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The Effect of Implementing Guided Discovery Tasks on Receptive Vocabulary Learning of Iranian EFL Learners in Blended Classes

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Abstract

In the current research an OPT test assigned to 140 students of Behgouyesh institution in Ardabil and homogenized learners were determined. Among all the learners, 32 intermediate male learners selected randomly and divided into control and experimental group. To capture the initial performance of the control and experimental groups, a pretest from TESTS HOME site was held. Regarding control group, students were given time to use discovery learning during each session; On the other hand, in Experimental group guided discovery and blended learning were combined together. It took 2 months to carry out the treatment. The sessions were held once a week forth total of 4 to 5 times each month. For evaluating the possible differences between the control and the experimental group, independent sample t-test was used to the results of the pretest and the posttest of receptive vocabulary. Besides, paired sample t-test was utilized to check for the students' potential enhancement in receptive vocabulary learning from the pretest to the posttest. Finally, it was concluded that both groups progressed in the posttest of receptive vocabulary. However, this improvement was statistically significant simply in the experimental group ($P \leq .0001$).

Keywords: guided discovery, receptive vocabulary, blended learning

1. Introduction

In his study, Olimova (2020) asserted that words are the most essential for fluent speaking or learning a particular language in a practical way. He added that no difference what your goal is when acquiring a foreign language, you ought to be fluent in gaining it. It refers to all target language skills (e.g., syntax, words, writing, and phonetics) proficiency. Olimova (2020) said that the majority of the learners feel easy with language principles; nonetheless, when they get a chance to use their second language knowledge, in contrast to actual speaking, reading, or writing, they look for complicated words in the dictionary. Applying the different reachable methods is one strategy for helping learners in acquiring many vocabularies (Alemi & Lari, 2013). Therefore, one of the shortages which the researcher attempted to consider in the process of learning was synthesizing the learning process with a technology-centered strategy.

There were lots of studies (Lessard-Clouston, 2013; McCarten, 2007; Octaberlina, & Anggarini, 2020; Ruzmetova, Orazova, & Kayumova, 2020; Susanto, 2017) with different methods in the field of vocabulary learning to show a suitable way for learning vocabularies. But still, there was a gap in this area. The gap in this context was that there was no study to combine guided discovery, blended learning, and receptive vocabulary to be performed in Iran.

The researcher of the current research felt a problem that was about the students' knowledge of receptive vocabulary. In this case, the students who participated in the institution to learn English with their teacher had no suitable achievement in the receptive vocabulary tests. In this regard, the researcher conducted research based on receptive vocabulary. The researcher tried to think about a solution to solve the current problem, and accordingly, she used guided discovery learning in blended class to improve receptive vocabulary.

The contribution of the research can be represented in three main dimensions. At first, it can be helpful for managers of the educational settings. They can use the blended classes with guided discovery learning instead of traditional class to get better results. Second, it can be beneficial for teachers to try guided discovery learning and blended procedures during the process of teaching. Moreover, teachers can use guided discovery learning and blended class projects in the process of private teaching. The third group that can use the results of the thesis are students. Students can benefit from guided discovery learning and blended class to learn English anytime, anywhere. Finally, syllabus designers and curriculum makers can design the process of learning and teaching based on the related contents to be performed in the classes.

In addition to all the above mentioned, there can be other aspects that may be considered as the significance of the research. First, the technology value is probed through the learning process. This progression has guided instructors, material and syllabus designers to notice the opportunity of combining technology with the regular curriculum advancement. Several researchers think of technology as practical devices in the mainstream of language teaching (Chirimbu &Tafazoli, 2013; Doughty & Long, 2003). They regard that it can increase learner self-government and assists trainers to have dominance over the process of language learning (Warschauer, 1996). Moreover, Ghasemi, Hashemi, and Haghighi Bardine (2011) kept the idea that students can reach new data and extended information by utilizing technology, and they can be achieved easily and fast.

The second dimension is about word learning. Word knowledge is continuously regarded as an essential device for second language learners (Kumar, 2020). Vocabulary knowledge plays an important role in language learning (Cameron, 2001). Harmon, Wood, and Kiser (2009), and Linse (2005) said that learners' word improvement is a significant area of their language progression. Vocabulary knowledge is continuous with restricted knowledge of words; a person cannot interact well, particularly in a second language. Schmitt and Carter (2000) emphasize the vocabulary learning significance, as vocabulary knowledge plays a vital part in interaction competence and second language learning. In addition, Nation (2001) states the relationship between lexical knowledge and language utilization is complementary: lexical knowledge empowers language use, and on the other hand, language use increases word knowledge.

