Impact of Gender on Vocabulary Acquisition using Augmented Reality among Iranian Seventh Grades Students

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Vocabulary learning is one of the most important factors that foreign language learners encounter during the process of learning a foreign language. Vocabulary learning used to be a neglected aspect of language learning. In recent years, however, interest in this area has grown enormously. Language teachers have been keen in searching for effective approaches to enhance vocabulary learning. Vocabulary learning is more important than familiarity with the form and meaning of a word. The acquisition of vocabulary plays a central role in learning a second language. The goal of this study is to obtain results regarding the level of students' vocabulary knowledge, prove the researcher's assumption about their low level of knowledge of English vocabulary, and show the difference between the boys' and girls' knowledge. Methods/Statistical Analysis: In this area, a primary sample of 200 students, consisting of 100 male and 100 female students studying in high-school were selected randomly from among the students in Tabriz, the city of Iran. Each student took an 8-score test based on the country's standards. Findings: According to the results of the study, the level of the students in English language vocabulary knowledge is low, and the level of the female students in English language vocabulary knowledge is better than the boys' level. Applications/Improvements: Therefore, the study recommends that a Multimedia Technology (Augmented Reality) as a tool to improve students' vocabulary learning in a foreign language.

Keywords: Augmented Reality, Vocabulary Acquisition, Multimedia, English Language

1. Introduction

Increasingly, research in vocabulary emphasizes the importance of lexical learning in foreign language classrooms. Therefore, learning a foreign language means acquiring a non-native language outside the country where it is officially used. Vocabulary in the English as a foreign language classroom plays an important role, since it is crucial to conveying meaning and expressing one's ideas. Hence, students consider words to be important and are keen to learn them[3, 9].

Vocabulary learning strategy emphasizes the importance of classroom activities, since mainstream students are usually exposed to a foreign language only during class. Language activities should be age-appropriate for the learner and appeal to their needs[1]. Classroom activities can be applied to any teaching method, as long as the teacher considers the level of language proficiency of the students. Meanwhile, the various factors that affect vocabulary learning in the foreign language class need to be considered by the teacher, who also needs to be aware that second language learners have different academic needs than students learning their first language[2,8]. Although different types of learner personalities prefer different lexical learning strategies, it is important that students are exposed to various kinds of instruction in order to successfully acquire productive knowledge of words.

This section offers an overview of the importance of vocabulary in language learning and an analysis of the educational methods for vocabulary acquisition. Nation (1990) stated that there are a variety of techniques for

vocabulary acquisition in a second language. Vocabulary is the most important element in language learning(I. S. Nation, n.d.). Increasing learners' vocabulary can play an important part in the development of the four language skills: listening, reading, writing and speaking[11]. Students and teachers have been concentrating their efforts in vocabulary acquisition as the number one priority of language learning6.

The recognition of the importance of vocabulary in language learning is based on new methods to teach new words in context. Researchers Knight(1994) claim that interactive multimedia is a tool that teachers can use to facilitate their work by using text, sound, and images to facilitate learning.

In the context of Iran, even though students realize the importance of vocabulary in learning language, most of them learn vocabulary passively. They consider the teachers' explanation for meaning, definition, pronunciation, spelling, and grammatical functions to be boring. In fact, they are passive in the vocabulary section of the class, and just listen to their teacher. Their young faces do not hide the frustration in English as Foreign Language (EFL) classes. Most of them complain about the heavy burden of learning new words. In reading and listening sections, they are awed by many unknown and unfamiliar words, and they cannot understand the underlying message. In other words, their competence in the target language is being held because of their limited vocabulary. With this limited vocabulary, they cannot rely on the strategy of guessing the meaning from context. EFL learners in Iran often look for effective ways to increase opportunities for retaining new words in long-term memory. They complain about forgetting new words soon after learning them.

Augmented reality (AR) is related to research on English learning. Kirner and Zorzal (2005) developed an English letter spelling game. Its rule is that players have to pick up the right cards to spell the correct word in the AR English letter cards. If their spelling is right, there will be a virtual object of the English letter card on the monitor. In such an attractive situation, the game can encourage players to interact more fortify their ability of solving problems Hsieh et al.(2008) by making the card design less complex with the conception of permutation and combination. The game can also offer students a new digital media of a different learning stimulation, and present the English learning system with an immersion learning effect, which helps students learning English vocabulary. In summary, the system contributes to making the traditional way of learning English vocabulary more vivid and better.

