THE EFFECTIVENESS OF SYNECTICS INSTRUCTIONAL MODEL ON FOREIGN LANGUAGE VOCABULARY TEACHING

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ABSTRACT

This study, which is an experimental research with pre-test and post-test control groups, aims to determine the effectiveness of the Synectics Instructional Model on foreign language vocabulary teaching. The research was conducted with two experimental and two control groups and 82 students taking part in these groups. The experimental application of the research was carried out during the fall semester of 2016-2017, with a total of 16 class hours in English reading course in English preparatory class. Research data was gathered from an English vocabulary achievement test which was designed by the researchers. In the process of analyzing the research data, independent t-tests, Cohen's d effect size test and thematic analysis were used. The major findings reveal that Synectics based vocabulary teaching has a strong effect on the level of learning and the persistence of the learning. On the other hand, there is a considerable difference between the numbers of the words that students learn indirectly in the process in favor of the experimental group students. Finally, the analysis also reveals that the experimental and control group students have variability in terms of the thematic diversity and semantic equivalence of the words learned indirectly in the process.

Key Words: Synectics instructional model, foreign language teaching, persistent learning, vocabulary learning, effective vocabulary teaching

1. Introduction

Teaching a foreign language, which is the most basic tool to communicate with different cultures, has maintained its importance for ages and has become a vital issue in today's conditions (Ginsburgh, Melitz and Toubal, 2015; Mack, Garcia and Garcia, 2014; Mallows, 2014; Streitwieser, 2014). A common language has emerged as a requirement to generate solutions for communication between individuals from different societies and cultures (Lee, 2006).

Teaching a foreign language, which can be defined as improving the needed language skills of individuals and societies from different cultures in order to communicate with each other, is an issue that has many complex dimensions (Sun, 2013). As a natural result of the quests to generate effective solutions for this matter, the subject of foreign language teaching has been an important and extensively studied research area.

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The relevant literature mainly discusses and explains the process of foreign language teaching based on four basic skills: listening, reading, writing and speaking (Burke, 2011; Powers, 2010). Nevertheless, the common denominator in listening, reading, writing and speaking skills in teaching a foreign language is vocabulary because it is a determinant factor that serves as a prior condition to learning a foreign language (Jiangwen and Binbin, 2013). In other words, individuals need vocabulary primarily to understand what is being said, what is written and to transfer their emotions and opinions.

On the other hand, there is a very close relationship between the active use of basic language skills and the richness of vocabulary (Milton, 2013). Students who do not acquire a sufficient vocabulary cannot be expected to be successful in listening, reading, writing and speaking skills (Ferreira, 2007) because the level of an individual's vocabulary knowledge affects learning and the active use of the four skills directly (Mehring, 2005). The individuals who have rich and strong vocabulary knowledge are able to use reading (Ma and Lin, 2015), listening (Stæhr, 2009), speaking (Nouralian, 2013) and writing skills (Milton, 2013) more effectively. To sum up, knowing the meaning of words is required to be successful not only in listening and reading skills (Beck, McKeown, and Kucan, 2008), but also in writing and speaking skills in a foreign language (Neuman and Dwyer, 2009).

Viewing the strong relationship between vocabulary and the four main language skills (Sprenger, 2013), it can be said that a failure in the process of teaching vocabulary affects the improvement of listening, reading, writing and speaking skills directly and a large part of the problems encountered in language teaching are caused by the failure in teaching vocabulary (Milton, 2013).

According to the relevant literature, there are some commonly used methods in the process of teaching vocabulary. The grammar-translation method, which is one of them, focuses on dictionary usage, creating word lists (Liu and Shi, 2007), finding equivalents in the mother tongue (Klodiana, 2012), and includes exercises like translation and memorization of the words (Asl, 2015). Vocabulary knowledge that is taught is limited to only reading texts.