Laufer and Nation (1999), Maximo (2000), Read (2000), Gu (2003), Marion (2008), Nation (2011), and others have understood that lexical acquisition is vital for practical second language utilization and has a significant role in the creation of full spoken and written materials. Learning words plays an essential role in all linguistic abilities (i.e., listening, speaking, reading, and writing (Nation, 2011) of English as a second or foreign language. In addition, Nunan

(1991) specified that sufficient vocabulary competence is really important in applying a second language because the vast vocabulary shortages weaken us to use syntax and functions we may acquire for complete interaction. The study has proved that readers of a second language depend strongly on vocabulary competence, and its lack is the central and the biggest blockage for readers of the target language to face (Huckin, 1995).

Thirdly, guided discovery is noticed. Wong and Yeh (2013) said that guided discovery functions activities in learning are good and attractive when they are put in language training and learning methods. Furthermore, Mishan (2004) stated that guided discovery utilization might own a big influence on language acquisition generally, richness and dominance of linguistic content especially.

There was a question in this research that the researcher was going to find a suitable answer for it. This question is represented in this section.

RQ1. Does guided discovery have a significant effect on the improvement of receptive vocabulary learning of Iranian EFL learners in blended classes?

According to the above research question, the following hypothesis was presented.

H01. Guided discovery does not have any significant effect on the improvement of receptive vocabulary learning of Iranian EFL learners in blended classes.

2. Review of the Literature

These days, people all around the world are connecting together through digital tools, and they can use different international languages. One of the international languages that are widely spreading in the world is English. The current language has four basic skills (listening, speaking, writing, and reading). In addition, there are some others concepts that can be taught to make a language learner able to make connections with others in the English language (vocabulary and grammar ability). It is worth noting that there are a number of different strategies and methods to be used to teach all concepts of language to the learners. The current research focused on one component of the English language that was vocabulary learning. Learning vocabularies and the strategies used in the current thesis that were guided discovery and blended learning are explained in detail.

2.1 Guided Discovery

The word ‘discover’ originates from the Latin word ‘discooperire,’ which means to find out or reveal or 'to be the first to find out, see, or know about, find out, learn of the existence of, or realize (Lavine, 2012). Educators from all over the world have pushed for using discovery as the central “find out” method. Bruner, in 1961, gave Dewey’s method of learning by doing a new name: Discovery Learning. This was in the 1960s. Bruner didn’t just mean “finding out something that people didn’t know before” when he said “discovery.” He also meant "all ways of getting knowledge for yourself by using your own mind” (p. 21). Bruner’s (1961) discovery learning method generally puts the student and the teacher in "a more cooperative position” (p. 23).

Weibell (2011) says that Bruner’s theory says that the student is not a passive listener, but is part of the formulation and sometimes plays the main role in it. He will be conscious of other options and may even act as if they were true. He may also evaluate new knowledge as it comes to him. Discovery Learning is an approach to teaching in which students engage with their surroundings by searching and attempting to manipulate objects, struggling with questions and controversial issues, or doing experimental studies (Ormrod, 2001).

Weibell (2011) said that bruner’s goal was to show that discovery follows a pattern, but he thought that what Bruner said about discovery went further than what was anticipated. Bruner also said that his theory had improved in ways he was unaware of because Discovery Learning has become known as a formless play strategy; He mentioned that he had written a paper called “The Act of Discovery,” which was published in the Harvard Educational Review in 1961. This paper was used by a number of teachers as the basis for a coaching school. As often happens, the discovery concept, which was originally set up to stress the importance of self-guidance as well as intentionality, became separated from its surroundings and turned into a goal in and of itself. Some teachers thought that discovery was good in and of itself, and that it didn't matter what it consisted of discovery or who made it (1971).

Some new studies have also proposed that minimally-guided direction does not create adequate results because it doesn't correctly involve in the trends of our performance or long-term memory (Kirschner, Sweller, & Clark, 2006). There have been noticeable words about whether Kirschner et al. (2006) correctly specified the strategies and trends in discovery learning. Furthermore, Guided Discovery Learning (GDL) highlights the key role of the tutor/guide but created by the model of discovery learning. Lavine (2012) confirmed that Guided Discovery Learning integrates academic direction given by a trainer, speech presenter, or writer with a more learner- and activity-oriented strategy. Brown and Campione (1995) endorsed GDL by arguing that it is a kind of halfway between an academic (or receptive) approach and a discovery method. Otherwise, they understood that GDL is not a convenient simplified strategy and that it needs mind which has enough experience and education to recognize the suitable times to come across and when to abandon well enough lonely.

