Research Paper

An Investigation into the Impact of Project-based Learning on Improving Writing and Speaking as Productive Skills

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ABSTRACT

In the present study, there was an attempt to investigate the impact of project-based learning on the productive skills (writing and speaking) of Iranian EFL learners. The participants of the study were selected out of 90 EFL learners who were given a piloted PET and the results were used to select 60 learners whose scores fell within the +/- one standard deviation from the mean. These 60 selected learners were randomly divided into two equal groups each consisting of 30 participants. One group served as the experimental group that received the main treatment (project-based learning) in line with Stoller (2006) and another as the control group. Then, the two groups took the pretest of speaking and writing to assure that they were homogeneous in terms of speaking and writing. After the 12 sessions of treatment, the participants took writing and speaking posttest, the results of independent samples t-test indicated that project-based learning had a significant effect on both the writing and speaking performance of the participants in the experimental group.

Keywords: *Project-based, Productive Skills, Speaking, Writing*

INTRODUCTION

Productive language skills are normally referred to as speaking and writing skills. The reason for calling them productive language skills is that in speaking and writing, learners need to produce language either orally or in pen. Speaking and writing have been the subject of numerous studies in the life span of L2 language acquisition. Speaking skill is undoubtedly an essential language skill and the proof is that people who know a particular language are conveniently called speakers of that language, e.g., English speakers (Ur, 1996(. On the other hand, writing is also considered essential particularly for the academic achievement and life requirement of the modern life.

Second language acquisition literature is replete with studies on L2 speaking and wiring with various focuses. Some focuses on the nature of speaking and writing and by proposing definition of writing and speaking or framework indicating components of writing and speaking. According to Chastain (1988) and Zhang et al. (2021), speaking serves as a vehicle that allows learners to take part in class activities, providing them with an opportunity of expressing themselves and their ideas.

He defines speaking as "the performance of the speakers' competence, speaking requires language students to activate their knowledge to produce a massage" (Chastain, 1988, p. 272). Regarding writing, Myhill (2008) notes that writing is viewed as a cognitively demanding task which is associated with the physical act of writing, the phonemic creation of vocabulary items, changing the vocabulary items into grammatically correct sentences as well as the construction of a coherent text that is compatible with the requirements of the task.

Other studies on productive skills have attempted to find ways to enhance speaking and writing among L2 learners. For instance, the history of second language acquisition is full of methods and approaches to find the most effective way for teaching a second language. In addition, some have investigated how task types affect L2 writing development (e.g., Birjandi & Malmir, 2009; Murad, 2009; Farahani & Khaganinejad, 2009; Cao et al., 2022; Hao et al., 2021; Wei et al., 2023) and some investigated how explicit teaching and task type affect L2 oral proficiency (e.g., Spada & Lightbrown, 2008).

Among the various perspectives on second language acquisition, project-based learning was an approach to L2 learning first introduced about two decades ago. This approach was first adopted by Fried-Booth (1986), Haines (1989), and Legutke & Thomas (1991). Project-based learning is backed by interactionist theories of learning which emphasize the role of interaction and communication in language learning (e.g., Long, 1983, 1996; Swain, 1995). In project-based learning, "students collaborate on sequential tasks and actively engage in gathering and processing information" to develop a final project (Mills, 2009, p. 609). Stoller (1997) summarized six characteristics of PBL in second/foreign language classrooms:

(1) Project work focuses on content learning rather than on specific language targets, (2) project work is student centered though the teacher plays a major role in offering support and guidance throughout the process, (3) project work is cooperative rather than competitive. Students can work on their own, in small groups, or as a class to complete a project, sharing resources, ideas, and expertise along the way, (4) project work leads to the authentic integration of skills and processing of information from varied sources, mirroring real-life tasks,

(5) project work culminates in an end product (e.g., an oral presentation, a poster session, a bulletin board display, a report, or a stage performance) that can be shared with others, giving the project a real purpose. The value of the project, however, lies not just in the final product but in the process of working towards the end point. Thus, project work has both a process and product orientation, and provides students with opportunities to focus on fluency and accuracy at different project-work stages, and (6) project work is potentially motivating, stimulating, empowering, and challenging. It usually results in building student confidence, self-esteem, and autonomy as well as improving students' language skills, content learning, and cognitive abilities (Stoller, 1997, pp. 4-5).

