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The effect of online gamification on EFL learners' writing anxiety levels: A process-based approach

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Abstract

Writing is one of the most difficult and neglected skills for EFL learners. Gamification, the use of game elements to increase user experience and interest in non-game content, can be used to deal with writing anxiety which is considered as a hindering affective factor in successful language learning. Within this scope, this study aims to investigate the effect of the online gamification tool 'Edmodo' on EFL learners' writing anxiety levels. The experimental design, one of the quantitative methods, was preferred. Data were collected through a background questionnaire and the Second Language Writing Anxiety Scale, involving 22 items scored on a five-point Likert response scale. Data were analysed with the Statistical Package for Social Sciences software. The results showed that the students who completed the activities and who were graded through Edmodo had significantly lower anxiety levels than the students using the traditional pen and paper.

Keywords: Gamification, foreign language, writing, anxiety.

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1. Introduction

Foreign language anxiety is a natural phenomenon in the language learning process and is regarded as an impeding affective factor in language learning (Byram & Hu, 2013). That is, the language learning process is negatively affected by a high level of anxiety, and an optimum level of anxiety promotes learner engagement. It is also thought to be the predictor of foreign language achievement (Gunes, 2019; Onwuegbuzie, Bailey & Daley, 1999). The research on foreign language anxiety mainly focuses on the oral mode (Cheng, 2002) for both within and outside classroom communication (Woodrow, 2006). According to Cheng, Horwitz and Schallert (1999), '…language classroom anxiety is a more general type of anxiety about learning a second language with a strong speaking anxiety element, whereas second language writing anxiety is a language-skill-specific anxiety.' Therefore, foreign language writing anxiety is an important domain that deserves to be explored.

Writing anxiety is an affective variable that bilaterally affects the language learning process. Thompson (1980) defines writing anxiety as the difference between projected gains and the ability to write caused by fear. There are several reasons that cause writing anxiety. However, the main factor of writing anxiety is the complexity of language and writing skills (Bruning & Horn, 2000). Students experience more problems in productive skills compared to receptive skills. Thus, the complexity of the language learning process and the challenges of productive skills make learners feel more anxious about writing tasks. The role of writing anxiety on the achievement of learners is a controversial issue. Whether the anxiety causes poor performance or vice versa is disputable. In the literature studies, two models were suggested regarding the role of anxiety on learner achievement, namely the deficit model and interference model of anxiety. The deficit model posits that anxiety occurs due to insufficient skills which lead to failure in performance (Horwitz, 2000). However, Sparks, Ganschow and Javorsky (2000) reject this notion and claim that anxiety occurs because of the cognitive-linguistic disability of learners instead of insufficient skills. As regards the interference model, it suggests that anxiety stems from the problems during the information retrieving process (Naveh-Benjamin, 1991). Although they differ in their stance to the cause of anxiety, two models concur that anxiety and achievement are related constructs.

To reduce the anxiety level of learners or keep it at an optimum level, several techniques have been suggested by researchers, one of which is gamification (Su, 2016). Gamification is basically defined as using game elements in non-gaming contexts to increase user activity (Deterding, Dixon, Khaled & Nacke, 2011). Following the successful applications of gamification in business and commerce, it has been transferred into educational settings in the recent decade. Gamification acts as a tool to deal with learner engagement, achievement and anxiety. Given that gamification promotes fun and entertainment in the learning process, learning anxiety and the use of gamification are related. Gamification is related to the flow theory, and one crucial component of flow theory is anxiety which radically affects the course of playing (learning) (Kim, Song, Lockee & Burton, 2018). Therefore, there is a need to empirically explore the relationship between gamification and foreign language writing anxiety.

Several researchers attempted to explore the relationship between gamification and anxiety from different perspectives (Bicen and Kocakoyun, 2017; Flores, 2015; Mufidah, 2016; Su, 2016). However, to our knowledge, the relationship between gamification and foreign language writing anxiety is waiting to be explored. It is crucial to investigate the relationship because gamification can be an effective technique to reduce anxiety in the language learning process. In this respect, we aimed to discover the effect of the gamification technique on learners' writing anxiety. This study is guided by the following research question:

1. Does gamification affect learners' second language writing anxiety?

1.1. Gamification and second language writing

The concept of gamification was benchmarked from the business industry to educational settings, and it has been the trending research topic of recent years. For many years, it has been successfully used for business purposes. In business settings, game elements, such as goal, competition, rewarding story and progress, are used to keep the clients in the system. For educational purposes, it is primarily used as a tool to enhance learner engagement and achievement. Dicheva, Dichev, Agre and Angelova (2015) propose a five-step process to benchmark gamification into education as (1) understanding the target audience and the concept, (2) defining learning objectives, (3) structuring the experience, (4) identifying resources and (5) applying gamification elements which are storylines, leader boards, interactive cooperation, time restrictions badges, levels and so on. With the help of the latest technological developments, gamification turned out to be a practical technique used in classrooms that make use of instructional technologies. Generally, gamification is used as an instructional technique in learning management systems (LMS). A LMS is a system in which education, online or offline, is delivered through a software, mobile application or website. Gamification is a crucial element in learning management systems. Within this framework, gamification acts as a tool for an effective instructional design.

