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Gamification and EFL Writing: Effects on Student Motivation*

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Many Korean students report lower motivation for English language writing. Gamification, a field receiving much attention in recent years, purports to increase motivation by adding game-like mechanics to ordinary tasks. This study reports on a quasi-experimental study aiming to examine gamification on a Korean university level English academic writing course to identify the effects of gamification on EFL writing motivation and writing performance. The Academic Writing Motivation Questionnaire (AWMQ) measured levels of English writing motivation among 22 Korean university students, half taking a course with additional gamified content, the rest taking the same course without gamified content. Mean scores for five motivational factors identified within the AWMQ were examined both for pre- and post-treatment and between treatment and control groups. Self-reported motivation showed a significant improvement in four of five factors for the treatment group post-treatment, but only one factor showed significant difference between the treatment and control groups. Comparison of writing samples produced by the participants and final course grades show no significant difference in EFL writing outcomes for the two groups. The results of gamification on motivation and writing outcomes, as well as potential areas of further research and implications for pedagogy related to gamification are discussed.

[EFL writing/motivation/gamification/Korean EFL learners/self-determination theory]

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I. INTRODUCTION

Gamification has become a common term in education research over the past decade. Gamification refers to using game-like elements or systems in non-game activities in order to change behaviors by making the desired activity more appealing or interesting (Chou, 2015; Kapp, Blair, & Mesch, 2014). Research devoted to improving classroom results through gamification has focused on a wide range of areas, and many studies suggest that it does have a beneficial effect on English language education (Dehghanzadeh, Fardanesh, Hatami, Talaee, & Noroozi, 2019). However, a majority of studies on the effects of gamification in language learning focus on grammar/vocabulary or general language learning (ibid). Recent studies suggest gamification can improve academic writing participation and performance among Hong Kong high school students (Lam, Hew, & Chiu, 2018) and reduce anxiety related to English language writing among Turkish university students (Yavuz, Ozdemir, & Celik, 2020), but to date little research of this type has been done in South Korea. Research on the motivational effects of gamification of English language academic writing at the tertiary level is an area in need of more study.

Studies of motivation and affect in English language education suggest that a desire to engage with language and a positive attitude towards learning facilitate language acquisition (Khajavy, MacIntyre, & Barabadi, 2018). When the researcher's students are asked which aspects of English language education are the most difficult or that they are least enthusiastic about, writing is a common response. This is backed up by a meta-analysis by Teimouri, Goetze, and Plonsky (2019) which found that, across multiple studies, most learners report the highest levels of second language anxiety in relation to listening and writing compared to reading and speaking (p. 375). Akbarov and Aydogan (2018) reported above average general language motivation for a cohort of Turkish ELLs, and that their writing anxiety was below average, suggesting that reducing anxiety may lead to better outcomes. If English language writing can become an enjoyable aspect of learning English rather than a source of anxiety, and gamification can lead to better attitudes and stronger engagement, gamification of the writing classroom might be a good tool to assist learners and improve outcomes. This study compares Korean students' self-reported survey data on writing motivation, as well as graded writing samples, from gamified and non-gamified writing courses at the university level, to see what sorts of effects the gamification program has on learner motivation and engagement towards English L2 writing as well as effects on L2 English writing ability.

II. REVIEW OF THE LITERATURE

1. Studies of Educational Motivation

Schunk, Meece, and Pintrich (2014) define motivation as "the process whereby goal-directed activities are instigated and sustained" (p. 5). This definition follows from the self-determination theory (SDT) enumerated by Deci and Ryan (2008), which suggests that the strength of motivation is due to the type of motivation more so than the amount of motivation an individual possesses. Educational research in motivation often examines intrinsic (self-generated) versus extrinsic (outside generated) motivation, but SDT theory proposes that autonomous motivation, where value lies in free choice to engage in the activity being performed, whether intrinsically or extrinsically generated, contrasts with controlled motivation, in which value is placed on the activity by sociocultural or emotional pressure to conform, and a lack of any motivation is considered amotivation (Deci & Ryan, 2008; Ryan & Moller, 2017).

Within the field of SLA research, theories such as Gardner's socio-educational model of motivation (Gardner, 2006) suggest that motivation arises from a combination of cultural and educational situational attitudes, integrative purposes, and instrumental purposes. Motivation and ability then contribute to language achievement, which is moderated by and also influences levels of language anxiety. Gardner's model posits that situational attitude and integrativeness are sufficient, but that instrumentality can also play a part in motivation, and that all three support and reinforce one another. Dörnyei's (2003) process model of L2 motivation suggests that learners pass through three distinct stages of motivation, each of which relies on differing motives or reasoning. The Preaction Stage is defined by choices made to engage in an activity or not, which lead to setting goals, making plans, and finally initiating the action. The Actional Stage involves motivation to persist in the action and carry out tasks that lead to completion. Finally, the Postaction Stage involves retrospection of the activity and evaluation of the effort. At each of these three stages, Dörnyei (2003) identifies influences which map to Gardner's situational and cultural attitudes, integrative factors, and instrumental factors which can influence the motivation, but each stage has distinct variations of each factor.