Since the project-based learning has interaction and collaboration at its heart, it can be argued that it can contribute to the oral proficiency. Furthermore, the same elements of interaction and collaboration can help the learners develop their writing skill by receiving feedbacks from peers. Interactions and peer feedback have essential roles in L2 writing classes (Stoller, 1997).

The first issue that is considered the starting point for doing the current study is continuing the same tradition of doing research to reach more effective and efficient ways for enhancing the language proficiency of the Iranian L2 learners. In this regard, speaking is still considered the main language skill and many Iranian EFL learners' main purpose of learning English is learning English oral proficiency. Masrai (2023) believes that learning speaking is the first learning objective of L2 learners. According to Ur (1996, p. 121), "Unlike reading, writing or listening activities, speaking requires some degree of real time exposure to an audience". Same situation exists for writing skill because nowadays more and more people enter universities and colleges who need to develop the writing skill as part of their academic achievement. This issue is thornier when the students enter postgraduate courses and need to write scientific papers to find academic recognition as part of their future academic careers. Aside from that, developing L2 writing competence is a challenging task for L2 learners which means that more research is needed to find a more practical way to help the L2 learners with writing development (Wigglesworth & Storch, 2009). Another issue is the lack of research on project-based learning in second language acquisition and its contribution to L2 learners' writing and speaking competence. There have been few studies on project-based learning in second language acquisition such as Dharmayanti & Wiryadi Joni (2021) Turnbull (1999a, 1999b), Beckett (1999), and Mohan and Beckett (2001). The one by Turnbull (1999) focused on the effectiveness of project-based learning on overall language learning in French classroom, the one by Beckett (1999) was on teacher's goals and teachers and students' evaluations of project-based learning though interviews and observations and the one by Mohan and Beckett (2001) was the implementation of project-based learning content-based ESL class at a Canadian university.

In other words, the study indicated the positive effect of project-based learning on productive skill which is good news but the problem is that context of the study is quite different from that of Iranian context of L2 education. To the best knowledge of the researchers, no studies have specifically dealt with direct effect of project-based learning on L2 writing and speaking skills of Iranians. This study contributes to our understanding regarding the current status of project-based learning and its contribution to language learning in general and L2 writing and speaking in particular. This contribution occurs in two ways: through extensive literature review and through field research.

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The literature review on project-based learning and L2 acquisition can enlighten us about the applicability of project-based learning in L2 classroom, teachers' and learners' reactions to project-based learning and its effect on various aspect of language learning. In addition, investigation of project-based learning in the current study and its effect on L2 speaking and writing can further inform us about its application and efficiency in Iranian context of L2 learning and teaching.

Regarding the practical contributions of the current study, it should be noted that results of the study will be significant to the language teachers, teacher trainers, curriculum developers and material developers. Based on the results of the study, language teachers and teacher trainers may give a second thought regarding their teaching techniques for writing and speaking instructions. Similarly, curriculum developers may decide on the inclusion of project-based learning in their curriculum for promising positive L2 learning results. In the same vein, material developers may decide on writing and speaking activities that relies on project-based learning or stick to their view of L2 teaching materials or look for alternative solutions.

Research Questions

The present study aimed to answer the following research questions:

Q1) Does project-based learning have significant effect on the English writing of Iranian EFL learners?

Q2) Does project-based learning have significant effect on the English speaking of Iranian EFL learners?

METHOD

Design of the Study

The study followed a quasi-experimental design in which experimental and control groups took pretest and posttest before and after project-based learning respectively. It was quasi-experimental because there was no true randomization in sampling. The dependent variable of the study was productive skills (writing and speaking) and independent variable was project-based learning.