Gamification studies mainly revolve around motivation and engagement variables. Garland's (2015) meta-analysis study shows that, out of eight studies, only one study indicates a negative relationship between gamification and these variables. It can be claimed that gamification is an effective technique in increasing the motivation and engagement of learners. The effect of gamification on foreign language learning is well researched (Flores, 2015; Lin, 2014; Osipov, Nikulchev, Volinsky & Prasikova, 2015; Osipov, Volinsky, Nikulchev & Prasikova 2016). Many scholars attempted to inspect the effectiveness of gamification on language learning and teaching process. Cahyani's (2016) study shows that gamification is a useful technique for the engagement of learners in language classes. Also, Shatz's (2015) study reveals how gamification is significant in promoting risk-taking in the language learning process, and Lin's (2014) study shows that gamification increases the participation rate of students in foreign language classrooms. The relationship between gamification and writing skills has been the concern of some scholars in recent years. In their study, Lam, Hew and Chiu (2018) tested the effect of gamification integrated blended learning on argumentative writing performances of learners, and they concluded that gamification significantly improves the writing achievement of learners. Similarly, El Tantawi, Sadaf and AlHumaid (2018) empirically showed the positive influence of gamification on academic writing performances of students. Bal's (2019) study investigated the effect of gamification on writing education and concluded that gamification significantly increases the motivation of students, facilitates classroom management, supports collaborative work and develops creativity in writing education. These studies show that gamification is an effective technique to improve writing skills. However, its role in writing anxiety level of students is highly neglected. The content analysis of Uzunboylu and Kocakoyun's (2017) study reveals that between 2014 and 2019, nine masters and doctoral theses were conducted on gamification. However, none of them is related to foreign language writing anxiety. Therefore, this study is significant in that it will shed light on the relationship between gamification and writing anxiety.

2. Methodology

To investigate the effect of the online gamification tool 'Edmodo' on EFL learners' writing anxiety levels, the experimental design was preferred. The data were obtained from the pre- and post-administration of the Second Language Writing Anxiety Inventory (SLWAI) developed by Cheng (2004) (Appendix 1). Prior to conducting the research, all participants were given information about the aim, importance and process of this study. The ethical review board was obtained from the administration of the faculty. Then, the participants were asked to sign a consent form assuring that their participation is voluntary.

2.1. Participants

A total of 47 students studying at the Department of Tourism Guidance in Balikesir University participated in this study. The participants were the third-grade students who took writing instruction as a part of their Vocational English classes throughout the program. The study group included 28 (59.6%) female and 19 (40.4%) male students. The mean age of the participants was 21.7 in the range of 20–24. They all studied English as a foreign language during their high school education, where they enrolled in English departments which involved 10–12 hours of English classes in a week when they are in the 10th grade. They also intensively studied English in 10th, 11th and 12th grades. Table 1 shows the descriptive statistics regarding the groups.

Table 1. Descriptive statistics regarding the groups

		Experim	ental	Cont	trol
	Mean	21.41		21.55	
Age	Minimum 20			20	
	Maximum	23		24	
	Number	Female	Male	Female	Male
Gender		16	8	15	7
	Percent	Female	Male	Female	Male
		66.7%	33.3%	65.2%	34.8%
	Total	24		23	

2.2. Tools

A background questionnaire and SLWAI developed by Cheng (2004) were used to collect data. First, a background questionnaire was developed to investigate the age and gender. The second tool used in this study was a questionnaire developed by Cheng (2004), which proved to be valid and reliable. The questionnaire included 22 items scored on a five-point Likert response scale ranging from 1 (strongly disagree) to 5 (strongly agree). Five of the items (1, 4, 17, 18 and 22) are negatively associated and were scored from reversely. In other words, the student who chose strongly agree in items 1, 4, 17, 18 and 22 got 1 point. A higher score obtained indicated a higher level of writing anxiety. The scores 65 and above demonstrate a high level of writing anxiety, the scores 50 and below show a low level of writing anxiety and a total score between 64 and 51 indicates a moderate level of writing anxiety. The 22 items of the SLWAI can be divided into three categories of anxiety: cognitive anxiety (1, 3, 7, 9, 14, 17, 20 and 21) which is related to mental states; somatic anxiety (2, 6, 8, 11, 13, 15 and 19) which is associated with psychical conditions; and avoidance behavior (4, 5, 10, 12, 16, 18 and 22) which is directly related to fear of writing.