Noels (2015) maps ELL motivations to Deci and Ryan's (2008) SDT construct. Through extensive surveys of a variety of language learners in a variety of learning contexts, Noels (2015) presents a taxonomy of motivational orientations ranked by how much self-determination or control each orientation represents. At the bottom is amotivation, where language learners engage in the activity only because of external requirements, and will likely cease once those requirements have been met. At the top is intrinsic motivation, where learners engage in language learning for pure enjoyment. Between these, motivational

orientations can be divided into four categories that move from more controlled to more autonomous forms of extrinsic motivation. External regulation relates to language learning for purely extrinsic motivational factors, such as preparing for employment requirements or promotion. Introjected regulation is similarly extrinsic, but stems from the learner's feelings of self-worth or how learning the language may improve their social status. Identified regulation involves actions selected by the learner to achieve a personal goal, rather than required by some outside authority. The learner chooses to improve in language ability because they see the inherent value of the language. Integrated regulation happens when language learning per se is not the goal, but linguistic ability is important for achieving the learner's goals or reflecting their values. This orientation is still extrinsic, but reflects a high level of autonomy.

This application of SDT by Noels (2015) appears to complement the motivational constructs of Gardner (2006) and Dörnyei (2003). Amotivation and external regulation seem keyed to instrumentality, introjected regulation combines instrumentality with situational attitude. Identified regulation combines situational attitude with integrative purposes. Integrated regulation is highly keyed to integrative purposes. Dörnyei's (2003) Process Model can be a useful tool for examining how learners with any of the SDT orientations engage in language learning activities in order to meet the goals or requirements they orient towards. It should be noted that Noels (2015) does find that most learners report a mix of self-determination orientations, as learning for enjoyment or to better integrate into a language community, for example, do not preclude external requirements for achieving high scores on language tests, opportunities to improve one's educational or employment situation, or a desire to find esteem, be it self-esteem or that of peers.

Studies of student motivation generally assume a positive effect of motivation upon performance, but according to Cheung (2018), few provide empirical evidence of these effects, and more research is needed in this area. Many studies also fail to link measures of motivation to measurable language learning gains (Teimouri et al., 2019). Similarly, language anxiety has been shown to have a negative effect on language acquisition and performance of language skills (MacIntyre, 2017). Some studies (Buckley & Doyle, 2016; Cheung, 2018) suggest that at least for some populations of language learners, efforts by teachers to employ motivational strategies lead to a general increase in learner motivation for writing in the L2. Interest in L2 writing, or any aspect of L2 learning, can also be bolstered by including original source materials, building enthusiasm towards the material, providing information that may surprise the learners or pique curiosity, allowing freedom of choice in how to engage with the material, and through integrating personal interests of the learners into the design (Schunk et al., 2014). Gamification is touted as one method in which all of these methods of interest building can be integrated into classrooms (Chou, 2015; Matera, 2015).

Looking specifically at writing motivation, Payne (2012) identifies five factors from factor analysis of her Academic Writing Motivation Questionnaire (AWMQ). Enjoyment "examined participants' enjoyment or apprehension to engage in writing activities" (p. 22). Self-efficacy "assessed participants' beliefs about their writing ability" (p. 22). Instrumentality "related to participants' beliefs about writing as a means of achieving success" (p. 22). Recognition "related to receiving rewards for writing or feedback on writing" (p. 22). Effort "had to do with the effort put forth to tackle a writing task" (p. 22). Payne specifically identifies Enjoyment as intrinsic motivation and both Instrumentality and Recognition as extrinsic motivation, but makes no comment about Self-efficacy or Effort. Looking at the factors through the lens of SDT theory, Enjoyment, Self-efficacy, and Effort appear to be more autonomous motivational factors, while Instrumentality and Recognition appear to be more controlled motivational factors.

