The Role of Problem-Based Learning (PBL) E-portfolios on Writing Anxiety

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Abstract

This paper aims at decreasing writing anxiety through the use of Problem-Based Learning (PBL) E-portfolios. It also investigated the impact of writing anxiety on writing performance. In order to achieve these goals, a PBL e-portfolio based unit at the faculty of Education in a university in Iran was examined through quantitative method. 60 EFL participants, perspectives were examined through a quasi-experimental intact group study. In the control group, participants (N=30) received conventional classroom instruction while those in the experimental group (N=30) received PBL e-portfolios-based learning. A couple of instruments were employed to collect data including: the Interchange Placement Objective Test (2005), Writing Anxiety Inventory Questionnaire, TOEFL Writing Module and weblog-based e-portfolio assessment. The results of this investigation revealed a remarkable decrease in writing anxiety which leads to a great improvement in writing performance among the experimental group.

Keywords: E-portfolio assessment; Problem-Based Learning; PBL e-portfolios; Writing anxiety.

1. Introduction

Writing is viewed as an important component of language learning that is receiving great interest and a crucial role in foreign and second language education [1].

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According to a scholar [2], the ability to write in English is considered essential in college which probably will an asset in students' career as well (p.3). However, writing is a problematic area in learning English as a foreign language and is known as the most difficult skill [3]. In the same line, another scholar [4] believes EFL students may have required knowledge about grammar and vocabulary but face difficulty in writing because of their anxiety. Writing anxiety that has been divided in three different categories of Cognitive, Somatic and Avoidance Behavior affect students writing performance significantly [5].

In order to address this issue, it is needed to pay close attention to interaction since "learners' comprehension of input, access to feedback and production of modified context" is feasible by interaction [6]. Despite, some qualifications such as motivation, learners' involvement in the process of learning and high mutuality are needed to gain interaction efficiently [7].Among those qualifications, involving L2 learners in the process of learning is the most important one because the other factors such as motivation can originate from it [8]. Furthermore, some other factors like authenticity, process ability and ability to provide learners with corrective feedback are necessary to be considered [9].

Establishment of interaction in writing classroom in order to reduce anxiety needs appropriate teaching method as well as assessment. To do so, e-portfolios as an alternative assessment and Problem-based learning (PBL) as a teaching method are recommended.

1.1Problem-Based Learning (PBL) E-portfolios and Interaction

Interaction has gained a great importance an acquiring second language (L2) because of successes it caused. This idea is supported by a number of scholars who believed the significant effect of interaction on students' learning [10]. In order to serve this purpose, the necessity of selecting appropriate teaching method and assessment is emphasized. Consequently, an integration of e-portfolios and problem-based learning is recommended.

As the starting point of E-portfolios, its definition can not be straightforward because it is considered as a brand new phenomenon [11]. However, many definitions are provided by different scholars. As an example, a scholar [12] defined e-portfolios as a digital collection of the students' work and reflections describing their learning experiences and professional accomplishments. According to the nature of e-portfolios, it is considered as a great way of increasing interaction because of some reasons. First, it can have a motivating role for learners since its tools absorb them, also, the possibility of having real audiences for communication is possible [13]. Second, the required authenticity for L2 interaction is possible by E-portfolios [14]. Further to this, the opportunity to assess L2 learners' progress is comfortably possible because the process of learning is the main focus of e-portfolios [15]. As a result, it is surely possible to improve interaction among learners by e-portfolios.

Weblog-based learning is a kind of e-portfolios that is emphasized by some scholars who believed web-based technologies have a big impact on modifying new ways of measuring students' ability and knowledge [16]. Moreover, in a web-based context the assessment process is carried out through the use of instructional technologies where participants undertake a variety of activities such as self-and-peer assessment, peer portfolio

reviews and teacher evaluation [17].

Problem-based learning (PBL) has the potential to facilitate e-portfolio-base learning, meanwhile, it has positive impact on students' interaction. In fact, knowledge construction happens through interaction and cooperation during PBL. Problem-based learning is a student-centre method in which a lot of attention is paid to problems, since it is considered as an effective way of learning by making to think and learning is occurring by thinking [18]. Therefore, it seems a good idea to incorporate e-portfolios into PBL. There are some reasons behind this idea. First, according to PBL' s goals an appropriate assessment for it is e-portfolios rather than traditional assessment [19]. Second, e-portfolios go beyond serving as an assessment since it can be used to support the process of learning [20]. Third, an important strategy of PBL, reflective thinking, has received great attention in e-portfolios as well. Generally, this integration causes more support and guidance for learners during PBL E-portfolios. Additionally, learners enable to share their ideas about their process with peers. Accordingly, communication skills are developed through PBL e-portfolios [21].