This has been understood that a Guided Discovery Learning technique needs specific teacher instruction. Janssen, Westbroek, and Driel (2014) reported that when educators completed practical training on how to put GDL into their habitual teaching work, there was an important enhancement in their enthusiasm and capability to follow this instructional style. This indicates a requirement for cost-effective and adequate training aspects for new teachers if an academic process needs to successfully implement GDL.

In their study, Janssen et al. (2014) studied the design obligations made by professional biology instructors applying GDL, supported by an inventory of learners' answers. The resulting lesson designs were pointed by both applying design factors and GDL features. In spite of a fundamental lack of willingness and competence, results revealed that instructors were adequately capable of designing GDL lesson plans. Janssen et al. said that vast observation research clarified those instructors have rarely practiced GDL. In addition, they noted that the majority of instruction is still largely guided by a direction that can be articulated when the instructor first explains the theory, followed by learners' practice. In addition, instructors like to ask learners relatively low questions, which do not impede the acquisition of new information.

2.2 Blended Learning

Nowadays, blended learning strategy in training second language has become a noticeable matter for language teachers all around the world. Blended learning is explained as a learning strategy that integrates technology with one-on-one learning. Specifically, blended learning means different presentation strategies for achieving the course goals by synthesizing one-on-one teaching in a usual class involving online teaching (Akkoyunlu & Soylu, 2006). Bersin (2004) stated that blended learning is the mixture of various educational media (technologies, tasks, different kinds of events) to produce a desirable teaching program for a particular learner. McGee and Reis (2012) say that blended learning includes teacher and students' cooperation in combined representation modes, generally one-on-one and technology-oriented, to advance learning results that are didactically championed by homework, tasks, and evaluation as suitable for a presented mode and which bridge course context in a way which is useful for the student (p. 9). This shows that in blended learning, virtual technology is not solely complementary but the main part of the educational program. It doesn't mean an instructor can easily begin a chatroom or upload speech videos and state he is directing a compound classroom.

The advantages of blended learning cannot be ignored (Garrison & Kanuka, 2004; Poon, 2013). Certain advantages of blended learning are as follows:

1. motivating active, concurrent, free, cooperative, and essential learning experiences,

2. supporting students in order to gain satisfaction and fulfillment adequately,

3. increasing learning and results involving content, goals, materials, approaches, and evaluation,

4. working more adequately with personal varieties,

5. administering and conducting the classroom easily, and

6. discounting the cost of every considerate hour.

Otherwise, blended learning is able to be a problem if it is not fulfilled correctly. According to the former researchers (Hofmann, 2011), possible challenges related to blended learning can be as follow:

1. the technology and internet availability,
2. the requirement of an LMS meeting all the students' and educators' necessities,
3. talents and approaches toward dealing with modern technology,
4. instant and effortless communication to address students' problems,
5. cultural acceptance for paralleling modernity with observing someone's identity and beliefs, and
6. conducting class for evaluating and observing the students.

2.3 Receptive Vocabulary

Receptive vocabulary encloses all the terms that can be comprehended by a man, involving spoken, written, or hand-operated signed vocabulary (Owens, 2001). Although, he confirmed that explanatory words include those that a man can explain or create, for example, by means of speaking or writing. Generally, receptive words seem to advance ahead of expressive ones over the course of initial language advancement, and receptive words are broadly larger than expressive ones (Owens, 2001).

A person's receptive words involve all of the vocabularies that one comprehends and understands upon hearing or reading (Komachali & Khodareza, 2012), despite the fact that productive words enclose the vocabularies that a man can create or produce. Vocabulary can be comprehended to alter degrees; therefore, the vocabularies in a person's receptive or productive word may not unquestionably all be recognized at a similar level. Frankly speaking, a person is able to comprehend much more vocabularies than one can really produce, as environmental clues and sameness to other lexicons may create an otherwise new lexical item intelligible. Although reading and listening skills are receptive ones, a person's vocabulary knowledge can vary smoothly amid two classifications. Owens (2001) described the receptive words as follows:

> Not all vocabularies involved in a person's receptive lexicons are recognized at a similar level; therefore, factors exist to evaluate the level of comprehension. Full fluency with a vocabulary, for instance, includes the capability of understanding and clear definition of words upon reading or hearing them. This includes a higher rate of comprehension to being able to properly utilize the lexicon but lacking the competence to present an exact and complete definition of it. Both of these are in a higher place than vocabulary comprehension just in context or understanding it, but it never contains a meaning (Owens, 2001).