2. Studies of Gamification

Gamification is a young field of study. The term first appeared in 2008 and became widespread in 2010 (Deterding, Dixon, Khaled, & Nacke, 2011). Since then, it has been adopted by researchers in economics, psychology, business, and marketing, among other fields (Chou, 2015). Studies applying gamification to education are increasing. An early survey of gamification in any sort of education research by de Sousa Borges, Durelli, Reis, and Isotani (2014) found 357 total papers related to gamification, with 48 being education related but only 26 of those 48 qualifying for inclusion in their analysis. Five years later, a meta-analysis specifically looking for studies of gamification in ESL by Dehghanzadeh, et al. (2019) initially identified 94 publications as potentially relevant, with 22 articles retained for inclusion in their analysis. While the past decade has seen an increase in gamification studies, and research into gamification of language education is growing, some areas have received more attention than others. Dehghanzadeh, et al. (2019) found more research being conducted at the secondary level than the primary or tertiary level, with the most common focus on vocabulary, and only three studies involving English language writing.

The purpose of gamification is to increase motivation to perform various real-world tasks by adding a layer of playfulness or challenge to the activity (Chou, 2015; Richter, Raban, & Rafaeli, 2015). Gamification is not a panacea, however, as the manner of gamification may target differing forms of motivation, and have differing results depending on the stance of the learner toward the subject matter (Buckley & Doyle, 2016). Gamification can also have negative effects in educational settings. Toda, Valle, and Isotani (2018) suggest that poorly implemented gamification can lead to loss of performance, undesired behaviors, indifference, and declining effects among learners. Chou (2015) argues that certain factors of motivation such as engaging curiosity or creating feelings of achievement and empowerment may lead

to higher and longer lasting levels of motivation, while others such as scarcity or unpredictability create only short-term motivation, and run the risk of becoming demotivational if overused.

Studies of gamification in ESL tend to claim positive results in motivation and educational outcomes (Dehghanzadeh, et al., 2019), but relatively few studies have examined the effects of gamification upon ELLs and writing. Some studies have touched upon writing among all four skills (Baldauf, Brandner, & Wimmer, 2017; Kétyi, 2016; Won & Kim, 2018), but the researcher found little evidence of dedicated gamification intervention specifically directed at motivation or educational outcomes of ESL/EFL writing. Kramer and Kusurkar (2017) found that gamification helped promote autonomous motivation for science writing among a cohort of French university students, so it is plausible to assume that gamification could also increase motivation for EFL students to write in English. With this in mind, this study will investigate the following questions:

Q1: Does gamification of a writing course improve EFL writing motivation?

Q2: Does gamification of a writing course improve EFL writing performance?

III. RESEARCH DESIGN

1. Participants

This quasi-experimental study was conducted as part of regular undergraduate Low Intermediate English Composition courses taught at a public university in Korea. In total, 120 undergraduate students participated in the courses, 60 in gamified sections of the course, and 60 in standard non-gamified sections of the course. All students voluntarily completed the AWMQ survey instrument, detailed below, at the beginning and end of the semester. In the gamified course, students that willingly took part in the gamification activities became the treatment group (n = 11). A random selection of students was chosen from the non-gamified course to be the control group (n = 11).

The participants consisted of Korean undergraduate students in their second (n = 13; treatment 6, control 7), third (n = 5; treatment 3, control 2), or fourth (n = 4; treatment 2, control 2) year of university. Most were English majors, with the one exception being an economics major in the treatment group. The treatment group consisted of 6 males and 5 females, while the control group had 4 males and 7 females.

In order to test the assumption that the two populations were of similar English ability, a paragraph writing sample was taken at the beginning of the semester from all students. The writing sample was a comparison paragraph between 50 and 75 words long, with a topic decided by each participant. The requirements were to have a topic sentence and at least

three points of comparison/contrast for the two subjects, along with a closing sentence. These writing samples were rated for grammar (5 points), organization (5 points), clarity of expression (10 points), and naturalness of expression (10 points), for a maximum score of 30 points, by a native speaker colleague.

First, the results from the gamified course (n = 60, M = 14.23, SD = 1.38) were compared to the results from the non-gamified course (n = 60, M = 13.87, SD = 1.57). An independent samples t-test showed no significant difference, $t(118) = 1.79$, $p = .065$. This test was performed to examine if the pools from which the participants were drawn were equivalent. Looking specifically at the treatment group (n = 11, M = 14.09, SD = 1.38) and the control group (n = 11, M = 14.09, SD = 0.94) also showed no significant difference, $t(20) = 0.00$, $p = .086$. After the initial AWMQ was administered, overall AWMQ scores for the control (n = 11, M = 2.68, SD = 0.43) and treatment groups (n = 11, M = 2.72, SD = 1.08) were compared as well. Initial levels of motivation for the two groups also showed no significant difference, $t(20) = 0.15$, $p = .91$. The assumption was made, based on these comparisons, that the two populations were equivalent in English ability and motivation at the beginning of the semester.