2.3. Procedure

This study used the following procedures: (1) assigning participants randomly in two groups: an experimental group who took in-class process-based writing instruction and completed the assignments on 'Edmodo', an online gamification tool, and a control group who took in-class process-based writing instruction and completed the assignments using the traditional pen—paper; (2) administration of the background questionnaire and SLWAI; (3) 4-week process-based writing instruction and (4) readministration of the SLWAI.

2.4. Instruction

The participants in both groups were given the same process-based writing instruction designed by the researchers, which included prewriting, drafting, revising, editing, and evaluating steps. Following the instruction, the experimental group was given assignments through the educational online gamification tool 'Edmodo'. The control group was asked to complete the assignments using the traditional pen—paper. The teacher gave badges to the experimental group by using several gamification features of Edmodo, which include the *student of the month, hard worker, participant, star performer and perfect attendance* (see Appendix 1). The control group was graded traditionally. Table 2 summarises the process-based instruction lasting for 4 weeks.

Table 2. Four-week process-based instruction

Weeks	Instruction	Assignment	Aim
Week 1	Information about using the descriptive	Writing a paragraph	Writing a
	language and organising an essay including	about business	descriptive
	introduction, a thesis statement, body		essay
	paragraphs and a conclusion.		
Week 2	Information about organising an essay including	Writing about	Writing a
	previous personal experience or a memorable	travel experiences	narrative
	event, and expressing the order of events by		essay
	using time words and time clauses.		
Week 3	Information about describing two subjects being	Comparing the pros	Writing a
	compared and contrasted and organising body	and cons of the	compare and
	paragraphs by using techniques, such as point-	types of holidays	contrast essay
	by-point essay, in which students choose three		
	or more key points to compare and contrast.		
Week 4	Information about organising a cause and effect	Writing an	Writing a
	essay including causes and effects.	advertisement	cause and
		about a travel	effect essay
		agent	

2.5. Data analysis

In this study, the Statistical Package for Social Sciences was used with the aim of analyzing the data. For this purpose, first of all, the reliability coefficients were calculated using Cronbach's alpha, a model of internal consistency based on the average inter-item correlation. Moreover, mean scores and maximum and minimum values for the participants' ages were calculated. Then, the number and percentage of participants' gender were calculated. Non-parametric tests were used. Wilcoxon signed-rank test was calculated to investigate whether there was any significant difference between the pre-and post-SLWAI scores in each group individually. Additionally, Mann–Whitney U tests were calculated to see the differences between groups.

3. Results and discussion

The reliability of the scale was calculated through Cronbach's alpha. The reliability of the pre-test for the experimental group was 0.80, which showed good reliability and it was 0.67 for the control group, which demonstrated moderate reliability. In addition, the reliability of the post-test for the experimental group was 0.69, which was moderate and it was 0.76 for the control group, which indicated moderate reliability.

To understand whether there was a significant difference between pre- and post-SLWAI scores, Wilcoxon signed-rank test was calculated. A statistically significant decrease was found between pre- and post-SLWAI scores of the experimental group (Z = -4.28, p < 0.001). These results showed that EFL learners' writing anxiety levels significantly decreased through the process-based instruction and online gamification activities. These results are in line with the findings of Bal (2019), El Tantawi et al. (2018) and Lam et al. (2018). To understand the issue in more detail, the differences between items were calculated and it was seen that the anxiety levels decreased in all 22 items. Table 3 shows Wilcoxon signed-rank tests for the experimental group.

Table 3. Wilcoxon signed-rank tests for the experimental group

Items	Z	Sig.
SLWAI 1	-3.825	0.000
SLWAI 2	-4.030	0.000
SLWAI 3	-4.255	0.000
SLWAI 4	-4.025	0.000
SLWAI 5	-3.789	0.000
SLWAI 6	-3.572	0.000
SLWAI 7	-3.508	0.000
SLWAI 8	-3.361	0.000
SLWAI 9	-4.256	0.000
SLWAI 10	-3.624	0.000
SLWAI 11	-3.905	0.000
SLWAI 12	-4.165	0.000
SLWAI 13	-4.193	0.000
SLWAI 14	-4.051	0.000
SLWAI 15	-4.252	0.000
SLWAI 16	-2.696	0.000
SLWAI 17	-3.564	0.000
SLWAI 18	-4.382	0.000
SLWAI 19	-4.122	0.000
SLWAI 20	-3.899	0.000
SLWAI 21	-3.904	0.000
SLWAI 22	-3.673	0.000

The total scores for pre- and post-SLWAI of the control group showed a slight decrease in the mean scores, which was not statistically significant (Z = -553, p = 0.58). The mean score of the pre-test of the control group was 75.08, while it was 73.78 in the post-test. That is, the EFL learners' writing anxiety in the control group slightly decreased through process-based instruction.