Participants

The initial participants of the study were 90 Iranian EFL learners at the intermediate level who were selected based on convenience sampling These 90 learners were given a piloted preliminary English Test (PET) and the results were used to select 60 learners whose scores lay within the range of +/- one standard deviation from the mean. Then, the 60 participants were divided into two groups to serve as experimental and control groups. Both males and females participated in the study and they were within the age range of 18 to 25.

Instrument
PET

PET is an English language proficiency test designed to test the English language learners' language proficiency at intermediate level of language proficiency. The test has been developed by Cambridge ESOL group and is well recognized internationally. The test contains 4 sections to test the four language skills i.e. reading, speaking, writing, and listening. Reading and listening section parts are in the form of

multiple format test while speaking and writing has more subjective nature. For scoring the speaking and writing sections, two raters rated the speaking and writing performances of the participants.

Speaking and Writing Test (pretest and posttest)
The same speaking and writing sections of PET served as the pretest and posttest. First, speaking and writing sections of PET was used as pretest and then as posttest after treatment to trace the effect of project-based learning on reading and writing competence of the participants.

Data Collection and Analysis Procedure
The data analysis included both descriptive and inferential statistical analyses. In descriptive analysis, the writing and speaking performances of the experimental and control groups were compared in terms of mean scores and standard deviations to get an idea of how they have performed before and after treatment. Then independent samples t-test was used to compare the writing and speaking performances of the two groups in terms of writing and speaking performances to statistically answer the research questions.

RESULTS

The main instrument in the study was PET the results of which were used for homogenizing participants in terms of overall language proficiency. In addition, the reading section of PET was used for measuring the dependent variable of the study i.e. reading comprehension. Here in this section, the reliability of PET is reported. It should be noted that reading and listening sections of PET were objective tests that accordingly the reliability of these two sections was estimated using the internal consistency measure of Cronbach's Alpha. Table 4.1 shows the Cronbach's Alpha of reading and listening section of PET administered to a pilot sample of 30 EFL learners.

Table 1
Reliability Analysis of PET Using Cronbach's Alpha

	N	Minimum	Maximum	Mean	Std. Deviation	Alpha	Number of Items
Reading Pilot	30	14.00	24.00	18.5333	2.68756	.788	35
Listening Pilot	30	6.00	15.00	10.3000	2.49344	..821	25
Valid N (listwise)	30						

The results of reliability analysis in the pilot study indicated that both reading and listening sections of PET have reliability indices above 0.70 which is an indication of the reliability of PET listening and reading.

As for the reliability of speaking and writing sections, inter-rater reliability was sought because these two sections were subjective tests. Therefore, two raters scored the speaking and writing sections of PET in the pilot study and degree of the relationships between the scores given by the two raters were

considered as the indices of reliability of PET speaking and writing. Table 2 shows the results of correlation coefficient between the scores of the two raters.

Table 2

Correlation Coefficient for PET Writing and Speaking in the Pilot Study

Writing		Writing rater 2
Writing rater 1	Pearson Correlation	.721**
	Sig. (2-tailed)	.000
	N	30
Speaking		Speaking rater 2
Speaking rater 1	Pearson Correlation	.889**
	Sig. (2-tailed)	.000
	N	30
**. Correlation is significant at the 0.01 level (2-tailed).		

According to the results of correlation analysis the relationship between the two raters' scores in speaking and writing were above 0.70. Thus, PET writing and speaking had the acceptable level of inter-rater reliability.

The first research question of the current study sought to explore if project-based learning has significant effect on the English writing of Iranian EFL learners. In order to answer this research question, the writing scores of the two groups on posttest were compared using an independent samples t-test. Table 3 displays the descriptive statistics of the control and experimental group scores on writing posttest.