In the audio-lingual method, another vocabulary teaching method, there are some mechanical exercises such as memorization of dialogues instead of word lists, repeating exercises, tongue twisters, etc. (Hartari, 2012). In this method, the most important point in the process of teaching vocabulary is repeating the learned words frequently through various drills.

In the direct method, which is typically used in vocabulary teaching, the aim is to teach vocabulary items through demonstrations using only the target language without using the students' mother tongue (Handayani, 2012), and regardless of grammar rules. In the process of teaching vocabulary by using this method, the common techniques are reading the words loudly, doing exercises like question-answer, gap-filling, dictation and paragraph writing etc.

Vocabulary teaching techniques which can be called traditional ones have been criticized because their processes include some activities such as pairing words and meanings, gap-filling exercises without establishing a link between students' prior knowledge and new knowledge. Moreover, they are far from enabling the students to be active in the learning process, and they are based on memorization (Koletnik, 2012). There are some research findings that show students have faced problems in the process of understanding, remembering, effectively using, retaining the learned vocabulary items (Nemati, 2009), and flourishing their vocabulary knowledge capacity in the traditional techniques

(Lago and Seepo, 2012; Rahimy and Shams, 2012). Learning and retention of the words and using them effectively can be possible through qualified learning and students' active participation in the learning processes (Nikolova, 2002). Therefore, in class vocabulary teaching activities are needed to be in a structure that makes students active (Suarcaya, 2008) and presents the words in a specific context (Ghazal, 2010).

Although there are some studies (Bintz; 2011; Coyle and Garcia, 2014; Jack, 2015; Kirsch, 2012; Klodiana, 2012; Lago and Seepo, 2012; Laqaei, 2015; Pena, 2011; Shabani and Zanussi, 2015; Suarcakya, 2008) that have been carried on how to realize the effective vocabulary teaching process, it is difficult to say that researchers have come to an agreement on this issue. On the other hand, the problems which are experienced about the quality of vocabulary teaching, the persistence of the learned words (Ferreira, 2007) and encountered failures in teaching learning processes still remain considerably (Berne and Blachowicz, 2008).

1.1. Synectics Instructional Model

Synectics is a model originally developed by Gordon and his colleagues to find creative solutions to the problems of developing new products in the industry (Estes, Mintz ve Gunter, 2010). The synectics instructional model which was adapted for education by William Gordon (1961) is a problem solving and creative thinking model that requires generating ideas on a subject freely (Tumangger and Ernidawati, 2012) and assessing the emerged ideas (Rajput, 2013).

Synectics instructional model rejects the assumption that teachers provide knowledge and students merely store it (Seligmann, 2007). It is based on the constructivist philosophy that advocates learners discover and construct their own versions of knowledge by their own experiences and observations and by forming personal connections between new and existing knowledge (Walker, 2009). In this model, it is aimed that stimulating creative thinking skills of students by making individuals bring different perspectives (Joyce, Weil and Calhoun, 2009) and by using metaphors, analogies, and contrasts related to the subject (Rajput, 2013). The model can be used to create motivational learning environments for students because it brings new and creative perspectives to complex subjects that are difficult to learn (Nolan and Williams, 2010). In the application steps of the model, it is aimed that encouraging students to actively participate in learning processes and to create collaborative learning environments through sharing of different opinions about the subject at the same time (Patil, 2012). In this way, students are expected to value each other's opinions and develop empathy (Tumangger and Ernidawati, 2012).

There are three versions of the synectics model but "making the familiar strange", which is more effective and functional especially for the situations aimed to make students learn new vocabulary effectively and permanently not ordinarily but by following creative procedures. The steps in "making the familiar strange" version in synectics model are as follows (Estes, Mintz ve Gunter, 2010; Joyce, Weil and Calhoun, 2009):

Describing the topic: It is used to frame an initial description of the topic. The teacher begins lessons by asking students to express their opinions about a topic with which they are familiar. The topic can be related to a character in a novel, abstract concepts like freedom or any other problem area.

Ensuring the participation of every student is very important in this step. This step is parallel to a brainstorming technique.