1.2 Writing Anxiety

Anxiety plays an important role in language acquisition. In fact, there is a negative correlation among anxiety and language learning. It affects writing skill as well [22]. Writing anxiety is defined as "language-skill specific anxiety", which differs from general classroom anxiety [23]. The effect of anxiety on learners' writing is supported by a number of researchers who believe that high anxious learners' outcomes in terms of fluency and length [24]. In other word, high anxious learners' writing are shorter and less fluent than low anxious learners. This idea is echoed by some other researchers who investigated that there is a significant negative correlation between anxiety and writing performance [25]. Furthermore, an scholar [26] indicated that learners with low writing anxiety utilize more writing strategies than learners with high writing anxiety. According to a number of researchers, anxiety has some sources. It includes individuals' writing ability, the degree of preparation to complete the writing task, the fear of being assessed and the mixed messages students receive from their teachers [27]. According to a scholar [28], learners who are anxious writers are not skillful writers. In contrast, another scholar [29] stated writing anxiety can be found among skillful writers as well. Fear of being evaluated is another important source of writing anxiety. As an scholar[30] stated, a great deal of decision and judgments are made based on the students' writing, how they express, the range of vocabulary, their accuracy, the arguments they make [31]. Also, fear of making mistakes should be added to the students' challenges involved during writing.

Anxiety has three different categories. Cognitive anxiety as the first category refers to the mental aspect of anxiety experience including negative expectations, preoccupation with performance and concern about others' perceptions. Second, somatic anxiety which refers to learners' perceptions of the physiological effects of the anxiety experience as reflected arousal and unpleasant feeling such as nervousness, pounding heart, sweating and tension [32]. Third, avoidance behaviors which involves a variety of dysfunctional thoughts, increase physiological arousal and maladaptive behaviors [33]. Taking together, there are many problems and challenges which should be solved in the classroom practices. To address this issue, a scholar [34] suggested a non-punitive, non-judgmental, non-mix message process to teaching language writing and E-portfolios is a key for

this purpose. Similarly, the benefits of e-portfolios is emphasized by an scholar [35], who considered e-portfolios as an opportunity to improve writing skill and cope with anxiety because the possibility of keeping track of what students have done and reflecting on the progress they have made is easily possible during PBL e-portfolios. In addition, we can experience a kind of cooperative learning during PBL which create relaxing environment for the learners, in which writing anxiety is alleviated [36].

1.3 Theoretical Framework

In order to integrate e-portfolios with PBL, self regulated learning theory (SRL) is adopted to frame this research. This theory is describing how students learn. According to an scholar[37], it is necessary to encourage students to be highly self-regulated learners through goal setting, monitoring, and controlling their cognition, motivation, and behavior. This scholar [38] introduced four phases for SRL including:

(1) planning, (2) monitoring, (3) controlling, and (4) reflecting. He asserted that the phases are not

 structured linearly or hierarchically and that monitoring, controlling, and reflecting can occur simultaneously. In order to plan their learning, students are required to set goals, activate their perceptions, and gain knowledge about the tasks as well as the context. Monitoring is the process of doing tasks, using meta cognitive activities, and being aware about the tasks and context. Controlling involves controlling tasks and context as well as regulating tasks and context. The last phase includes having different perceptions and reflections on oneself, tasks, and context. In particular, approaching the learning tasks in a mindful and confident manner, setting goals, and developing a plan for attaining those goals are characteristics of highly regulated learners[39]. The activities that are possible through portfolio adaptation and are aligned with SRL are goal setting, reflection, prior knowledge and motivation. Goal-setting was developed over a25-year period based on some studding [40]. According to these studies, there is a connection between goal setting and performance. For instance, high goals lead to higher level of performance. According to a scholar [41], goal setting is an effective strategy to enhance writing ability. She further stated that writers have no one to guide them, to tell them what to do or how and when to do. In order to solve this problem, goal setting can be enhanced through the implementation of portfolio [42]. For instance, teachers can use portfolio to investigate what their students need to reach their goals. A critical component of an educational portfolio is learners' reflection on the individual piece of work [43]. In doing so, learners may select the best piece of their work and reflect on why it is the best [44]. Prior knowledge refers to students' characteristics, their previous experiences, and their new knowledge [45]). It is believed that prior knowledge affect students' learning which is supported by an scholar [46] who conducted a research about the effect of prior knowledge on learning through portfolio implementation and she concluded students with prior knowledge outperformed those with none prior knowledge. Those lacking students could improve their writing through activating their background knowledge [47]. Students' motivation is an effective factor in their learning [48]. In order to increase their motivation, portfolio is suggested since it has the potential to enhance motivation and it is supported by some scholars [49] who concluded that students who participated in creating portfolio were more active and motivated. They further stated students become autonomous through implementing portfolio which enhanced their motivation. Also, the positive effect of portfolio on motivation is emphasized by a scholar [50] who said intrinsic motivation is increased through portfolio.

2. Research Questions

To fulfill the objective of the research the following research questions are addressed:

RO1: To see whether integration of e-portfolios into Problem-based learning affect EFL students, writing anxiety.