2. Survey Instrument

The Academic Writing Motivation Questionnaire (AWMQ) was developed by Payne (2012). The survey is a self-report instrument with thirty-seven Likert-type questions, ranked 0 (strongly disagree) to 4 (strongly agree), related to writing motivation, and three demographic questions: gender, number of books read for pleasure, and academic major. Figure 1 shows a portion of the AWMQ (Payne, 2012).

FIGURE 1
AWMQ Sample

ACADEMIC WRITING MOTIVATION QUESTIONNAIRE (AWMQ)
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In order to better understand what you think and how you feel about the writing you do in your courses, please respond to each of the following statements by circling the number in one of the boxes or providing the requested information. Thank you!

Statements	Strongly Disagree 0	Disagree 1	Uncertain 2	Agree 3	Strongly Agree 4
01. I enjoy writing.	0	1	2	3	4
02. I like to write down my thoughts.	0	1	2	3	4
03. I use correct grammar in my writing.	0	1	2	3	4
04. I complete a writing assignment even when it is difficult.	0	1	2	3	4
05.Being a good writer will help me do well academically.	0	1	2	3	4

Payne (2012) lists a Cronbach reliability coefficient of .95, and claims content validity based on the research surveyed at the time, other measures of writing motivation, and "expert advice" (p. 25). The current survey data has a Cronbach reliability coefficient of .90 on the pre-treatment survey, and .94 on the post-treatment survey. The Cronbach alpha levels for each of the five factors were somewhat lower, but still relatively good. Enjoyment is .77 on the pre-treatment survey and .80 post treatment. Self-Efficacy is .79 pre, .83 post. Instrumentality is .85 pre, .86 post. Recognition is .81 pre, .83 post. Effort is .77 pre, .81 post. While the instrument was designed with L1 learners in mind, discussion of the item content with colleagues suggests that all but two items appear relevant to tertiary L2 learners' concerns and desires with regard to L2 writing. Item 25 asks about enjoyment of writing literary analysis papers, and Item 28 asks about enjoyment of writing research papers. Most L2 English learners in Korea, even at the tertiary level, are not engaged in these types of writing. However, the current study is focused on English majors, who do, or may soon, engage in these types of writing as part of their studies. In order to determine whether these two items skewed results or not, overall reliability was recalculated twice, removing one item each time. Removing Item 25 from a reliability measure gives a reduction of Cronbach's alpha to .89 on the pre-treatment results, and no change on the post-treatment results. Removing Item 28 had no effect on pre- or post-treatment results. It seems that the two items, while possibly not directly relevant, did not skew the reliability of the instrument. While not designed for L2 English writing, the AWMQ is believed by the researcher to be a valid and reliable instrument for university level L2 English majors, although it may not be appropriate for younger or less advanced L2 learners, or non-majors studying English.

After administering the survey, an exploratory factor analysis by Payne (2012) identified five main factors: Enjoyment (12 items), Self-Efficacy (8 items), Instrumentality (5 items), Recognition (4 items), and Effort (3 items). There were three more minor factors identified in Payne's analysis, but factor six (3 items) had no discernible unifying variable, while factors seven and eight each consisted of only one item. Results of the five items that make up factors six through eight are retained in the overall score analysis of this study, but only the five main factors will be analyzed in detail.

The current study looks first at the results of the AWMQ survey administered at the beginning (pre-treatment) and ending (post-treatment) of a normal 15-week university level English academic writing course, with both gamified (treatment) and non-gamified (control) course content. Results from each of the five main factors identified by Payne (2012): Enjoyment, Self-Efficacy, Instrumentality, Recognition, and Effort, are examined individually in order to answer the first research question.

To answer the second research question, writing outcomes of the participants were compared. The assignment was to write a five-paragraph essay of 300 to 500 words in length, of descriptive, comparative, cause-effect, or classification style, on a topic chosen by the

participant. Participants were given freedom to select their topic and essay style in order to make the essays as relevant as possible to the interests and lived experiences of the students, rather than forcing topics in which they may have had little authentic interest. Regardless of writing style, each essay was required to have an introductory paragraph with thesis statement, at least three body paragraphs developing the topic, and a concluding paragraph which summarized and provided a closing statement. These essays were rated by the same native speaker colleague who rated the initial writing samples used to test the assumption of equivalent English proficiency, using the same criteria used in the initial assessment: grammar (5 points), organization (5 points), clarity of expression (10 points), and naturalness of expression (10 points), for a total possible score of 30 points. Final grades in the course were also used for purposes of this analysis.