Create direct analogies: Students create direct analogies between the words offered from the first step and words from unrelated categories. For example, the teacher can ask the students to think the offered words and tell a vegetable, toy, machine or something else. All of their opinions are written on the board and students are encouraged to explain why they choose their analogy. Teachers can help with grammar structures when students give explanations. One of the analogies is chosen with the students' vote to use in the next step of the model.

Describe personal analogies: Students are asked to tell how they feel when they imagine themselves as the word that they select in the previous step. After giving students enough time to think, all of the answers are written on the board again.

Identify compressed conflicts: Students are asked to examine the feelings that they describe in the previous step in order to put together pairs of the words that seem to fight each other and to explain why they think the words fight each other. After that, students choose the best combinations that include the best compressed conflicts by voting.

Create a new direct analogy: Students are asked to create a new analogy by focusing on the compressed conflict selected in the previous step. Then, students vote on the best analogy among the offered ones in this step again.

Reexamine the original topic: The purpose of not focusing on the original topic is to get away from the topic step by step and then to return with a rich imagination that has been developed during the process. Students are asked to make a relationship between the original topic and the last analogy selected in the previous step of the model and to create a written product as a homework assignment for the last step. Asking the students to write about the original topic gives them an opportunity to think about all of the things generated during the process and to use their imagination. This is why they are asked to consider the process while creating the written products. The papers that students created are collected in the next lesson by the teacher to give feedback.

Evaluation: This step includes discussing and evaluating the activities during the lessons with students. Students are asked to explain why some steps are helpful while others are not. If it is necessary or if they want, they can write their reflections on anonymous sheets. Then, results can be discussed with students.

In countries where the mother tongue or second language is not English, students don't have an opportunity to use the vocabulary they have learned at school actively in their daily life. Therefore, the main determinant of the success of foreign language education, especially in the process of teaching vocabulary, is the teacher and the instructional activities carried out by the teacher. In this regard, the instructional models, methods, and techniques are really important matters in the process of vocabulary teaching. It should not be overlooked that students can attend lessons actively, adapt into the process easily (Sweeny and Mason, 2011) and get more successful results in remembering vocabulary (Seddigh, 2013), when interesting, different and creative instructional models are used in the vocabulary teaching process.

1.2. Research Questions

In this study, synectics instructional model was considered as a functional model that can be used in vocabulary teaching in a foreign language because of its powerful structural features. The effectiveness of the model was tested and discussed in the context of its results. In this context, the current study investigated the following research questions:

(1) Do the results of the students in the experimental groups and in the control groups vary in terms of learning new vocabulary items which were aimed to be taught?

(2) Does the learning retention level of the students in the experimental and control groups vary in terms of the vocabulary items which were aimed to be taught?

(3) Do the results of the students in the experimental and control groups vary in terms of the vocabulary items which students learned indirectly during the process?

(4) Does the learning retention level of the students in the experimental and control groups vary in terms of the vocabulary items which students learned indirectly during the process?

(5) What is the thematic aspect of the vocabulary items which students learned indirectly in the experimental groups?

(6) How is the distribution of the vocabulary items in terms of variables being negative, positive and neutral meaning which students learned indirectly in the experimental groups?

(7) Do the results of the experimental and control groups vary within themselves?

2. Method

2.1. Participants

This study was conducted in the fall 2016 academic semester in a state university English prep class. Two experimental and two control groups were selected by random sampling from the same level English prep classes which consisted of pre-intermediate level students according to the levels of the Common European Framework of Reference for Languages and English placement exam results which was held at the beginning of the academic year. The total number of students who were studying in four different classes in the experimental and control groups was 82. Of these, 39 were in the experimental groups and 43 were in the control groups. All of the students are going to study at engineering faculty after the prep class. The experimental applications of the research were carried out in English reading course by one of the researchers who has experience in English language teaching field for 7 years. The classes are equipped with technological gadgets such as OHP, smartboards and classroom desks are arranged according to the U-shaped layout to allow interaction between the students and the instructor.