RO2: To see whether integration of e-portfolios into Problem-based learning affect EFL students, writing performance.

RO3: To see whether integration of e-portfolios into Problem-based learning affect writing anxiety, s subcategories.

To come up with a reasonable result on the basis of the aforementioned research problems the following null hypothesis was proposed:

HO1: The integration of PBL-based e-portfolios does not have any effect on the writing anxiety of Iranian EFL learners

HO2: The integration of PBL-based e-portfolios does not have any effect on the writing performance of Iranian EFL learners.

HO3: The integration of PBL-based e-portfolios does not have any effect on the writing anxiety, s subcategories

2.1 Methodology

This research used quasi-experimental intact group methodology.

2.2 Participants

The present study was conducted at University in Iran. There were 60 female participants. The groups were intact. Students were divided in two groups of experimental and control. According to IT questionnaire, those who were familiar with the Internet technology joined the experimental group.

2.3 Instrumentations

To collect the required data, several instruments were employed in this study:

2.3.1 Interchange/Passage Objective Placement Test

The Interchange Objective Placement Test, version A developed by[51]was administrated to make sure that all participants were homogenous at the same level of language proficiency. The three main sections of this test are listening (20 items), reading (20 items), and language use (30 items). Participants were supposed to gain scores

between 24 and 35 out of 70 to be suitable according to the scoring guidelines of this instruments. The reliability of this test, computed through cronbach's Alpha, was relatively high (r=.79). Out of 100 participants who took test, 60 were selected for this study.

2.3.2 Information Technology (IT) Inventory

The treatment in the experimental group involved in composing and uploading tasks via weblogs, consequently, the researcher had to determine learners' degree of familiarity with the Internet. To serve this purpose, all participants (N=60) were asked to fill out an IT inventory. It consisted of three with the total number of 58 items. Those participants who proved to be IT illiterate were assigned to the control group and those with IT knowledge to the experimental group.

2.3.3 Writing Anxiety Inventory (SLWAI) Questionnaire

This instrument was used to measure the degree to which students feel anxious in L2 writing and is considered in many studies related to second language writing anxiety valid and reliable, its reliability is .91. [52]. This questionnaire includes two parts. First part intended to collect personal information of the students that is gender and stream of study. Second part was SLWAI which consist of 22 items including 7 items on the Somatic anxiety (Items 1 to 7), 8 items on the Cognitive anxiety (Items 15 to 22), and 7 items on the Avoidance Behavior (Items 8 to 14) scored on a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree).

2.3.4 TOEFL Writing Test as Pre-test and Post-test

The students both in the experimental and the control groups were administrated the TOEFL into five major writing components including content, organization, vocabulary, language and mechanics with each one having four rating levels of very poor, poor to fair, average to good and very good to excellent. Each component and level has clear descriptions of the writing proficiency for that particular level as well as a numerical scale. Taking together, score 1 to 4 is considered for each of these five components, and students' writings are scored out of 20 [53]. Students' writings were scored by two raters. They scored according to above explanation. After the treatment, the researcher administrated another writing test as post-test chosen from the same book to investigate the effects of the treatment at the end of the semester.

2.3.5 Weblog

In the experimental group, students used weblog in order to make their e-portfolios. They posted their writing on the weblog, and they revised their tasks after receiving their instructor's comments then rewrite them and resend them.

2.4 Procedure

In the control group, conventional method was utilized. In other word, it was teacher-centre classroom in which teacher was the talker who taught grammatical rules, required vocabulary and writing structures. Learners were

usually listening to teacher and write down what she said. In this class, learners wrote 9 writing assignments inside the classroom using pen and paper throughout 9 weeks, and received feedback from instructor. In the experimental group, students were taught by PBL-based e-portfolios learning. Students were divided into groups with 4 or 5 members in each group, and they all had their own laptops in class. Two topics were presented to students by instructor and one of them was chosen by students each session. then the PBL process that corresponded to the five stages according to an scholar[54] which involved nine weekly face-to-face sessions started.

First stage:

Meeting the problem Students gained a clear understanding of the topic and reached a group agreement on the problem. To do so, students read the topic on their own, underline key words and main points and have a discussion with their group mates to get the same understanding. After that, team members were asked to describe the topic on their own words, also, linked it to their own experiences and prior knowledge by instructor. In order to guide their discussion, some questions were provided by teacher in the weblog. In fact, instructor made some questions in all stages that were available on students، weblog.

Second stage:

Problem analysis and Learning issues Brainstorming and generating possible explanations about the problem were provided by each groups at this stage. In doing so, each students presented her explanations, and all team members، input were combined. Accordingly, each group members had an active role in this process. After that, the most important part of PBL process which is identification of learning issues and formulation of learning objectives started. During this process, self-directed learning tasks were assigned by the groups. Accordingly, each group member complied a set of notes from her self-directed learning to share with others and to teach at the next stage.