Table 3

Descriptive Statistics of the Writing posttest of the Groups

	Groups	N	Mean	Std. Deviation	Std. Error Mean	Kolmogorov-Smirnov		
						Statistic	df	Sig.
Writing Posttest	Experimental	30	12.2121	4.32312	.65242	.103	30	.221
	Control	30	9.8743	3.32451	.75241	.104	30	.334

Table 3 clearly shows that experimental group scored higher than control group in terms of writing posttest scores. However, to detect any significant difference, it was necessary to apply an independent samples t-test. The use of the independent samples t-test was guaranteed due to the fact that the scores of the two groups were normally distributed according to the results of Kolmogorov Smirnov test of normality (p>0.05). Table 4 presents the results of independent samples t-test on the posttest scores of the two groups.

Table 4

Results of Independent Samples t-tests for the Posttest Writing Sores

		Levene's Test				
		F	Sig.	t	df	Sig. (2-tailed)
Writing Pretest	Equal variances assumed	1.225	.175	.209	58	.002
	Equal variances not assumed			.215	53.921	.002

According to the results of independent samples t-test, there was a significant difference between the two groups in term of writing posttest scores, p=0. 002 which is lower than the confidence level of 0.05. Therefore, the null hypothesis of the study was rejected and it was concluded that project-based learning had a significant effect on the English writing of Iranian EFL learners.

The second research question of the current study aimed to discover if project-based learning has a significant effect on the speaking of Iranian EFL learners. In order to answer this research question, the speaking scores of the two groups on posttest were compared using an independent samples t-test. Table 5 demonstrates the descriptive statistics of the control and experimental group scores on speaking posttest.

Table 5

Descriptive Statistics of the speaking posttest of the Groups

	Groups	N	Mean	Std. Deviation	Std. Error Mean	Kolmogorov-Smirnov		
						Statistic	df	Sig.
Speaking Posttest	Experimental	30	12.4531	4.21424	.78451	.212	30	.198
	Control	30	8.2565	5.12423	.87451	.329	30	.219

Table 5 clearly shows that experimental group scored higher than control group in terms of speaking posttest scores. However, to find any significant difference, it was necessary to apply an independent samples t-test. The use of the independent samples t-test was guaranteed due to the fact that the scores of the two groups were normally distributed according to the results of Kolmogorov Smirnov test of normality (p>0.05). Table 6 presents the results of independent samples t-test on the speaking posttest scores of the two groups.

Table 6

Results of Independent Samples t-tests for the Posttest Speaking Scores

		Levene's Test			
		F	Sig.	t	df

					Sig. (2-tailed)
Writing Pretest	Equal variances assumed	1.487	.784	.321	58	.000
	Equal variances not assumed			.325	53.874	.000

According to the results of independent samples t-test, there was a significant difference between the two groups in term of speaking posttest scores, p=0.00 which is lower than the confidence level of 0.05. Therefore, the null hypothesis of the study was rejected and it was concluded that project-based learning had a significant effect on the English speaking of Iranian EFL learners.

DISCUSSION

The present study aimed to investigate the effect of project-based learning on the English writing and speaking of Iranian EFL learners. The results of statistical analyses indicated that project-based learning had a significant effect on both the writing and speaking performance of the participants in the experimental group.

The findings of the current study are in line with an investigation done by Shafaei & Abdulrahim (2015) in which they attempted to study the impact of Project-Based Learning (PBL) in Iranian EFL learners' assistance and new vocabulary retention. Two groups of participants (experimental and control groups) were chosen. The experimental group was exposed to PBL method while was being taught by the use of conventional method. The findings revealed that learners using PBL method (experimental group) outperformed the control group regarding their vocabulary retention and recall rate.