2.2. Instrument

The research data was collected using the "English Vocabulary Achievement Test" prepared by the researchers. The test was presented to 5 English subject experts who have been working in English language teaching field for at least 5 years in order to ensure content and face validity before the applications. After the feedback was received from them, a few small corrections that are related to the spelling of the words were made and the final form of the test was ready for application. It was used as a pretest, posttest and retention test in the research, and it consisted of three parts. In the first part of the test, there is a personal information form that consists of some questions related to students' name, surname, and classroom.

In the second part of the test, 43 English words, intended to be taught, were listed alphabetically in a table layout. These words are needed to be taught to all students in the English prep classes at the same level of English competence in the scope of reading lessons. In other words, they are the ones stated in the instructional plan. Across each word, there are blank lines for students to write the equivalent of the words in their mother tongue. This second part was given to the students in the control and experimental groups before the experimental application. Students were asked to write the meanings of the 43 words related to teaching content that they knew in their mother tongue. The aim of this was to determine and omit the words that they already knew the meaning of them before the experimental application from the English vocabulary achievement test for the posttest session.

In the third part of the test, there is a table which consists of two columns for students to write the new words that they learn indirectly during the vocabulary teaching-learning process. There are blanks for students to write English words that they learn in the left column, and there are blanks for students to write equivalents of those words in their mother tongue in the right column in the pretest session. These words are apart from the words, which are intended to be taught, in the second part of the test. For the posttest session, this part of the test was prepared specifically for each group after the experimental applications were done, because the number and type of vocabulary items learned during the application process were different in the experimental and control groups where different instructional models were used. In other words, each of the groups was subjected to posttests and retention tests that consisted of the words they had learned indirectly during the process. For this purpose, word lists that students learned indirectly in their own group were prepared according to the data collected from the third part of the pretest to design the posttests and retention tests.

2.3. Research Design

This research which was designed according to pretest-posttest with a control group that is one of the true experimental designs was conducted on two experimental and two control groups. The experimental groups consisted of students in two different English prep classes where vocabulary items were taught based on synectics instructional model. The control groups consisted of students in two different English prep classes where vocabulary items were taught based on the direct method. Independent variables are synectics instructional model of which effectiveness was tested and direct method; dependent variables are the level of vocabulary learning and learning retention.

2.4. Experimental Applications

The experimental application of the study was conducted during the reading course. This process included 16 hours of lesson in the Fall 2016 term. All of the teaching processes of the research in the experimental and control groups were carried out by the same instructor. At the beginning of the experimental applications both in experimental and control groups, English vocabulary achievement test was given to students.

The second part of the test, which consisted of 43 English words that were intended to be taught to students, was prepared and carried out in order to determine and cross out the words that they had already known the equivalents in Turkish from the posttest.

After experimental applications both in experimental and control groups, the tests were collected and 19 words, which students knew the equivalents of in their mother tongue, were omitted from the posttest form. As a result, remaining 24 English words in the posttest form were the ones that none of the students in the experimental or control groups knew the meaning in their mother tongue.

2.5. Teaching in the Experimental Groups

First of all, students were asked to complete the first and second part of the pretest form. Then, the students read "Rio Reborn" text and they discussed their ideas about the topic under the guidance of the instructor. In the next step, students were asked to create five-person groups and to share their ideas about the positive developments in their own cities like in the "Rio Reborn" text. When all of the group works finished, a representative from each group was asked to share their group's ideas to all of the students. The aim of this warm-up activity was just drawing students' attention to the subject. Then, 43 words that were to be taught and some sample sentences were reflected on the wall through an already-prepared presentation. Students were asked to comment on the meaning of the words in the sentences. When the students' comments finished, meanings for all words were explained by the instructor based on the sample sentences.

