to travel abroad") resulted in decreases (-0.12 and -.0.26 respectively). With Group Two in this study, intrinsic motivation levels increased across the board. However, the only statistically significant increases found according to the t-tests were in items 3 ("I work hard in learning English because I think it would help me in my future studies") and 6 ("I practice and review at home in order to foster my learning"). Item 3's especially high significance is difficult to analyze, but certain elements of Classcraft like the sense of ownership over their customizable characters may have led the students to feel more invested in their learning. Also, working toward goals with their peers in parties may have reinforced or even augmented internal beliefs about the importance of English for future studies. With respect to item 6, the high degree of autonomy likely increased intrinsic motivation, resulting in some students possibly increasing their study time at home.

Regarding extrinsic motivation, the decrease found in item 10 ("I do all the tasks and activities in order not to have a bad grade") for Group One could perhaps be attributed to the recourse provided to the students by the Classcraft rewards, e.g. students could use crystals to skip assignments or improve poor scores. In other words, as students knew the rewards provided a safety net, they may have been less fearful of the ramifications of failing to submit their assignments in a timely manner. With respect to Group Two's statistically significant responses to items 12 ("I think that learning English is important for my future") and 13 ("I think that learning English is important to have a good job in the future"), it is difficult to draw direct connections between Classcraft and the importance students believe that English abilities have on their futures. One possible explanation could be that Classcraft may have helped students create a connection between learning English to concrete goals and future benefits. As mentioned in the background, Setyoadi and Patmanthara (2023) supported the notion that gamification may have an influence on students' mastery-approach goal orientations. As mastery-approach is a type of goal-orientation that occurs when a person desires to complete a task for the sake of self-improvement or life outcomes, that could provide an explanation for the increase in the students' belief that English is important to their futures.

The results for Group Two were in alignment with the Rivera-Trigueros & Sánchez-Pérez (2020) study. Responses to both the intrinsic and extrinsic motivation-based items saw an increase, with the exception of item 14 ("I think that learning English is necessary to travel

abroad"), where the decrease was -0.27. The overall interest in English in Group Two started at a lower level than Group One, with 6 of 14 motivation items being more than 0.5 lower and one being 1.00 lower. Motivation starting at a lower level in Group Two may account for the more significant increase that was observed by the end of the semester. The increase in item 6 ("I practice and review at home in order to foster my learning") is likely due to students being able to earn rewards for completing their assignments on time. It is important to note that none of the students used their crystals during the semester. As students were not directly asked why they did not use their crystals, the authors can only offer a couple of plausible explanations for this: First, it is likely that some students did not trade their crystals for rewards since the rewards—e.g. "Skip an assignment" or "Redo an assignment"—would not have been sufficient to help them reach a passing score for the class. Another explanation could be that some students felt uncomfortable using their crystals for personal gain when the entire team could benefit from each group member saving his or her crystals for end-of-the-semester group rewards.

The pronounced disparity regarding the efficacy of Classcraft as a motivational tool observed between the two groups (as seen in the t-test results above) certainly requires some exploration. Before the study was conducted, the authors hypothesized that Classcraft would have a positive effect on both intrinsic and extrinsic motivation for a number of reasons. The autonomy provided to the students through features like character customization and role selection and sense of growth granted by the leveling system were expected to have a positive impact on intrinsic motivation. It was presumed rewards for desirable behaviors would do the same for extrinsic motivation. Ultimately, the results showed that Classcraft only had a significant effect on the low-level group (Group Two). This is in stark contrast to the Rivera-Trigueros & Sánchez-Pérez (2020) study as their findings indicated that Classcraft is especially effective with high-level students.

While a more refined study is likely necessary, several possible factors may account for the discrepancy between the two groups. First, low-level learners typically have a greater need for sources of motivation, especially ones that affect extrinsic motivation. It was stated earlier that Adzmi, et. al (2024) claimed that well-defined goals provided by gamified applications like Classcraft may help lower-level learners become more engaged and overcome barriers like anxiety and low confidence. Conversely, per Rutledge, et al. (2018), high-level students tend to place a higher value on autonomy with respect to their education, so external rewards may feel unnecessary or even intrusive to them. Another potential explanation is that the high-level students may have felt more confident participating

independently since advanced students often have less need for support and collaborative elements that applications like Classcraft provide. Rutledge et al. (2018) also mentioned that there is "a positive, linear relationship between specific, challenging goals and performance," and that such goal-setting can enhance self-efficacy and the completion of said goals leads to "higher satisfaction and [spur] intrinsic motivation" (p.1017). As Group One students were already higher achievers than Group Two, it is possible that they required more demanding goals than Group Two in order for Classcraft to have the same effect on their motivation.

Future Directions

In a future study, several refinements to the methods could be made. First, it would be beneficial to conduct interviews with the students to gather explanations for their survey responses. In this study, the authors could only offer conjecture as to why changes occurred between the pre- and post-survey results and why there were such drastic differences between the two groups. Alternatively, open-ended questions could be added to the surveys to complement the Likert scale items. Also, more enticing rewards could be offered to the students in exchange for their crystals. This would be part of the research design as Classcraft does not reserve control over the rewards. For example, Classcraft suggests connecting the reward system to the school store so students can spend their crystals on school-wear or practical items, e.g. notebooks, pens, etc. Next, this study was conducted as a collaborative experience in which the students formed parties (teams) for the purpose of pooling their resources (in the form of crystals) to earn greater rewards.

In a subsequent study, it may be worthwhile to assess the efficacy of adding a competitive component between the parties so that the greater rewards are reserved only for the top party(ies). Other researchers might also consider introducing a control group that is not exposed to Classcraft but works with a similar syllabus. In doing so, comparisons between gamified and non-gamified instruction could be observed. Additionally, longitudinal studies that assess whether the effects that Classcraft has on intrinsic and extrinsic forms of motivation persist over time could be beneficial. Finally, the instructors that are chosen to incorporate Classcraft into their classrooms should receive training on the platform to ensure that its implementation is uniform across all classes.

As an aside, one of Classcraft's main deficiencies is the lack of translations for the Quest feature. The Quest mode, in which students slowly progress through a narrative by completing homework or in-class tasks, is advertised as one of Classcraft's primary features. Unfortunately, due to the complexity of the language used in the Quest mode, neither of the

two authors' student groups were able to comprehend the narrative, so the mode was abandoned by both authors. If the two authors revisit Classcraft in a future study, it would be beneficial to work with the Classcraft developers to either add Japanese translations or even a function that would allow teachers to add translations of their own to the mode.

Conclusion

As mentioned in the Background section, previous research has suggested that rewards undermine intrinsic motivation, but the results of this study did not conclusively suggest this is the case. However, the findings of this study are largely harmonious with past studies that show how gamification can positively impact extrinsic motivation. These research findings should reinforce the importance of tailoring motivational approaches to meet each student group's needs, which is a key priority to LERC instructors who work with learners spanning across the spectrum of English proficiency levels. Next, as previously stated in Future Directions, the effectiveness of Classcraft as a motivational tool may have been hindered by the students' inability to comprehend the narrative within the Quest mode, which is a main component of Classcraft. If this shortcoming is addressed by the Classcraft team, future studies may be able to more clearly elucidate Classcraft's impact on motivation. Furthermore, the Quest mode would make Classcraft more useful to other LERC courses, e.g. Reading & Writing, as any assignment type can be used to advance through the mode's narrative.

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