The results of the present study can be justified on the basis of cooperative language learning. Benson (2001) defined "cooperation" as a process in which two or more learners need to work together to achieve a common goal, usually the completion of a task or the answering of a question" (as cited in Beatty & Nunan, 2004, p. 165). Schrage (1990) views cooperation as "the process of shared creation: two or more individuals with complementary skills interacting to create a shared understanding" (p. 40). Thus, the cooperative learning is a process in which the leaners are divided into small groups, interacting and cooperating with each other to accomplish a task or a project. Scholars have argued that participation in pair or group work enhances practice opportunities considerably. This usually results in reinforcement of oral skills, and creates diverse activities in the classroom (McGroarty, 1993).

Cooperative language learning gives the learners a chance to be exposed to more comprehensible input and output and hence they are more likely to engage in negotiation of meaning. Jia (2003) argues that useful language learning hinges on engaging in social interaction so that the communication needs in target language are met more quickly. This is because the leaners who are divided into teams and subgroups get many times as many opportunities to talk and negotiate meaning compared to traditional methods.

Crandall (1999) and Kagan (1995) believe that learning a foreign language within the framework of cooperative learning contributes to the construction of natural, interactive environments in which learners listen to each other, make inquiries, and make issues clearer. They argue that interaction within

and between the groups help the students with negotiating for more comprehensible input as well as with changing their output to render it more understandable to other students. Similarly, Zhang (2010) states: In cooperative group settings, when communicating in group work, students need to make them understood so they adjust their language to suit the members of that group. As a result, there is a much higher proportion of comprehensible input (p. 82).

Cooperative Learning is in keeping with constructivist theories which deem the contribution of learners essential in deriving their own knowledge in a social setting. Cooperative Learning techniques serve as an ideal teaching method with respect to learning   languages. All instructors would accept that being able to put the language to use is the most significant outcome of language learning and that without practice learners fail to learn the subject.

According to Long & Porter (1985) a new approach has been taken to the role cooperative learning can play in classroom as well as the instructional and affective reasons behind using such a type of learning. In the same context, the potential advantages and merits concerning this kind of learning have been examined in the context of second/foreign language learning (Coelho, 1992; Cohen, 1994; Holt, 1993, & Kessler, 1992).

Cooperative Learning provides the students with an opportunity to put the language to use. In addition, it also lets them discover the vocabulary and the grammar for themselves and they come to learn how to make manipulations in the language in order to meet their needs (Kagan, 2014).

According to Vygotskian approach, social environment of cooperative learning plays a key part in learning. Vygotsky puts emphasis on the developmental trends which unfold through the individual's engagement and interactions with others in the social context. Based on this view, children grow as thinkers through internalization of processes that were initially experienced in the social context (Cowie, 1994). According to Grundman, (2002):

There are clear benefits when another adult interacts with a less expert one. Rather than just transferring information from one person to the next, learning is about 'the negotiation of meaning. For it to be effective, it must be embedded in personally significant issues, human settings and social relationships. Cooperative learning, from this standpoint, creates opportunities for the understanding of meanings to take place through dialogue (p. 8).

Referring to another advantage of cooperative learning, (Cowie, 1994) maintain that children come to know how to effectively interact and communicate with their peers, strengthen their own self-confidence as they express issues of mutual concern, and expand their network of friendships. Cowie & Rudduck (1988) believe learners who are engaged in cooperative learning obtain higher achievement compared to those who act in a competitive and individualistic learning context. In addition, cooperation influences the relations among learners, their self-confidence, and long-term retention positively.

CONCLUSION AND IMPLICATIONS

Evidently, human beings are social creatures by nature. Human beings need to have social communication in all aspects of our life. As a means to satisfy this need i.e. socializing, human beings have used group working for educational goals for hundreds, and perhaps even thousands, of years. It would probably be inconceivable to see an individual who has never been required to engage in a group

work during his/her education. Unfortunately, traditional form of group work does not seem to be efficient enough to lead to desired results such as higher-level thinking abilities and critical and analytical thinking. This is because traditional group work usually does not have the structure required to enhance language learning. However, working in groups and pairs via project-based learning in which the activities are well-defined and structured will lead to effective learning (Stoller, 2006).

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