In the second step, students were asked to examine 43 words that were intended to be taught and suggest new words by creating analogies that were evoked by the 43 words. They were encouraged to explain why they created these analogies in English. In this process, all of the grammatical mistakes were ignored, and mistakes in the words and their sentences to explain their ideas were corrected and written on the board by the instructor. 31 analogies in the first experimental group and 24 analogies in the second experimental group were suggested in this step. After all the analogies were suggested, one of the analogies was selected as the main theme for the lesson by voting in each class.

In the third step, students were asked to describe how they felt when they imagine themselves as the selected word in the previous step. All of the opinions were written on the board again.

In the fourth step of the experimental application, students were asked to examine the feelings that they described in the previous step in order to put together pairs of the words that seem to fight each other and explain why they think the words fight each other. After that, students chose the best combinations that included compressed conflicts by voting.

In the fifth step, students were asked to create a new analogy by focusing the compressed conflict selected in the previous step and think about these two opposite words in the compressed conflict. After all of the analogies were written on the board, students voted on the best analogy among the offered ones.

In the sixth step, students were asked to correlate between the original topic and the last analogy selected in the previous step of the model and to create a written product as a homework as the last step by using the words that they learned in the process. It was aimed to get students to use both the words that intended to be taught and the words that students learned indirectly during the process.

The papers that were written by students were not analyzed in the scope of this research. The purpose was only to provide students an opportunity to create individual work that could reinforce the meanings of the words and to create a written product.

At the end of the process, students were asked to write the words that they learned indirectly during the process and their meanings on the tables in the third part of the pretest form. Those words were the ones that students learned indirectly apart from 43 English words that were intended to be taught.

2.6. Teaching in the Control Groups

Firstly, students were asked to complete the first and second part of the pretest form. Then, they read the "Rio Reborn" text and talk about their ideas about the topic under the guidance of the instructor.

After that, the same presentation was reflected on the wall as in the experimental groups. There were 43 English words that were intended to be taught and sample sentences which were used while explaining the meaning of the words. In the teaching process, all of the explanations and the meanings of the words were explained by using English without using the students' mother tongue like in the experimental groups.

Then, students were asked to do some exercises in their course books such as question-answer, sentence completion, fill in the gap, etc., to reinforce their learning. In the last step, some worksheets which include mechanical exercises was given as a homework to the students.

At the end of the process, students were asked to write on the third part of the pretest form if they learned different words indirectly during the process like in the experimental groups. Those words were the ones apart from 43 English words that were intended to be taught.

2.7. Collecting and Analyzing the Data

The first and the second parts of the achievement test were conducted before the experimental application and at the end of experimental application the third part was conducted as the pretest and used to prepare the posttest session. After one week from the experimental application, the achievement test was administered as a posttest for experimental and control groups. After five weeks from the posttest, the same achievement test was conducted again to test the retention of the learned words for the experimental and control groups.

After reading, coding and entering the research data in an electronic environment, the data was analyzed using "SPSS 21 for Windows" software. As it can be seen in table 1, according to the test of normality it was found that the data are normally distributed.

Table 1. Test of normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Achievement Test	,138	82	,200	,958	82	,459
Retention Test	,167	82	,112	,937	82	,170

In compliance with the research questions, independent t-tests were used to test the significance of the difference between the means of groups. In case of statistically significant differences between the means of groups, Cohen's d formula was used to calculate the effect size. In the process of analyzing of the last two research questions; thematic analysis technique, which is one of the data analysis techniques in qualitative research, was used.

3. Findings

3.1. Findings Related to the 1st Research Question

Table 2. The words intended to be taught to the experimental and the control groups

	Experimental Group		Control Group				
	M	SD	M	SD	T	%95 CI	Cohen's d
The words to be taught	20.71	2.36	14.04	4.35	8.73	[5.14, 8.19]	1.87

According to the results from the second part of the posttest including 24 words which were intended to be taught in the scope of the syllabus, the mean of the experimental groups is (=20.71) and the mean of the control groups is (=14.04). An independent t-test shows that the difference between the means of the groups is statistically significant in favor of the experimental groups (t=8.73, p<.00).