Third stage: Discovery and Reporting

Considering self-directed learning, group members shared their discovery. They integrated information as a group and made sure the accuracy, reliability and validity of the information.

Fourth stage: Solution Presentation

At this stage, group presented solution to the problem and clarify doubts through questions and answer. each group presented their findings for the final presentation.

Fifth stage: Overview, Integration and Evaluation

Teacher rounded up the PBL process in a verbal review and evaluation session with the students. Then, students were asked to reflect on their on own learning process. Finally, students started to write their paragraphs on the weblog which formed by the instructor.

3. Result

3.1Pre-test for PBL E-portfolios and Writing Anxiety

To see if the two groups of control and experimental were statistically different in their pre-test scores on writing anxiety questionnaire, the researcher opted for independent sample t-test. Initially, the researcher performed the preliminary analysis to ensure no violation of the assumptions of normality.

Table 4.1: Tests of normality of pre-test for writing anxiety

	Group	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
pre-test writing anxiety	Control	.129	30	.200[*]	.952	30	.190
	experimental	.160	30	.078	.969	30	.509

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The results of the Kolmogorov-Smirnov statistic indicated that normality of the distribution of scores was not violated since non-significant result (Sig value of more than .05) indicates normality. As table 4.1 showed the Sig. value was .20 and .07 for control and experimental groups respectively, suggesting no violation of the assumption of normality.

Table 4.2: Descriptive statistics for pre-test writing anxiety

	Group	N	Mean	Std. Deviation	Std. Error Mean
pre-test writing anxiety	Control	30	67.90	10.902	1.990
	experimental	30	70.63	8.556	1.562

The results from Descriptive Statistics showed the mean and standard deviation for the control group (M=67.90, SD=10.90) and the experimental group (M=70.63, SD=8.55). The total number of students participated in the study was 60.

Independent Sample T-test offered two lines as displayed by Table 4.3. With reference to the Table, since the Sig. value was larger than .05, therefore, the first line was followed which referred to Equal variances assumed. That is to say, since in this table, the significant value was .156 which was larger than .05; the first line was used to report findings.

To figure out if there was a significant difference between the control and experimental groups, having checked the column labeled Sig. (2-tailed), the researcher discovered there was no significant difference in the mean scores on the dependent variable for each of the two groups. Because the value in the Sig. (2-tailed) column was *above* .05 (which was .28), there was *no* significant difference between the two groups before the treatment phase.

Table 4.3: Independent samples test for pre-test writing anxiety

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
pre-test writing anxiety	Equal variances assumed	2.067	.156	-1.0	58	.284	-2.733	2.530	-7.798	2.331
	Equal variances not assumed			-1.0	54.89	.285	-2.733	2.530	-7.804	2.338

3.2 Post-test for PBL E-portfolios and Writing Anxiety

To see if the two groups of control and experimental were statistically different in their post-test, the researcher again ran independent sample t-test. Initially, the researcher performed the preliminary analysis to ensure no violation of the assumptions of normality.

Table 4.4: Tests of normality of post-test for writing anxiety

	Group	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
post-test writing anxiety	Control	.078	30	.200[*]	.981	30	.839
	experimental	.177	30	.067	.933	30	.060

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The results of the Kolmogorov-Smirnov statistic indicated that normality of the distribution of scores was not violated since non-significant result (Sig value of more than .05) indicates normality. As table 4.4 showed the Sig. value was .20 and .06 for control and experimental groups respectively, suggesting no violation of the assumption of normality.

Table4.5: Descriptive statistics for post-test writing anxiety

S	Group	N	Mean	Std. Deviation	Std. Error Mean
post-test writing anxiety	Control	30	56.20	7.184	1.312
	experimental	30	51.43	6.383	1.165

The results from Descriptive Statistics showed the mean and standard deviation for the control group (M=56.20, SD=7.18) and the experimental group (M=51.43, SD=8.38). The total number of students participated in the study was 60.

Table 4.6: Independent samples test for post-test writing anxiety

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
post-test writing anxiety	Equal variances assumed	.615	.436	2.71	58	.009	4.767	1.755	1.255	8.279
	Equal variances not assumed			2.71	57.2	.009	4.767	1.755	1.254	8.280

Since the Sig. value in Table 4.6 is larger than .05 so that the first line is used to report the data, which refers to Equal variances assumed. To discover if there is a significant difference between the two groups, the researcher referred to the column labeled Sig. (2-tailed). Since the Sig. (2-tailed) value was *less* than .05 which was .009, then there was a significant difference in the mean scores on the dependent variable for each of the two groups. Thus, the first research question of the study was rejected. After the treatment, the anxiety of the students at the experimental group was decreased significantly.