Mann–Whitney U test for independent variables was used to see whether there was a difference between groups in both pre- and post-SLWAI scores. No significant difference was found between the experimental group and control group in the pre-test (U = 242, p = 475). However, when the post-test SLWAI scores were examined, it was seen that the experimental group outperformed the control group (U = 0, p < 0.001). That is, the anxiety levels of the group who did the activities through Edmodo were significantly lower than the group using the traditional pen–paper.

4. Conclusions

Two conclusions were reached in this study. First, the instruction designed within a process-based approach framework had a positive effect in terms of lowering the writing anxiety levels of EFL students, namely the writing anxiety levels of the students who took the process-based instruction decreased. The second conclusion was that the students who completed the activities and were graded through Edmodo had significantly lower anxiety levels than the students using the traditional pen and paper. That is, the online gamification tool was useful in lowering anxiety levels.

When the studies in the literature are examined, it is obvious that our results are consistent with the studies conducted on the issue. For instance, Cahyani (2016) and Lin (2014) found that gamification is useful in increasing engagement and participation in language classes. In addition, in the studies of El Tantawi et al. (2018) and Lam et al. (2018), it was found that the academic writing performances of students increased through gamification, which is similar to our results. Bal (2019) discovered that gamification helped to increase learners' academic writing motivation levels and lowered negative attitudes towards writing.

By considering those results, some recommendations can be made for teachers. First, as writing is seen as boring and tedious by most of the students, teachers should do their best to make it more enjoyable and preferable for students. Second, as online tools are useful, more writing instruction integrated with online tools should be included in EFL curriculums. Third, teachers should lower the anxiety levels of students by using various techniques.

There are some limitations of this study. As this study is limited to 47 EFL students in the Department of Tourism in Balikesir University, non-parametric statistics were used. The number of participants should be increased and parametric statistics should be used in future studies to investigate the issue in more detail. Additionally, this study is an experimental study that included a background questionnaire, a writing anxiety questionnaire, pre- and post-tests, and experimental and control groups. Further studies with different research designs should be conducted on the issue. In addition, the focus of this study is limited to the dependent variables and anxiety, and the data collected regarding EFL writing anxiety is confined to the SLWAI developed by Cheng (2004).

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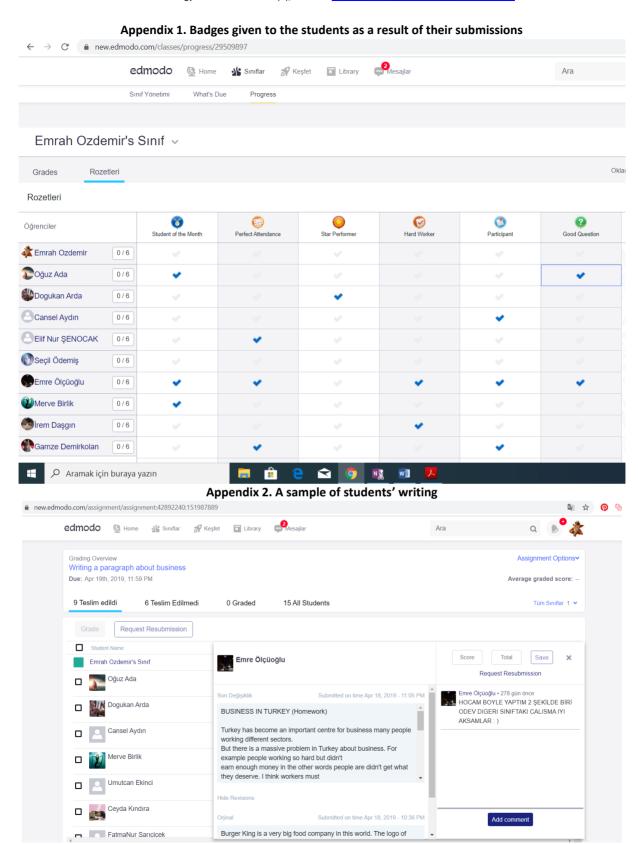
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70