Cohen's d formula is preferred frequently in the calculation of effect size between the means of two groups (Cohen, 1988). The effect size value of this research is (d=1.87). This value refers to a powerful effect (Cohen, 1988). Based on this finding, it can be said that vocabulary teaching by using the synectics instructional model has very effective results in learning words that are intended to be taught.

3.2. Findings Related to the 2nd Research Question

Table 3. The retention test of the words intended to be taught in the experimental and the control groups

	Experimental Group		Control Group				
	M	SD	M	SD	T	%95 CI	Cohen's d
The words to be taught	18.94	3.88	11.55	3.64	8.89	[5.73, 9.04]	1.96

According to the results from the second part of the retention test including 24 words which were intended to be taught, the mean of the experimental groups is (=18.94) and the mean of the control groups is (=11.55). Independent t-test shows that the difference between the means of the groups is statistically significant in favor of the experimental groups (t=8.89, p<.00).

Cohen's d effect size value (d=1.96) pointed out a very significant effect in favor of experimental groups (Cohen, 1988). Based on this finding, it can be said that teaching vocabulary based on the synectics instructional model has a very effective result in the retention of student's learning.

3.3. Findings Related to the 3rd Research Question

According to the analyses based on the data received from the third part of the posttest; the number of learned words indirectly during the process is 50 in the first experimental group, 47 in the second experimental group, 13 in the first control group and 11 in the second control group. The results of independent t-test which was conducted to compare the mean percentage of the results that students achieved from the third part of the achievement test are below:

Table 4. The learning levels of the words that were learned indirectly during the process in the experimental and the control groups

	Experimental Group		Control Group				
	M	SD	M	SD	T	%95 CI	Cohen's d
Indirectly learned words during the process	88.28	6.78	66.38	12.99	9.69	[17.39, 26.41]	2.08

According to the students' results achieved from the third part of the achievement test, the mean percentage of the experimental groups is (=88.28) and the mean percentage of the control groups is (=66.38). Independent t-test shows that the difference between the mean percentages of the groups is statistically significant in favor of the experimental groups (t=9.69, p<.00).

Cohen's d effect size value (d=2.08) pointed out a very significant effect in favor of experimental groups (Cohen, 1988). Based on this finding, thanks to the structure and process steps of the model, it can be said that teaching vocabulary on the basis of using synectics instructional model has very

effective results in the words that students learned through the activities such as question-answer, discussions, giving examples, making explanations, etc. in the class.

When the number of the words that students learned during the process in the experimental and control groups and the statistical values of the differences between the means are considered together, this finding becomes much more important. When the students in the experimental groups are compared with the students in the control groups, it reveals that students in the experimental groups learned about five times more words than the students in the control groups. They further reinforced this finding with their success in the posttest results.

3.4. Findings Related to the 4th Research Question

Table 5. T-test table of the retention test of the words learned indirectly during the process in the experimental and control groups

	Experimental Group		Control Group				
	M	SD	M	SD	T	%95 CI	Cohen's d
Indirectly learned words	80.26	11.08	55.25	11.67	9.93	[20.00,30.03]	2.19

According to the student results from the third part of the retention test, the mean of the experimental groups is (=80.26) and the mean of the control groups is (=55.25). An independent t-test shows that the difference between the means of the groups is statistically significant in favor of the experimental groups (t=9.93, p<.00).

Cohen's d effect size value (d=2.19) pointed out a very significant effect in favor of the experimental groups (Cohen, 1988). Based on this finding, it can be said that teaching vocabulary using synectics instructional model has very effective results in word retention that students learned indirectly during the process.

3.5. Findings Related to the 5th Research Question

As it was explained before, in addition to 24 words which were intended to be taught, the number of words students learned indirectly during the process is 50 in the first experimental group, and 47 in the second experimental group.

The data gathered from the students regarding this research question were analyzed after a coding process through thematic analysis by English subject experts. Themes were determined by using words that students learned indirectly during the process.