To determine the effect size between the two groups, the researcher used eta squared, as the most commonly used formula. Eta squared can range from 0 to 1 and represents the proportion of variance in the dependent variable that is explained by the independent (group) variable. SPSS does not provide eta squared values for t-tests. Therefore, the researcher calculated it manually. The procedure for calculating eta squared is provided below.

The formula for eta squared $= t2 / t2 + (N1 + N2\text{-}2)$

As the table shows, in this study, t=2.71. Therefore:

$(2.71)^2 / (2.71)^2 + (30 +28) = 7.34/65.34 = 0.11$

The guidelines (proposed by [51] for interpreting this value are:

.01=small effect,

.06=moderate effect,

.14=large effect.

Therefore, the effect size of .11 was moderate. It means that experimental class performed better than control class, the effect size was rather considerable.

3.3 PBL E-portfolios and Writing Performance

As for the second research question concerning the impact of PBL E-portfolios on the writing performance of Iranian Intermediate EFL learners, the researcher distributed the relevant tests prior to and following the treatment phase between the two groups.

3.4 Pre-test for PBL E-portfolios and Writing Performance

To see if the two groups of control and experimental were statistically different in their pre-test, the researcher opted for independent sample t-test. Initially, the researcher performed the preliminary analysis to ensure no violation of the assumptions of normality.

Table 4.7: Tests of normality of pre-test for writing performance

	Group	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	df	Sig.
pre-test writing performance	Control	.157	30	.066	.902	30	.009
	experimental	.154	30	.067	.929	30	.046

a. Lilliefors Significance Correction

The results of the Kolmogorov-Smirnov statistic indicated that normality of the distribution of scores was not violated since non-significant result (Sig value of more than .05) indicates normality. As table 4.7 showed the Sig. value was .066 and .067 for control and experimental groups respectively, suggesting no violation of the

assumption of normality.

Table 4.8: Descriptive statistics of pre-test for writing performance

	Group	N	Mean	Std. Deviation	Std. Error Mean
pre-test writing performance	Control	30	12.37	1.273	.232
	experimental	30	12.80	1.472	.269

The results from Descriptive Statistics showed the mean and standard deviation for the control group (M=12.37, SD=1.27) and the experimental group (M=12.80, SD=1.47). The total number of students participated in the study was 60.

Table 4.9: Independent samples test of pre-test for writing performance

		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
pre-test writing performance	Equal variances assumed	.333	.566	-1.2	58	.227	-.433	.355	-1.144	.278
	Equal variances not assumed			-1.2	56.8	.228	-.433	.355	-1.145	.278

Since the Sig. value in Table 4.9 is larger than .05 so that the first line is used to report the data, which refers to Equal variances assumed. To discover if there is a significant difference between the two groups, the researcher referred to the column labeled Sig. (2-tailed). Since the Sig. (2-tailed) value was *more* than .05 which was .227, then there was not significant difference in the mean scores on the dependent variable for each of the two groups.

3.5 Post-test for PBL E-portfolios and Writing Performance

To see if the two groups of control and experimental were statistically different in their post-test, the researcher again ran independent sample t-test. Initially, the researcher performed the preliminary analysis to ensure no violation of the assumptions of normality.

Table 4.10: Tests of normality of post-test for writing performance

	Group	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	df	Sig.
post-test writing performance	Control	.180	30	.084	.938	30	.083
	experimental	.178	30	.076	.921	30	.078

a. Lilliefors Significance Correction

The results of the Kolmogorov-Smirnov statistic indicated that normality of the distribution of scores was not violated since non-significant result (Sig value of more than .05) indicates normality. As table 4.10 showed the Sig. value was .084 and .076 for control and experimental groups respectively, suggesting no violation of the assumption of normality.

Table 4.11: Descriptive statistics of post-test for writing performance

	Group	N	Mean	Std. Deviation	Std. Error Mean
post-test writing performance	Control	30	13.67	1.184	.216
	experimental	30	15.20	1.215	.222

The results from Descriptive Statistics showed the mean and standard deviation for the control group (M=13.67, SD=1.18) and the experimental group (M=12.50, SD=1.21). The total number of students participated in the study was 60.

Since the Sig. value in Table 4.12 is larger than .05 so that the first line is used to report the data, which refers to Equal variances assumed. To discover if there was a significant difference between the two groups, the researcher referred to the column labeled Sig. (2-tailed). Since the Sig. (2-tailed) value was *less* than .05 which was .000, then there was a significant difference in the mean scores on the dependent variable for each of the two groups. Thus, the second research question of the study was rejected. After the treatment, the experimental group outperformed the control group in writing performance.

To determine the effect size between the two groups, the researcher used eta squared, as the most commonly used formula.

As the table shows, in this study, t=4.9. Therefore:

$(4.9)^2 / (4.9)^2 + (30 + 28) = 24.01/82.01 = 0.29$

The guidelines (proposed by [50]) for interpreting this value are:

.01=small effect,

.06=moderate effect,

.14=large effect.