Receptive words are investigated by language experts, psychiatrists, and others for several various reasons. Language learning, both for kids learning their mother tongues or for older ones searching to acquire a new language, needs the advancement of a fundamental receptive word. Language learning is an unbelievably essential skill. Therefore, some people are optimistic for advancing learning approaches by better-recognizing word improvement. In addition, different modes of brain disturbance and some psychological situations can significantly change the vocabularies that one may recognize. Scholars and medical professionals wish to be able to find and fix such linguistic losses (Owens, 2001).

Receptive lexicon is sometimes investigated by sociologists, as a word may own big social concern. It is, for example, applied as one scale of the quality of a person's attention, as high-quality education looks at results in the improvement of a much vaster vocabulary knowledge than education of lesser quality. Lexicon impacts the path in which one communicates, and one is often evaluated socially based on the vocabulary that one utilizes and comprehends. In addition, the receptive word is closely related to how available some kinds of literature are to some men. Some highly-noticed studies of classical literature, for example, are written with a higher diction that someone with a lack of highly advanced words can find it hard to comprehend (Owens, 2001).

3. Methodology

Regarding the current study, it can be mentioned that a quasi-experimental, pretest, and posttest method was utilized. In the present study, a quantitative approach was used. Also, two variables in the present study were going

to be considered. The variables can be divided into two kinds, including the independent variable, which was the blended learning method and also dependent variable, which was students' receptive vocabulary learning.

3.1 Sample

The method used for selecting the participants of the present research was a none-randomly selection. The participants were chosen among all the students at Behgouyesh institution in Ardabil (1399-1400). The convenient sampling method was utilized to choose the population of the research. All of the participants were male in the current study. 32 participants out of 140 learners were the main sample of this study. According to the level of EFL learners, it can be mentioned that they were all intermediate level and the range of their age was from 13 to 17. They were randomly divided into one control and one experimental group. The guided discovery in blended class form was used as a treatment in the experimental group, and the control group used the conventional method of instruction.

3.2 Materials and Instruments

In the present study, QPT (Version 1.1) test was used in the study. This test contains three parts. The initial section involved 40 questions, the second section enclosed 20 questions, and the writing part was put in the third part, where the students had to write cohesive paragraphs in which 150-200 lexicons were applied. One point was devoted to each question of the first and second sections, but the final part owned 10 points. The total score was 70 (See Appendix A).

The test used as a pretest was chosen from the TESTS HOME site. The pretest of the study contained three levels to evaluate the participants' capability. The current test is designed on multiple choice format. Every level declares various students' levels of competence. It contained 40 questions that were replied by the participants. Each question had half a point.

The participants tried to utilize the pretest as the posttest (See Appendix C) immediately after running the treatment in the class. Accordingly, there were some differences observed in the arrangement of the posttest compared to the pretest. The teachers proved the validity, and the reliability was also 0.83.

The main textual material used in this study was Select Readings book that is written by Linda Lee and Erik Gundersen. Despite having various levels, in the present study, the intermediate level was used by the researcher and was published by Oxford University Press. The researcher in this study made an effort to extract 16 texts to be used as material from 14 lessons of this book.

3.3 *Data Collection and Analysis*

Regarding the treatment, three different perspectives can be taken into consideration. The first one was regarding administration environment discovery. From different academic environments where were asked by the researcher, Behgooyesh academy, agreed to be part of this study. As this institute is famous and popular in Ardabil, therefore, the number of participants was more than other institutes.

The second criterion was the manner in selecting students. The researcher tried to announce students by attaching some notices on the institution boards. Volunteers were asked to deliver their names to the institution head. Both boys and girls were asked to take part in the notice. After that, all the participants (140 learners) whom the head registered were evaluated in the placement test. After taking the test, the researcher selected those students who were certified as intermediate ones. Sixty-three intermediates were there; however, this study required 32 of them. Therefore, the researcher picked up 32 males randomly.

The final dimension of the research was working on the actual treatment of the research. After selecting participants, according to OPT, they were randomly divided into two various groups. The initial one was control and the other was the experimental, which was called the blended group. At the beginning of the term, the pretest was taken. It was also fully explained in the instrument section. It took two months to carry out the treatment. The sessions were held once a week for 4 to 5 times each month. The students were supposed to take part in the classes with a total number of 12 sessions (90 minutes each session). In the first step, the pretest was held to record the beginning performance of the control and experimental group.