As an international language, English has an important and crucial role in every field of education. Therefore, it is logical to look for influential ways to improve knowledge of English. Employing new techniques and strategies that are based on new technology and then implementing them in the curriculum, this study can find a new and interesting way to cope with the difficulty of learning English in our schools. AR-based multimedia instruction may lead to basic change in curriculum and bring a new, different, and attractive environment into our English classrooms than the traditional and boring classroom lectures[7, 9, 11, 10, 12]. The findings of this study may be useful for textbook designers, teachers and learners.

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2. Main Results

In order to obtain accurate results regarding the level of students' vocabulary knowledge, and prove the researcher's assumption about their poor level of knowledge of English vocabulary and the difference between the boys' and girls' knowledge in this area, a primary sample of 200 students, consisting of 100 male and 100 female students studying in high-school, were selected randomly from the students in Tabriz, the city of Iran. It should be mentioned that, due to the limited cooperation of relevant institutions, the researchers were faced with limitations in accessing samples. Each student took an 8-score test based on the country's standards. The general descriptive table of data is as below.

Table 1.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviatio
Preliminary Study	200	.00	8.00	3.8325	2.02545
Valid N	200				

Based on the table above, the highest score is 8 and the lowest score is zero (0). The average of scores is 3.83 and the standard deviation is 1.82.

Table 1.2: Preliminary Study

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
.00	7	3.5	3.5	3.5
.25	5	2.5	2.5	6.0
.50	4	2.0	2.0	8.0
.75	2	1.0	1.0	9.0
1.00	3	1.5	1.5	10.5
1.25	4	2.0	2.0	12.5
1.50	7	3.5	3.5	16.0
1.75	6	3.0	3.0	19.0
2.00	5	2.5	2.5	21.5
2.25	7	3.5	3.5	25.0
2.50	8	4.0	4.0	29.0
2.75	3	1.5	1.5	30.5
3.00	7	3.5	3.5	34.0
3.25	5	2.5	2.5	36.5
3.50	11	5.5	5.5	42.0
3.75	15	7.5	7.5	49.5
4.00	20	10.0	10.0	59.5
4.25	6	3.0	3.0	62.5
4.50	9	4.5	4.5	67.0
4.75	7	3.5	3.5	70.5
5.00	12	6.0	6.0	76.5
5.25	3	1.5	1.5	78.0
5.50	11	5.5	5.5	83.5
6.00	2	1.0	1.0	84.5
6.25	5	2.5	2.5	87.0
6.50	2	1.0	1.0	88.0
6.75	9	4.5	4.5	92.5
7.00	3	1.5	1.5	94.0
7.25	2	1.0	1.0	95.0
7.50	2	1.0	1.0	96.0
7.75	1	.5	.5	96.5
8.00	7	3.5	3.5	100.0
Total	200	100.0	100.0	

Now, if level C can be allocated to the range of scores 3-4.5, and level D can be allocated to the scores lower than 3, then, according to the frequency table above, it can be observed that 67 per cent of the students are equal to or below 4.5. So the scores in levels C and D can be considered as poor or low scores.

The descriptive table of data is Girls (Gender=1) and Boys (Gender=2) as follows:

Table 1.3: One-Sample Statistics a

	N	Mean	Std. Deviation	Std. Error Mean
Pre	100	4.0100	2.07921	.20792

a. Gender = 1

Table 1.4: One-Sample Statistics a

	N	Mean	Std. Deviation	Std. Error Mean
Pre	100	3.6550	1.96458	.19646

a. Gender = 1

The mean (average) of girls' scores is 4.01 and the mean of boys' scores is 3.65. In order to test the main hypotheses of the study, first of all, one must make sure of the normality of the data. To achieve this goal, the normality will be tested per the method in the following section.

2.1 Examining the normality of data through Kolmogorov – Smirnov test

When determining if a sample of quantitative measures has been obtained through a normal distribution, one of the most common tests of compatibility is the normal distribution (normality) test. The Kolmogorov-Smirnov test is suitable for testing for normality.

Kolmogorov-smirnov (KS) test: Examining or analyzing the distribution of the data of dependent and independent variables.

H_0: Normal distributed data

H_1: Non-normal distributed data

The normality of two communities is examined. Hence, in order to examine the normality of data, the Nonparametric Kolmogorov-Smirnov test must be done first. The distribution can be assumed normal for boys and girls as a whole or separately.

Before performing statistical tests on data, in order to choose the appropriate statistical test, it is necessary to be aware of normality and non-normality of distribution of data. To achieve this goal, Kolmogorov-Smirnov test is used for examining the normality of the test scores.

The Kolmogorov-Smirnov test for, respectively, girls and boys population is as follows.