Therefore, the effect size of .29 was large. It means that experimental class performed better than control class, the effect size was considerable.

Table 4.12: Independent samples test of post-test for writing performance

	Levene's Test for Equality of Variances		t-test for Equality of Means						
						Mean	Std. Error	95% Confidence Interval of the Difference	
	F	Sig.	T	df	Sig. (2-tailed)	Difference	Difference	Lower	Upper
post-test writing performance Equal variances assumed	.001	.980	-4.9	58	.000	-1.533	.310	-2.153	-.913
Equal variances not assumed			-4.9	57.9	.000	-1.533	.310	-2.153	-.913

3.6 PBL E-portfolios and Writing Anxiety's Subcategories

As for the last research question concerning the impact of PBL E-portfolios on writing anxiety's subcategories, the researcher opted for One-way ANOVA. The subcategories were somatic anxiety, avoidance behavior and cognitive anxiety.

Table 4.13 showed the mean scores for each of the subcategories. The mean score for somatic anxiety was 13.93 with the standard deviation of 2.13. The mean score for avoidance behavior was 14.53 with the standard deviation of 2.80. The mean score of cognitive anxiety was 22.90 with the standard deviation of 5.06.

Checking the significance value (Sig.) for Levene's test, since this number was *greater* than .05, the assumption of homogeneity of variance had not been violated. As Table 4.14 showed, the Sig. value was .070 and as this was greater than .05, the homogeneity of variance assumption was not violated.

Table 4.13: Descriptive statistics for subcategories scores

| | | | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum | Between-Component Variance |
	N	Mean			Lower Bound	Upper Bound			
somatic anxiety	30	13.93	2.13	.38	13.13	14.72	10.00	18.00	
avoidance behavior	30	14.53	2.80	.51	13.48	15.57	10.00	21.00	
cognitive anxiety	30	22.90	3.80	.69	21.47	24.32	15.00	31.00	
Total	90	17.12	5.06	.53	16.06	18.18	10.00	31.00	
Model Fixed Effects			2.99	.31	16.49	17.74			
Random Effects				2.808	4.67	29.57			24.82

Table 4.14: Test of homogeneity of variances for subcategories scores

Levene Statistic	df1	df2	Sig.
3.35	2	87	.070

Table 4.15: ANOVA for subcategories scores

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1507.62	2	753.81	84.07	.000
Within Groups	780.03	87	8.96		
Total	2287.65	89			

Using the statistical formula of one-way between-groups ANOVA, the researcher examined the significant difference between the students' scores on subcategories, as measured by the writing anxiety questionnaire. There was *a* statistically significant difference at the $p<.05$ level in students' scores for the three categories [$F(2, 87) =84.07$, $p=.01$] (See Table 4.15).As indicated by figure 4.1, the means plot also displays that the mean score of scores. Therefore, the third research question was rejected.
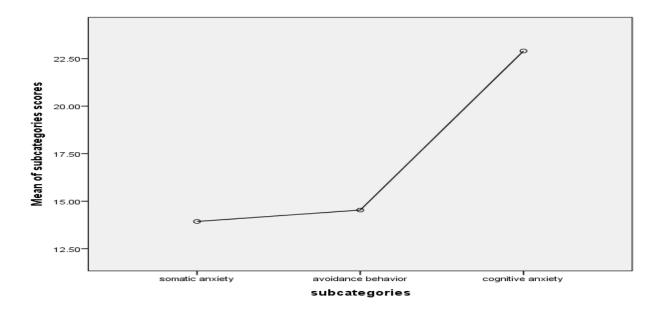
Figure 4.1: Means plots for subcategories scores

Table 4.16: Multiple comparisons for subcategories scores

(I) subcategories	(J) subcategories	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
somatic anxiety	avoidance behavior	-.600000	.77313	.741	-2.5255	1.3255
	cognitive anxiety	-8.96667*	.77313	.000	-10.8921	-7.0412
avoidance behavior	somatic anxiety	.60000	.77313	.741	-1.3255	2.5255
	cognitive anxiety	-8.36667*	.77313	.000	-10.2921	-6.4412
cognitive anxiety	somatic anxiety	8.96667*	.77313	.000	7.0412	10.8921
	avoidance behavior	8.36667*	.77313	.000	6.4412	10.2921

*. The mean difference is significant at the 0.05 level.

As displayed by Table 4.16, Post-hoc comparisons using the Tukey HSD test indicated the exact difference between the mean score for writing anxiety's subcategories that was significantly different between the categories. The asterisks (*) next to the values listed showed that the cognitive anxiety was significantly different from the other categories at the $p<.05$ level. The exact significance value was given in the column labelled **Sig**. In the results presented above, the subcategories of somatic anxiety and avoidance behavior were not statistically significantly different from one another.