Table 6. Thematic view of the words learned indirectly during the process in the experimental group

	Themes		The number of the words(f)
The words learned indirectly during the process	1st Experimental Group	Politics	5
		Jobs	7
		Adjectives for people	11
		Other	27
		Total	50
		Religion	12
		Death	5
		Adjectives for people	7
	2nd Experimental Group	Other	23
		Total	47

The 50 words were grouped under three themes such as politics (5), jobs (7), adjectives for people (11), and the other 27 words cannot be grouped under any theme in the first experimental group. On the other hand, the 47 words grouped under three themes such as religion (12), death (5), adjectives for people (7) and the other 23 words cannot be grouped under any theme in the second experimental group.

3.6. Findings Related to the 6th Research Question

Table 7. The view of the indirectly learned words in the experimental group during the process

Semantic Equivalent			The number of words (f)	Percentage (%)
The words learned indirectly	1st Experimental Group	Neutral	17	34,0
		Negative	22	44,0
		Positive	11	22,0
		Total	50	100,0
The words learned indirectly	2nd Experimental Group	Neutral	10	21,3
		Negative	22	46,8
		Positive	15	31,9
		Total	47	100,0

The results achieved from analysis conducted by English subject experts to determine the semantic equivalents of the words that students learned indirectly during the process. The variables were categorized as negative, positive or neutral connotation according to the implementation steps below:

Seventeen of the words students learned indirectly in the teaching process in the first experimental group have neutral connotation; 22 of them have negative connotations, and 11 of them have positive connotations. On the other hand, 10 of the words in the teaching process in the second experimental group have neutral connotations; 22 of them have negative connotations, and 15 of them have positive connotations.

3.7. Findings Related to the 7th Research Question

Table 8. The difference between experimental and control groups within themselves

	Achievement Test		Retention Test	
	The words to be taught (%)	Indirectly learned words (%)	The words to be taught (%)	Indirectly learned words (%)
1st Experimental Group	86.17 SD=10.47	87.36 SD=5.83	82.75 SD=12.75	76.81 SD=10.52
2nd Experimental Group	86.51 SD=9.26	89.48 SD=7.87	83.08 SD=11.26	84.73 SD=10.42
1stControl Group	70.83 SD=13.96	68.18 SD=10.15	58.33 SD=11.75	53.84 SD=9.78
2ndControl Group	67.73 SD=22.01	64.50 SD=15.45	54.18 SD=12.46	56.71 SD=13.45

The means achieved by the experimental and control groups were analyzed to test whether the results from the structure of the groups or student variable. According to the analysis results, the difference between the means of the first experimental group for the second and the third parts of the achievement tests (=86.17 & =87.36) and the second experimental group (=86.51 & =89.48) is not statistically significant (p>.05). Similarly, the difference between the means of the first control group for the second and third parts of the achievement tests (=70.83 & =68.18) and the second control group (=67.73 & =64.50) is not statistically significant (p>.05) according to the independent t-test results

Moreover, According to the analysis results, the difference between the means of the first experimental group for the second and the third parts of the retention tests (=82.75 & =76.81) and the second experimental group (=83.08 & =84.73) is not statistically significant (p>.05). Similarly, the difference between the means of the first control group for the second and third parts of the achievement tests (=58.33 & =53.84) and the second control group (=54.18 & =56.71) is not statistically significant (p>.05) according to the independent t-test results.

Based on the findings, it can be said that the result related to the words during the process did not result from the structure of the groups or student variable. The main factors that explain these results are the independent variables of this research.

4. Conclusion

The findings about effectiveness and persistence were discussed together with the discussion about the achievements of the research.