3. Procedure

To gamify the 15 week long low-intermediate English composition course, before the semester began, a series of challenges related to the course content was created and placed on a website. These challenges were based on a variety of tasks related to academic writing such as vocabulary development, brainstorming, drafting, editing and revising, identifying thesis statements, and so on. The development of challenges was based on ideas from Matera (2015) and Crawford (2003). The website was designed to allow certain challenges for the entire semester, while other challenges were only available for one month (September, October, November, December, respectively). This was done to add time pressure to complete challenges, so that activities involved in the challenges could progress in difficulty, and to mirror content being taught in the course during the semester. A scoreboard was set up on Google Sheets for participants to check their progress and earn badges, and the course group messaging app was also used to announce high scorers each month (Matera, 2015).

The gamification goals were based on guidelines offered by Matera (2015) such as building friendly competition between groups of students, connecting content to student interest, communal activities, timed events, piquing curiosity, and most importantly freedom of choice over which gamified activities to engage in or not. The researcher believed that curiosity and challenge would lead to engagement, which would then generate higher levels of intrinsic motivation towards writing. In order to increase curiosity and the "fun" factor, a superhero story and theme in which the learners could aid various superheroes to combat the heroes' associated supervillains was applied to the challenges as most learners expressed interest in the many popular films of that genre (Kapp, et al., 2014; Matera, 2015). The gamification mechanics were for learners to engage in activities and challenges presented on the website, submit them in class or via email, and to earn points and badges that would place them on the leaderboard. Points, badges, and leaderboards (PBL) are common

gamification mechanics in both education and incorporate gamification settings (Chou, 2015; Kapp et al., 2014).

The writing course in which this study was conducted implemented a process writing approach to academic text writing, focusing on prewriting (topic selection, brainstorming, outlining) to drafting (first draft, peer feedback, revision), and finishing (editing, final draft). The process employed was recursive rather than linear, with learners advised to return to previous steps or repeat steps as necessary. The content covered descriptive, comparison, cause-effect, and classification writing styles. Classes involved a mixture of lectures, practice writing activities, peer feedback sessions, and individual writing workshop time with the instructor. Students were asked to produce one paragraph in each writing style, both in draft and final form, during the course of the semester and to write a five-paragraph essay in both draft and final form at the end of the semester. Both control and treatment courses followed the same syllabus aside from the gamified content given additionally to the treatment group.

In week one of the semester, participants in both the treatment and control groups were given the AWMQ before any gamified content was introduced to the treatment group. In week two, gamified content was introduced to the treatment group. The link to the website containing the challenges was provided via a group communication smartphone application that was used for other class messages and reminders. Students in the treatment group were told that these activities were strictly voluntary and would not be part of the course grade, but could potentially help to improve the quality of course work. The point scoring system was explained, and participants were informed that high scorers would win snacks as prizes each month. Throughout the semester, participants were regularly reminded of the gamified content, typically at the close of each class. Each month, small prizes consisting of snacks or a drink were awarded to the participants who accumulated the highest number of points for that month.

At the end of the semester, the AWMQ was again administered to both the gamified and non-gamified courses to measure differences in motivation due to gamification. Final scores for the class, as well as scoring of the final essays by a native speaker as detailed above, were used to compare differences in English L2 writing outcomes for the treatment and control groups. Analysis of results was done with IBM SPSS Statistics v.26 software. AWMQ responses were valued 0 (strongly disagree) to 4 (strongly agree). Mean values for each item on the AWMQ were calculated to get overall scores. Means for sets of AWMQ items related to each factor identified by Payne (2012) were calculated in the same manner. The means were analyzed for differences between pre- and post-treatment results with paired samples t-tests. Differences between the treatment and control groups for post-treatment survey results were analyzed using independent samples t-tests with treatment type as the grouping variable. The native speaker assessment of writing samples and final grades were compared

using independent samples t-tests, with treatment type as the grouping variable.

IV. RESULTS

The results for the pre-treatment AWMQ survey results for the treatment group and control group were averaged by totaling all responses for the items that make up each factor identified by Payne (2012) then dividing by the number of respondents. These numbers were then analyzed in SPSS. The pre-treatment survey descriptive data are presented in Table 1.

TABLE 1
Pre-Treatment AWMQ Descriptive Data

	Treatment Group (N = 11)			Control Group (N = 11)		
Factor	*M*	*SE*	*SD*	*M*	*SE*	*SD*
Overall	2.72	.33	1.08	2.68	.13	.43
Enjoyment	2.14	.12	.39	2.34	.18	.59
Self-Efficacy	2.06	.17	.58	2.52	.16	.53
Instrumentality	3.22	.17	.55	3.47	.12	.39
Recognition	3.18	.14	.45	3.07	.16	.53
Effort	2.36	.17	.57	2.55	.21	.70

Results of the post-treatment AWMQ survey results for treatment and control groups were averaged in the same manner as the pre-treatment results, and also analyzed in SPSS. Descriptive data for post-treatment survey results are presented in Table 2.