The experimental group used a blended procedure and guided discovery learning at the same time, which means that the participants in the experimental group had to be in both traditional classes and online classes. In this case, the

students first took part in the online class when they were at home for 45 minutes, and they had to be in the classroom in the institution on the current day to pass another 45 minutes of the class. Students in the procedure of guided discovery learning had to identify the words and then the rules for making them and discover the desired points. In the online class (first half), the teacher tried to explain the words that the students didn't know. It is obvious that the texts for this group were presented through a computer. In this case, the participants were able to use a computer to see the material of the class. The students in experimental group had to find the meaning of those words that were written in bold format. They had to use their own way to find the meaning of new words and vocabularies. The teacher asked them to try to find the meaning of the vocabularies by focusing on the pictures and contents of the texts. It must be mentioned in the online part of the class, the teacher tried to read the text for students, and she asked the students to read the text one by one. In addition, the teacher explained and told the content of the text in her own words. The role of the teacher in the second half of the class was as time-monitoring and conducting the class activities rather than teaching deductively. She asked students to retell the story. Then, students had to represent the meaning of the bold vocabularies in the form of synonyms, antonyms, and English definitions. The teacher attended to correct the students' errors at the end of the session. At the end of the procedure, the posttest was administered.

In the control group, students were taught with a typical method, while students in the experimental group were given the time to use both discovery learning and blended learning at the same time during each session. Hence, the students in the typical class were given some texts to read and work on them to learn vocabulary through the guided discovery method. In these pre-selected texts, some different vocabularies were shown to students. The students tried to figure out what was taught in each session as the new lesson. Next, the students tried to use some synonyms and antonyms or to represent definitions for words to perceive the target vocabularies that were written in blue color. The only duty of the teacher in the control group was monitoring and controlling the class.

The data were collected through the pretest and the posttest. In the analyses level of this study, the collected data from the vocabulary tests were calculated and the procedures of descriptive statistics (comprising means and standard deviations) along with inferential statistics; namely, paired t-test, and independent samples t-test were run. In order to discover the possible difference between the control and the experimental groups in terms of their receptive vocabulary before and after the completion of the treatment, the parametric independent samples t-test was used. Also, for exploring the participants within-group improvements from the pretest to the posttest, paired samples t-tests were used by the researcher. Normality is the main assumption of the parametric tests, was checked for all of the distributions through skewness analyses as well as obtaining trimmed means.

4. Results

This study explores the effect of guided discovery on the improvement of receptive vocabulary learning of Iranian EFL learners in blended classes. Since the assumption of homogeneity of covariance matrices was violated, refer to Appendix I, the data collected through this study were analyzed using and independent-samples t-test, which assumes normality of data and homogeneity of variances of groups. The normality of the data was probed by computing the ratios of skewness and kurtosis indices over their standard errors (Table 1). As noted by Field (2018, p 345-46) the ratios of skewness and kurtosis over their standard errors are analogous to Z-scores, which can be compared against values that you would expect to get if skew and kurtosis were not different from 0 (see Section 1.8.6). So, an absolute value greater than 1.96 is significant at $p < 0.05$, above 2.58 is significant at $p < 0.01$ and above 3.29 is significant at $p < 0.001$". Since the computed ratios were lower than +/- 1.96, it can be concluded that the normality assumption was retained. The assumption of homogeneity of variances will be discussed when reporting the results of the independent-samples t-test.

Table 1. Testing normality of pretest and posttest of receptive vocabulary learning by groups

		N	Skewness			Kurtosis		
Group		Statistic	Statistic	Std. Error	Ratio	Statistic	Std. Error	Ratio
Experimental	Pretest	16	-.447	.564	-0.79	-.308	1.091	-0.28
	Posttest	16	-1.011	.564	-1.79	.251	1.091	0.23
Control	Pretest	16	-.817	.564	-1.45	-.024	1.091	-0.02
	Posttest	16	-.881	.564	-1.56	.113	1.091	0.10

4.1 KR-21 Reliability Indices

Table 2 displays the descriptive statistics and KR-21 reliability indices for the pretest and posttest of receptive vocabulary learning. The results showed that the two tests enjoyed reliability indices of .60 and .76, respectively. The low reliability for the pretest might be due to the fact that the students were selected to be homogenous. Another reason might be what Field (2018) quoted Nunnally (1978) as saying at early stages of test development, reliability indices of .50 are acceptable.

Table 2. Descriptive statistics and KR-21 reliability of pretest and posttest of receptive vocabulary learning

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	KR-21
Pretest	32	4	17	11.09	3.409	11.620	.60
Posttest	32	7	20	15.63	3.490	12.177	.76

4.3 Comparing Groups on Pretest of Receptive Vocabulary Learning

An independent-sample t-test was run to compare the experimental and control groups' means on pretest of receptive vocabulary learning in order to prove that the two groups had the same level of receptive vocabulary learning ability before the administration of the treatments. Table 3 displays the results of the descriptive statistics for the two groups on the pretest. The results indicated that the experimental (M = 11.19, SD = 3.44) and control (M = 11.00, SD = 3.47) groups had fairly close means on the pretest.