Table 1.5: One-Sample Kolmogorov-Smirnov Test a

		Pre
N		100
Normal Parameters[b,c]	Mean	4.0100
	Std.	2.0792
Most Extreme Differences	Absolute	.062
	Positive	.062
	Negative	-.060
Test Statistic		.062
Asymp. Sig. (2-tailed)		.200[d]

a. Gender = 1

Table1.6: One-Sample Kolmogorov-Smirnov Test a

		Pre
N		100
Normal Parameters[b,c]	Mean	3.6550
	Std.	1.9645
Most Extreme Differences	Absolute	.089
	Positive	.077
	Negative	-.089
Test Statistic		.089
Asymp. Sig. (2-tailed)		.051[d]

a. Gender = 2

The most important output is the last row of each of the two tables, which is the P-value, or tailed probability test for the data.

Moreover, the amount of significance (2-tailed) related to girls' scores is 0.00 and the amount of significance (2-tailed) for boys' scores is 0.011, and both are lower than 0.05. So, there is no reason (significant at 0.05 level) to reject this null hypothesis that the independent samples have been obtained from the normal distribution.

There is no reason to reject that the intended distribution is normal. Per the results of the tables presented above, it is observed that the null hypothesis of the research is accepted. The results of findings in the table indicate that,

in the normality test, the distribution of data is normal.

2.3 Hypotheses
The first hypothesis:

H_0: The average (mean) of students' scores is higher than 4.5.

H_1: The average (mean) of students' scores is lower or equal to 4.5.

Regarding the level of the score, the above test can be considered as follows:

H'_0: Less than 0.5 of students are considered to be in levels C and D.

H'_1: 0.5 or more than 0.5 of the students are considered to be in levels A and B.

The test is performed based on the initial form of the hypothesis considering the normality of data and using a one-sample t-test that ignores gender. Per the second hypothesis, the likelihood ratio test must be performed for a normal population. The result was the same for both methods. Thus, one of the tests, the one-sample T-test, will be considered here.

Table1.7: One-Sample Test a

	Test Value = 4.5					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Pre	-2.357	99	.020	-.49000	-.9026	-.0774

a. Gender = 1

As shown in Table 7, the significance (2-tailed) is equal to 0.02 and less than 0.05, so it can be concluded that the test is significant. Since the statistical amount of the test t = -2.357 < 0, and the average (mean) of scores of female students is more than 4.5, the null hypothesis H_0 can be rejected.

Table1.8: One-Sample Test a

	Test Value = 4.5					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Pre	-4.301	99	.000	-.84500	-1.2348	-.4552

a. Gender = 2

As shown in Table 8, the significance (2-tailed) is equal to 0.00 and less than 0.05, so it can be concluded that the test is meaningful and significant. Since the statistic amount of t = -4.301 < 0, and the average (mean) mean of male students' scores is higher than 4.5, the null hypothesis, H_0 can be rejected

Second hypothesis:

H_0: The average (mean) of girl's scores is lower than or equal to the average (mean) of boy's scores.

H_1: The average (mean) of girls' scores is higher than the average (mean) of the boy's scores.

Before performing the test and comparing the two populations, the conditions for doing the test must be prepared. The first condition is the independence of the two communities, which is fulfilled here. The second condition is examining the normality of the two societies, to make hypothesis of normality of data accepted.

Using a t-test, two examples of independent results are obtained in a table like the following.

Table 1.9: Descriptive Statistics

	Levene's Test For Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-	Mean Difference	
PreTest	Equal Variances assumed	.407	.524	1.241	198	.016	.35500
	Equal Variances not assumed			1.241	1937.367	.016	.35500

First, it must be noted that, according to the Levine test, the first row of the table is used for all variances of the two populations, and rejects all the variances.

According to the information in the table above, the significance (2-tailed), is equal to 0.016 and lower than 0.05, so it can be concluded that the test is significant. Since the statistical amount of test is t = 1.241 > 0, and the average (mean) of girls' scores is lower than or equal to the average (mean) of boys' scores, the null hypothesis H_0 can be rejected at a meaningful and significant level of 0.05. This result means that the level of the female students in English language vocabulary knowledge is higher than the boys' level.

3. CONCLUSIONS

According to the results of the study, the level of the students in English language vocabulary knowledge is low, and the level of the female students in English language vocabulary knowledge is better than the boys' level. Augmented Reality has great potentials in education, more specifically in language learning. It can create a new era for situated learning by integrating itself with mobile learning and other concepts and technologies. With augmented reality, there would be no need to define the learning contexts and environments, as the real-world circumstances define them. In Iran, vocabulary learning has been very problematic for students studying English as a foreign language (EFL). Because of students' inadequate knowledge of vocabulary, many have difficulties comprehending language input. Augmented reality represents one potentially powerful method for increasing language learners' vocabulary size due to its capacity for multimedia presentation.

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