4. Conclusion

This study contributes to the implementation of PBL E-portfolios in the writing skill among university students

in Iran. According to the data, PBL E-portfolios was a feasible and effective approach to alleviate learners' writing anxiety significantly and affected their writing performance positively. It is concluded, therefore, that the PBL E-portfolios initiated a meaningful increase in the mean score of the experimental group, consequently, PBL weblog-based e-portfolio can positively affect Iranian intermediate EFL learners writing anxiety and writing performance.

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APPENDICES

Appendix A: Second Language Writing Anxiety Inventory

1.My thoughts become jumbled when I write English compositions under time constraint.

a. Strongly disagree   b. disagree   c. no strong feeling either way

  d. agree   e. strongly agree

2. I often feel panic when I write English compositions under time constraint.

a. Strongly disagree   b. disagree   c. no strong feeling either way

d. agree   e. strongly agree

3. I tremble or perspire when I write English compositions under time pressure.

Strongly disagree   b. disagree   c. no strong feeling either way

d. agree   e. strongly agree

4. I feel my heart pounding when I write English compositions under time constraint.

a. Strongly disagree   b. disagree   c. no strong feeling either way

d. agree   e. strongly agree

5.I usually feel my whole body rigid and tense when I write English compositions.

a.Strongly disagree   b. disagree   c. no strong feelings either way

d. agree   e. strongly agree

6. I freeze up when unexpectedly asked to write English composition.

a. disagree   b. disagree   c. no strong feelings either way

d. agree   e. strongly agree

7.my mind often goes blank when I start to work on an English composition.

a. Strongly disagree   b. disagree   c. no strong feelings either way

  d. agree   e. strongly agree

8. I would do my best to excuse myself if asked to write English compositions.

a. Strongly disagree   b. disagree   c. no strong feeling either way

   d. agree   e. strongly agree

9. Whenever possible, I would use English to write compositions.

a. Strongly disagree   b. disagree   c. no strong feeling either way

   d. agree   e. strongly agree

10. I usually seek every possible chance to write English composition outside of class.

a. Strongly disagree   b. disagree   c. no strong feeling either way

d. agree   e. disagree

11. I often choose to write down my thoughts in English.

a. Strongly disagree   b. disagree   c. no strong feeling either way

 d. agree   c. strongly agree

12. I usually do my best to avoid writing English composition.

a. Strongly agree   b. disagree   c. no strong feeling either way

d. agree   c. strongly agree

13. Unless I have no choice, I would not use English to write compositions.

a. Strongly agree   b. disagree   c. no strong feeling either way

d. agree   e. strongly agree

14. I do my best to avoid situations in which I have to write English.

a. Strongly disagree   b. disagree   c. no strong feeling either way

 d. agree   e. strongly agree

15. I don't worry at all about what other people would think of my English compositions.

a. Strongly disagree   b. disagree   c. no strong feeling either way

d. agree   e. strongly agree

16. I 'm not afraid at all that my English compositions would be rated as very poor.

a. Strongly disagree   b. disagree   c. no strong feeling either way

d. agree   e. strongly agree

17. I don't worry that my English compositions are a lot worse than others.

a. Strongly disagree   b. disagree   c. no strong feeling either way

d. agree   e. strongly agree

18. I'm afraid that the other students would deride my English compositions if they read it.

a. Strongly disagree   b. disagree   c. no strong feeling either way

d. agree   e. strongly agree

19. I'm afraid of my English compositions being chosen as a sample for discussion in class.

a. Strongly disagree   b. disagree   c. no strong feeling either way

d. agree   e. strongly agree

20. While writing in English, I'm not nervous at all.

a. Strongly disagree   b. disagree   c. no strong feeling either way

d. agree   e. strongly agree

21.If my English composition is to be evaluated, I would worry about getting a very poor grade.

a. Strongly disagree   b. disagree   c. no strong feeling either way

 d. agree   e. strongly agree

22. While writing English compositions, I feel worried and uneasy if I know they will be evaluated.

a. Strongly disagree   b. disagree   c. no strong feeling either way

d. agree   e. strongly agree

23. While writing in English, I often worry that the ways I express and organize my ideas do not conform to the norm of English writing.

a. Strongly disagree   b. disagree   c. no strong feeling either way

d.   agree   e. strongly agree

24. While writing in English, I often worry that I would use expressions and sentence patterns improperly.

a. Strongly disagree   b. disagree   c. no strong feeling either way

 d. agree   e. strongly agree

25. I usually feel comfortable and at ease when writing in English.

a. Strongly disagree   b. disagree   c. no strong feeling either way

d. agree   e. strongly agree

26.When I write in English, my ideas and words usually flow smoothly.

a. Strongly disagree   b. disagree   c. no strong feeling either way

d. agree   e. strongly agree

Appendix B: Internet & Computer Questionnaire (IT Questionnaire)

This is a confidential questionnaire. We ask for your name and email only so that we can match the questionnaire with future questionnaires. Information will not be used for any other purposes. The questionnaire asks you about your use of the Internet. The internet can be defined in many ways but for the purpose of this questionnaire , please take the internet to mean , world wide web, e-mail and communication between computers. This is not a test and there is no right or wrong answers.