Table 3. Descriptive statistics of pretest of receptive vocabulary learning by groups

	Group	N	Mean	Std. Deviation	Std. Error Mean
Pretest	Experimental	16	11.19	3.449	.862
	Control	16	11.00	3.479	.870

Table 4 displays the results of the independent-sample t-test. Before discussing the results, it should be noted that the assumption of homogeneity of variances was retained. As displayed in Table 4, the non-significant results of the Levene's test (F = .001, p > .05) indicated that the two groups enjoyed homogenous variances on pretest. That was why the first row of Table 4.4; i.e. "Equal variances assumed" was reported.

The results (t (30) = .153, p > .05, 95 % CI [-2.31, 2.68], r = .028 representing a weak effect size[1]) indicated that there was not any significant difference between the two groups' means on the pretest of receptive vocabulary learning. Thus it can be claimed that the two groups were homogenous in terms of their receptive vocabulary learning ability before the main study.

Table 4. Independent-samples t-test; Pretest of receptive vocabulary learning by groups

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper

Equal variances assumed	.001	.983	.153	30	.879	.188	1.225	-2.314	2.689
Equal variances not assumed			.153	29.998	.879	.188	1.225	-2.314	2.689

Figure 1 displays the two groups' means on pretest of receptive vocabulary learning. The results indicated that the means for the experimental and control groups were 11.19 and 11.00 respectively.

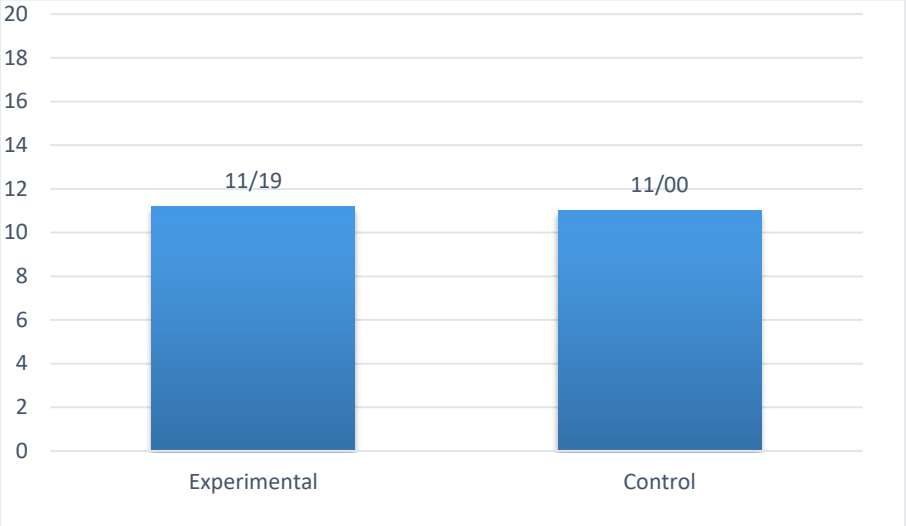

Figure 1. Means on pretest of receptive vocabulary learning by groups

4.4 Exploring Research Question

Does guided discovery have a significant effect on the improvement of receptive vocabulary learning of Iranian EFL learners in blended class?

An independent-sample t-test was run to compare the experimental and control groups' means on posttest of receptive vocabulary learning in order to probe the only research question raised in this study. Table 5 displays the results of the descriptive statistics for the two groups on the posttest. The results indicated that the experimental group (M = 17.19, SD = 2.82) had a higher mean than the control group (M = 14.06, SD = 3.46) on the posttest of receptive vocabulary learning.

Table 5. Descriptive statistics of posttest of receptive vocabulary learning by groups

	Group	N	Mean	Std. Deviation	Std. Error Mean
Posttest	Experimental	16	17.19	2.822	.705
	Control	16	14.06	3.464	.866

Table 6 displays the results of the independent-samples t-test. Before discussing the results, it should be noted that the assumption of homogeneity of variances was retained. As displayed in Table 6, the non-significant results of the Levene's test (F = .402, p > .05) indicated that the two groups enjoyed homogenous variances on the posttest. That was why the first row of Table 4.6, i.e., "Equal variances assumed" was reported.

The results (t (30) = 2.798, p < .05, 95 % CI [.844, 5.40], r = .455 representing a moderate effect size) indicated that the experimental group significantly outperformed the control group on the posttest of receptive vocabulary learning. Thus it can be claimed that the null hypothesis as "guided discovery did not have any significant effect on the improvement of receptive vocabulary learning of Iranian EFL learners in blended class" was rejected.