TABLE 2
Post-Treatment AWMQ Descriptive Data

	Treatment Group (N = 11)			Control Group (N = 11)		
Factor	*M*	*SE*	*SD*	*M*	*SE*	*SD*
Overall	3.04	.11	.36	2.76	.13	.42
Enjoyment	2.77	.18	.58	2.43	.17	.55
Self-Efficacy	2.77	.12	.41	2.75	.15	.51
Instrumentality	3.78	.05	.17	3.11	.16	.54
Recognition	3.41	.14	.48	3.18	.14	.46
Effort	3.06	.11	.36	2.88	.21	.70

Pre- and post-treatment data for each of the five factors identified by Payne (2012) were compared with 2-tailed paired samples t-tests, with the alpha level set at .05. The results are presented in Table 3 and show that for the control group, Instrumentality showed a significant difference from the decrease in mean value over time, while the other factors' means did not vary not significantly over time despite improvement. On the other hand, the treatment group's means for all factors improved over time, and all showed significant differences save for Recognition.

TABLE 3
Pre- and Post-Treatment Paired T-Test Results

Motivational Factor	*MD*	*SD*	*t* (df 10)	*p* (2-tailed)	Cohen's *d*
		Control Group			
Enjoyment	-.091	.27	-1.098	.298	0.16
Self-Efficacy	-.227	.35	-2.137	.058	0.44
Instrumentality	.364	.54	2.253	.048	0.76
Recognition	-.114	.30	-1.242	.242	0.22
Effort	-.333	.52	-2.140	.058	0.47
		Treatment Group			
Enjoyment	-.621	.65	-3.180	.010	1.27
Self-Efficacy	-.716	.52	-4.551	.001	1.41
Instrumentality	-.564	.43	-4.375	.001	1.38
Recognition	-.227	.44	-1.715	.117	0.49
Effort	-.697	.35	-6.642	.000	1.47

Next, a comparison of the post-treatment survey data comparing the treatment and control groups was performed using 2-tailed independent samples t-tests, with the alpha level set at .05. The results are presented in Table 4. The overall results of the post-treatment surveys for the treatment and control groups were not significantly different. Looking at each factor, only Instrumentality showed a significant difference between the two groups.

TABLE 4
Treatment and Control Post-Treatment Independent T-Test Results

Motivational	Control		Treatment				
Factor	*M*	*SD*	*M*	*SD*	*t* (df 20)	*p* (2-tailed)	Cohen's *d*
Overall	2.759	.42	3.039	.36	-1.678	.109	0.72
Enjoyment	2.432	.55	2.765	.58	-1.380	.183	0.59
Self-Efficacy	2.750	.51	2.773	.41	-0.115	.909	0.05
Instrumentality	3.109	.54	3.782	.17	-3.953	.001	1.68
Recognition	3.182	.46	3.409	.48	-1.134	.270	0.48
Effort	2.879	.70	3.061	.36	-0.764	.454	0.33

The effects of gamification on writing results were next compared by looking at ratings of student writing quality by a native speaker judge on the final writing essay project, as well as the final course grades totaled from all assignments given during the semester by the class instructor (the researcher) for both the treatment and control groups. Table 5 lists the descriptive data for both of these measures.

TABLE 5
Writing Assessment Descriptive Data

	Treatment Group (N = 11)			Control Group (N = 11)		
Measure	*M*	*SE*	*SD*	*M*	*SE*	*SD*
Native Speaker Rating	29.27	.30	1.01	28.09	.89	2.95
Final Course Grade	95.01	1.74	5.76	95.18	1.18	3.92

Independent sample t-tests for the Native Speaker Rating showed no significant difference, $t(20) = 1.26$, $p = .223$. Similarly, the final course scores of the participants showed no significant difference, $t(20) = -0.04$, $p = .966$. This suggests that gamification had little effect on improving the subjects' L2 writing ability.

V. DISCUSSION

This experiment was conducted to see what effect gamification has on both motivation towards and performance in an EFL academic writing course. Gamification purports to reduce anxiety and improve motivation, which leads to improvements in performance (Chou, 2015; Matera, 2015), while writing has been cited by EFL learners as an area in which many lack motivation or feel higher anxiety (Teimouri et al., 2019). Results from the experiment showed significant improvements in motivation from before and after treatment for the treatment group on four of five factors, while for the control group, motivation was only significantly different (lower) on one factor. However, final levels of motivation between the two groups were similar in overall results for all but one motivational factor. While gamification appears to have had a small effect on motivation, writing performance between the treatment and control groups did not show a marked difference. The implications of this will be discussed here.