1.   Name:…………………
2.   Date of birth:…………..
3.   Your e-mail address and phone number: (required)…………….. ………
4.   Sex: …………………..
5.   Degree: ………………..
6.   Age:…………………..
7.   Year you first entered university: ………….
8.   Do you own a computer?   Yes   No

9.   Do you have your own personal e-mail address?   Yes   No

10.   Do you have your own personal webpage?   Yes   No

11.   Where do you access the internet? (You may circle more than one).

 Home/study bedroom   library   internet café   computer laboratory

If you have used the World Wide Web or e-mail please could you answer the following questions? Please don't leave any blanks. Each statement is followed by five numbers 1, 2, 3, 4, and5, and each number means the following:

 1' means that "I strongly disagree with this statement".

2 ' means that "I disagree with this statement".

3 ' means that "I am neither agree nor disagree with this statement".

4 ' means that "I agree with this statement".

5 ' means that "I strongly agree with this statement".

12. I find the World Wide Web difficult to use.   1 2 3 4 5

13. I find the World Wide Web useful.   1 2 3 4 5

14. I find email difficult to use.   1 2 3 4 5

15. I find e-mail useful.   1 2 3 4 5

16. I find MSN /Yahoo/Google difficult to use.   1 2 3 4 5

17. I find MSN/Yahoo/Google useful.   1 2 3 4 5

If you have used the World Wide Web or e-mail for school /college work please could you answer the following questions?

18. I found the World Wide Web useful in my college work.   1 2 3 4 5

19. I found the World Wide Web difficult to use in my college work.   1 2 3 4 5

20. I found e-mail useful in my college work.   1 2 3 4 5

21. I found e-mail difficult to use in my college work.   1 2 3 4 5

22. I found MSN/Yahoo/Google useful in my college work.   1 2 3 4 5

23. I found MSN/Yahoo/Google difficult to use in my college work.   1 2 3 4 5

24. I would describe myself as an internet user.   1 2 3 4 5

25. I feel very emotionally attached to other internet users in general.   1 2 3 4 5

26. I feel a part of an internet user's community.   1 2 3 4 5

27. When there is an opportunity I always get involved in using the internet.   1 2 3 4 5

28. Whenever I can, I tell people I am an internet user.   1 2 3 4 5

29. I like the people who use the internet frequently.   1 2 3 4 5

30. I am very similar to other internet users.   1 2 3 4 5

31. Using the internet is a very important aspect of being a student.   1 2 3 4 5

32. I always feel anxious when using the internet.   1 2 3 4 5

33. I go out of my way to avoid using the internet.   1 2 3 4 5

34. It is easy for me to use the internet.   1 2 3 4 5

35. It is important for me to be able to use the internet.   1 2 3 4 5

36. Other internet users are very like me.   1 2 3 4 5

37. My anxiety about using the internet bothers me.   1 2 3 4 5

38. I'm more anxious about using the internet than I should be.   1 2 3 4 5

39. I'm very different from internet users.   1 2 3 4 5

Please estimate the number of times you used the following applications in an average week. Please don't leave any blanks. Each statement is followed by five numbers 1, 2, 3, 4, and5, and each number means the following:

1' means that "I never use the mentioned application".

2 ' means that "I use the mentioned application once a week".

3 ' means that "I use the mentioned application several times a week".

4 ' means that "I use the mentioned application once a day".

5 ' means that "I use the mentioned application several times a day".

40. E-mail.	1 2 3 4 5
41. Chat.	1 2 3 4 5
42. Newsgroups/discussion groups.	1 2 3 4 5
43. Game web sites.	1 2 3 4 5
44. Other specialist web sites (e.g. sports web sites).	1 2 3 4 5
45. Surfing the web with no set purpose.	1 2 3 4 5
46. Downloading (e.g. pictures, games, music, and software).	1 2 3 4 5
47. Listening to radio stations over the world wise web.	1 2 3 4 5
48. Shopping.	1 2 3 4 5
49. Searching the library web sites for references.	1 2 3 4 5
50. Contacting staff via e-mail for information.	1 2 3 4 5
51. Contacting external experts via e-mail for information.	1 2 3 4 5
52. Contacting other students via e-mail concerning college work.	1 2 3 4 5
53. Contacting other students via MSN concerning college work.	1 2 3 4 5
54. Using the college web pages.	1 2 3 4 5
55. Using the web, excluding college web pages, for searching for relevant materials.	1 2 3 4 5
56. Posting to newsgroups and message boards.	1 2 3 4 5
57. Online assignments.	1 2 3 4 5
58. Downloading college materials from the college web pages.	1 2 3 4 5