Table 6. Independent-samples t-test; Posttest of receptive vocabulary learning by groups

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	.402	.531	2.798	30	.009	3.125	1.117	.844	5.406
Equal variances not assumed			2.798	28.823	.009	3.125	1.117	.840	5.410

Figure 2 displays the two groups' means on the posttest of receptive vocabulary learning. The results indicated that the means for the experimental and control groups were 17.19 and 14.06, respectively.

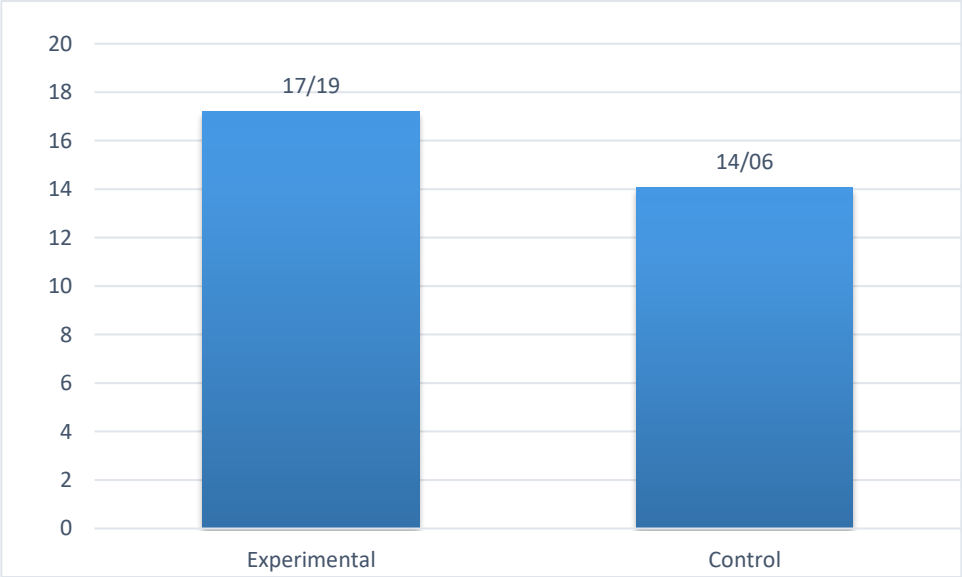

Figure 2. Means on posttest of receptive vocabulary learning by groups

Paired samples t-test was run to examine if the mean difference within groups was statistically significant from the pretest to the posttest. The results are in Table 9.

Table 10. Paired Samples T- test for the pretest and the posttest of receptive vocabulary learning

			Paired Differences						
			Mean	SD	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Control	Pair 1	Pretest - Posttest	-3.063	1.370	-5.983	-0.142	-2.2354	15	0.0410
Experimental	Pair 2	Pretest - Posttest	-6.625	0.712	-8.143	-5.107	9.3016	15	.0001

According to the results of paired samples t-test, although the two groups progressed in the posttest of vocabulary, this improvement was statistically significant simply for the experimental group (P≤.01). In other words, the experimental group made a higher progress as compared to the control group in the posttest of receptive vocabulary.

5. Discussion

As it already mentioned in the former sections, the most important goal of this study was finding out the potential effects of guided discovery learning on the development of receptive vocabulary learning of Iranian EFL learners. After gathering the required data and according to the results of this study, it became clear that guided discovery instruction had a significant impact on the improvement of Iranian EFL learners' receptive vocabulary learning in both typical and blended classes. It seems necessary to regard some of the archived data and compare it to other studies which were done in this field. For instance, Garzón (2018) carried out one research in this term. Hence, comparing Garzón's (2018) results with the gathered results showed some agreements between both studies.

Accordingly, Garzón's (2018) concentrated on the receptive vocabulary acquisition process of English language learners through the implementation of project-based tasks approach by the use of the guided discovery learning strategy; he stated that the results showed the effectiveness of the guided strategy on improving receptive vocabulary learning. He asserted that the participants who used the mentioned strategy had better performance in the posttest. In addition, another research that revealed the same results was a study done by Merrouche and Zaidi (2016). In order to explain the process, it can be mentioned that they made their own efforts to find out about the learners' attitudes toward learning receptive vocabulary through discovery learning as well as estimating the probable impact of discovery learning on receptive vocabulary. The findings showed that learners were aware of the significance of receptive vocabulary, vocabulary learning, and guided discovery learning. Moreover, the learners used the current strategy to learn vocabularies. At the end, they concluded that the discovery learning had significant impact on the performance of the students in the posttest.