Five factors of writing motivation (Enjoyment, Self-Efficacy, Instrumentality, Recognition, Effort) can be measured by the AWMQ (Payne, 2012). According to SDT, motivation develops from three basic needs: a need for competence, a need for autonomy, and a need for relatedness (Ryan & Moller, 2017). Enjoyment is most closely related to intrinsic motivation as described by Noels (2015): seeking to perform an action simply for the pleasure it provides, and would seem to be the factor that gamification is most strongly argued to target (Kapp et al., 2014). Self-Efficacy is keyed to both integrated regulation and introjected regulation (Noels, 2015), which represent values related to both personal ability and personal goals that the activity may help achieve. Instrumentality seems to be aligned with external regulation (Noels, 2015): the need for competence, or the ability to perform tasks well; it could also be somewhat aligned with identified regulation, or the need for autonomy to control one's actions. Recognition seems most aligned with external regulation (Noels, 2015), such as fulfilment of extrinsic motivators or recognition by teachers or peers. Effort includes elements of introjected, identified, and integrated regulation (Noels, 2015), such as completing tasks and meeting expectations.

Twelve items on the AWMQ relate to Enjoyment. A few examples of AWMQ items that measure Enjoyment include:

- I enjoy writing.

- I like to participate in written online discussions.
- I like classes that require a lot of writing.

Significantly higher Enjoyment for the treatment group, with a large effect size (Cohen's *d* 1.27), suggests that the gamification activities were fun for the participants, and that there might be higher intrinsic or autonomous motivation after the gamification activities. However, the difference in final Enjoyment scores between the treatment and control groups was not significant. Considering the small size of the treatment group, this result should be taken as suggestive, pending a larger study.

The AWMQ has eight items related to Self-Efficacy, with examples such as:

- I use correct grammar in my writing.
- I complete a writing assignment even when it is difficult.
- I can easily focus on what I am writing.

The treatment group showed significant improvement in Self-Efficacy after engaging in gamification activities, and the effect size was large (Cohen's *d* 1.41). This suggests that the learners felt more confident about their own writing abilities. As with Enjoyment, however, the level of Self-Efficacy at the end of the semester was not significantly different from the control group, suggesting that some other factor than gamification may have influenced this.

On the AWMQ, there are five items related to Instrumentality, such as:

- Being a good writer will help me do well academically.
- I am more likely to succeed if I can write well.
- Being a good writer is important in getting a good job.

The improvement in Instrumentality suggests that gamification activities in this experiment helped the participants in ways that they feel will lead to practical real-world benefits in their lives. This would imply an increase in extrinsic or controlled motivation, and the effect size (Cohen's *d* 1.38) shows a large effect. This was the only factor in which the treatment group improved significantly more than the control group, but this could be explained by the fact that the control group showed a decrease in Instrumentality from pre- to post-treatment. Again, the small sample size in this study makes this result suggestive.

Recognition is represented by four questions on the AWMQ:

- I like to write down my thoughts.
- I like to get feedback from an instructor on my writing.
- It is important to me that I make an A on a writing assignment.
- I want the highest grade in the class on a writing assignment.

Recognition is the sole factor that did not significantly improve for the treatment group. It also did not differ significantly between treatment and control groups. This suggests that gamification did not modify learners' behavior related to many external regulators such as peer or instructor approval or competitiveness. A more competition-focused gamification program might see different results here.

Finally, there are three questions on the AWMQ that relate to Effort:

- I write more than the minimum on writing assignments.
- I put a lot of effort into my writing.
- I like others to read what I have written.

The treatment group showed a significant improvement in this factor, with a large effect size (Cohen's *d* 1.47). This suggests that gamification may have given the learners a stronger desire to complete tasks. However, the post-treatment means were not significantly different from the control group's means, and with a small pool of participants and only three questions on the survey that make up this factor, strong conclusions cannot be made.

The writing quality of both treatment and control groups improved over the course of the semester, and there was no significant difference between their outcomes. This suggests that while gamification did appear to lead to higher levels of both intrinsic and extrinsic/controlled motivation, gamification did not lead to concrete gains in English academic writing ability. Critics of gamification warn of the potential for it to lower performance or lead to demotivation (Buckley & Doyle, 2016; Toda, et al., 2018). Both groups showed improvement, but the lack of greater improvement among the treatment group suggests that gamification may have been unnecessary. As Toda, et al. (2018) points out, educational gamification that focuses on points, badges and leaderboards (PBL design) may lead to several negative results. The lack of significant improvement in writing ability by the treatment group may be due to flaws in the gamification content design and implementation, or may suggest that gamification does not significantly improve outcomes despite what adherents claim. More and larger scale studies would be useful to determine which of these explanations is more likely.