The first finding achieved from this research indicates that teaching vocabulary based on the synectics instructional model has very effective results in learning words through the lesson content. On the other hand, the findings related to the second research question shows that vocabulary teaching based on the synectics instructional model has a very powerful effect on the retention of the words. It is a known fact that when students are active in the learning process (Bean, 2011), interact with their teachers and peers (Biggs and Tang, 2011), or when they use the information that they learn in new situations, (Pugh and Bergin, 2006), or when they are in a learning environment enabling to discover information by their own experiences and observations (Fry, Ketteridge, and Marshall, 2009), and when they are able to associate the previous learning and to form their own meaningful learning environment (Walker, 2009), they are able to learn qualifiedly (Lizzio, Wilson, and Simons, 2002). Thanks to the structure and the functional application steps enabling students to be active in the teaching-learning process, it can be said that the synectics instructional model plays an important role in the students' qualified and permanent learning in regards to the variables that were mentioned above in this research.

The third finding of the research reveals that applications of teaching vocabulary by using the synectics instructional model have very powerful effects on indirectly learned words during the process. It occurs through the interaction between students during the application steps of the model. Furthermore, the findings of the fourth research question show that teaching vocabulary based on synectics instructional model has a very powerful effect on the retention of words students learned indirectly during the process. Many researchers have proven that when students are guided to think differently and sophisticatedly as active learners (Craft, 2005), and supported to use their imagination and creativity, (Egan, and Judson, 2009), and when they are in rich learning environments where students can learn from each other in accordance with individual differences (Michaelson, Knight, and Fink, 2004), they realize qualified and permanent learning (Francis, Rivera, Lesaux, Keiffer, Rivera, 2006). From this point of view, it can be said that the synectics instructional model plays an important role in the results of the number, quality, and the retention of words that students learned indirectly during the process thanks to the application steps that lead students to think about the subject, to create direct analogies, personal analogies, and compressed conflicts, to make explanations, to give examples and to join the discussion in the classroom.

The findings that relate to the fifth research question reveals that students not only learned most of the 24 words permanently that were aimed to be taught in the lesson but also in the first and second experimental group they learned 50 and 47 words indirectly during the process. The words are grouped under the themes such as politics, jobs, death, adjectives for people but there are also some words that cannot be grouped under any theme.

When considering the number of the indirectly learned words during the process in the experimental and control groups, it can be said that this diversity primarily resulted from the models that were used in the teaching process. A significant difference between the number and types of the words that students learned in the experimental and control groups supports this idea. Although students studied the same content in the lessons, there can be differences between the prior knowledge of the students, interests, creativity, imagination, etc. Indeed, the fact that interests, prior knowledge, and other individual differences are the sources of the diversity and richness in the process of learning is a condition that is highlighted in the literature.

The findings that related to the sixth and the last research question shows that words with negative connotation have the highest percentage in both experimental groups. The second one is neutral words in the first experimental group and positive ones in the second experimental group. This result can be explained through the idea that students are more productive at creating contrasts or equivalent words in the process of creating direct analogies, personal analogies or compressed conflicts that are related to words that were already in the content of the lessons. On the other hand, a large number of the new words that were offered by students in the process of creating analogies that were offered by others might play an important role in this result.

When the semantic differences of the words are commented as a diversity and richness, learning new and different words that have a negative, positive or neutral connotation in addition to the words taught to the students should be considered as a very important and valuable result.

The purpose of this experimental study is to determine the effects of the synectics instructional model based vocabulary teaching on undergraduate students' vocabulary learning levels and the level of persistence of learned words on a foreign language.

The results that were achieved from the research reveal that the model is very effective in foreign language vocabulary teaching. However, it can be said that more research is needed to reveal the effects of different variables on the process. In addition to the model, the effects of the structure of the subject content, subject area, the size of group and creativity can be analyzed further.

Another important issue is the necessity of research that reveals whether students' cultures, subcultures or social, economic, religious and other demographic qualifications are variables that affect the foreign language vocabulary learning process or not. For example, some research can be conducted to investigate the correlations between students' economic income level, the subculture in which they live, positive or negative perceptions of self-esteem, and their predisposition to learn negative or positive words on foreign language.

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