Another study that led to the same results was related to Mohammed (2021). In his study, He did a research that fulfilled the guided discovery sheet as a strategy that mainly pointed out the meaning, pronunciation, and form (MPF) of the second language. According to the results of his study, the guided discovery sheet strategy helps learners in the process of mastering English language skills. Receptive vocabulary was one of the most important perspectives of his study which revealed that the guided discovery procedure had a suitable impact on receptive vocabulary. In fact, the findings of the present research showed better performance by experimental group participants than the control group.

As stated already, students in the experimental group employed both blended procedure and guided discovery instruction.

The results of our research are in agreement with research conducted by Alipour (2020). He probed the effect of virtual versus blended learning on improving receptive vocabulary learning of Iranian intermediate EFL students. In order to advance the study, 90 Iranian EFL students (17 to 19 years) at the intermediate level took part in the study and they were separated into three equal groups. The findings showed that virtual and blended learning groups exceeded the control one; furthermore, no meaningful variation was discovered between virtual and blended learning groups. Alipour (2020) suggested that there may be more benefits for EFL learners to allocate their time to acquire a second language by virtual platform and blended learning based on assistant situations.

In addition, it can be said that the same results can be seen in research administrated by Vasbieva, Klimova, Agibalova, Karzhanova, and Birova (2016), who have advanced research to analyze the impacts of the blended learning method on training receptive vocabulary to ESL students. This strategy can be explained as a mixture of one-on-one classroom elements with virtual direction (Osguthorpe & Graham, 2003). The learners' educational performance by having a comparison of the blended learning context and typical learning environment are investigated. The findings of t-test for related data and Sandler's *A*-test propose that blended learning created a positive impact on the ESL students' outcomes.

5. Conclusion

The statistical procedures, including descriptive and the related inferential analysis of the findings, were explained in detail in the previous chapter. As it was stated previously, for evaluating the possible differences between the control and the experimental groups, independent sample t-test was used to the results of the pretest and the posttest of receptive vocabulary. Besides, paired samples t-test was utilized to check for the students' potential enhancement in receptive vocabulary learning from the pretest to the posttest. Finally, it was concluded that using guided discovery had a statistically significant effect on Iranian intermediate EFL learners' receptive vocabulary learning. In addition, based on the results of paired samples t-test, both groups progressed in the posttest of receptive vocabulary. However, this improvement was statistically significant simply for the experimental group ($P \leq .05$). In other words, the experimental group had better achievement as compared to the control group in the posttest of vocabulary.

There have been plenty of limitations while doing this research which will be described in the following. For example, when the researcher wanted to find a setting for doing this study, there was a big problem, such as finding an institution. Another problem was a lack of enthusiasm to participate in research studies. As people were facing Coronavirus pandemic, there was a challenge in the way of obeying health protocols. Therefore, the number of participants could not be extended. Other limitations such as lack of the adequate number of students and lack of enough time were other factors which can be stated here. Finally, finding enough number of students in the same level was problematic as well.

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Bio note

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Appendix A

Student ID.....**Name**.....**Faculty**.....

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Appendix B

The updated Vocabulary Levels Test (Webb, Sasao, & Ballance, 2017)

This is test that looks at how well you know useful English words. Put a check under the word that goes with each meaning. Here is an example.

	game	island	mouth	movie	song	yard
land with water all around it						
part of your body used for eating and talking						
piece of music						

It should be answered in the following way.

	game	island	mouth	movie	song	yard
land with water all around it		☐				
part of your body used for eating and talking			☐			
piece of music					☐	

1,000 Word Level

	eye	father	night	uncle	voice	year
body part that sees						
parent who is a man						
part of the day with no sun						
brother of your mother or father						

	drink	check	forget	laugh	prepare	suit
get ready						
make a happy sound						
not remember						
make sure						

2,000 Word Level

	apartment	cap	envelope	lawyer	section	union
cover for letters						
kind of hat						
part						
place to live inside a tall building						

	environmental	junior	constant	rotten	smooth	wise
bad						
not rough						
younger in position						
happening all the time						

3,000 Word Level

	anxiety	regime	counsel	foundation	phrase	wealth
combination of words						
guidance						
large amount of money						
government						

	exhibit	capture	debate	impose	proceed	prohibit
catch						
go on						
talk about what is correct						
show in public						

4,000 Word Level

	candle	diamond	gulf	vitamin	soap	tutor
something used for cleaning						
teacher						
valuable stone						
healthy supplement						

	activate	disclose	hug	shrink	plunge	weep
cry						
tell						
turn on						
make smaller						

5,000 Word Level

	lime	maid	mustache	paradise	pastry	vinegar
hair on your upper lip						
perfect place						
small baked food						
green fruit						

	applaud	erase	expire	intrude	notify	wrestle
announce						
enter without permission						
remove						
end						