For educators teaching unmotivated students, gamification does appear to assist with increasing levels of student motivation, if they opt into the gamification activities. However, educators looking at gamification as a method to improve language learning outcomes may wish to consider carefully how they engage in gamification, or if they engage at all. The participants in the control group of the current study appear to have had sufficient motivation to achieve improvements in their writing ability equal to those who engaged in the gamification content. Educators should weigh carefully the extra effort needed to create and implement gamification content in their academic writing courses against the potentially small benefits that might be gained by that effort.

One final area to be considered is the small sample size of this study. Out of sixty students in the course with gamified content, only eleven chose to engage with the content. The researcher had decided that all gamification content should be strictly voluntary, as otherwise the validity of the study might come into question. Requiring participation in the gamification content would have limited the valid analysis to amotivation (done only because it was required) and external regulation (done only to achieve the extrinsic goal of

fulfilling class duties). Because of this decision, few students elected to take part. The researcher collected comments explaining why students elected to participate or not, and this data will be explored in a future study.

The gamification elements used in this study were focused on PBL elements (Matera, 2015). If the gamification elements used in this study had been more carefully designed around other elements such as the guidelines given by Chou (2015) rather than those given in Matera (2015), engagement with gamification elements could conceivably have been higher. Future researchers should design their gamification elements carefully to focus on those that encourage intrinsic motivation to engender feelings of accomplishment, ownership, and meaning rather than simply earning points and badges (Chou, 2015). "[L]ack of motivation can…stem from lack of value. Here, one might actually have self-efficacy but simply not want to engage in action" (Ryan & Moller, 2017, p. 220). Students who chose not to engage with the gamification content may not have seen that content as valuable, as the course content itself was already of enough value to them. And for those that did engage with the gamified content, it appears to have helped motivate them, but did not provide enough value to help improve their outcomes in the course. Future studies using non-major English learners should be performed to control for the already high levels of English writing motivation shown by the English major participants of the current study. The regular course work itself may not appear as valuable to such learners beforehand, and the gamified content may appear more valuable and interesting in contrast.

VI. CONCLUSION

The effects of gamification of a tertiary EFL academic writing course on student motivation as measured by the AWMQ survey instrument, and writing outcomes as measured by graded writing samples and final course grades were examined in this study. The results of the AWMQ show that while four motivational factors (Enjoyment, Self-Efficacy, Instrumentality, Effort) improved for the treatment group after engaging in gamification activities, only Instrumentality showed significant difference from the control group. Writing outcomes were similar in both groups despite some increased motivation from gamification. This suggests that while gamification does have some influence, learners who may already be highly motivated might not see much benefit from gamification techniques.

There are two main limitations to this study. First, the gamification experiment was performed in courses that contained a majority of English majors, who exhibited high levels of motivation towards English academic writing from the beginning of the semester. Because motivation was already high, there may not have been a need to gamify the course.

Future studies of non-major tertiary or adult ELLs, as well as ELLs in secondary education, are warranted to more accurately gauge the effects of gamification on L2 English writing motivation. The second limitation is due to the small sample size. The gamification elements were presented in a course with 60 students, but only a fraction engaged with the gamification elements. Gamification elements were not mandatory, as the researcher believed that might invalidate measures of motivation, as amotivational learners would have been forced to participate. This left only a small sample of data. Larger studies with better incentives for participation may well find more robust results than the current study.

Several avenues for future research present themselves from this study. Studies of gamification of English language education have primarily been focused on general effects, rather than on specific aspects of English language education or individual language skills. More focused research such as this study, but for other language skills, vocabulary acquisition, grammar, or communicative functions may help identify the areas in which gamification can have the greatest impact on motivation to learn English. This study focused on the effects on learners who were already highly motivated, but future studies should also examine gamification with learners who may be less highly motivated than learners who have chosen English as their academic major. Studies may also wish to examine different motivational factors or the basic needs that create motivation identified in SDT to better understand motivation to learn English and also the best use of gamification in English language learning.

Some pedagogical implications of this research include the following. As gamification of a course requires much effort and planning, educators would be wise to gauge existing levels of motivation before embarking on a gamification plan. If motivation is sufficiently high, gamification may be unnecessary. Educators should also carefully integrate the gamified content into their subject material in such a way that it is not viewed as unnecessary or an extra burden by the learners. Gamified content should be presented as additional, but of value to English language education. Educators should also keep in mind the basic needs that drive motivation, as well as the variety of factors that make up language learning motivation when designing content and activities, and make sure to communicate this openly with the learners so that they can recognize the value of the gamified content.

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Examples in: English
Applicable Languages: English
Applicable Levels: Tertiary

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