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Using Augmented Reality Applications to Develop EFL Speaking Skills and Reduce Communication Apprehension of Primary Stage Pupils

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Abstract

The present research aimed at developing primary stage pupils' EFL speaking skills and reducing their communication apprehension through using a mobile augmented reality applications (MAR) treatment proposed by the researcher. The following instruments were constructed: a) a Speaking Skills checklist, b) a Speaking Skills test with a Scoring Rubric and c) a Communication Apprehension scale. The research adopted the quasi-experimental design using a pre-post two independent group design. Results of the reseach revealed that the proposed augmented reality applications (MAR) treatment had a positive effect on developing primary pupils' EFL speaking skills and reducing their communication apprehension. Finally, it was recommended that this MAR applications treatment should be integrated in a "Speaking Course" that learners may study or participate in and it should receive more attention from curriculum designers.

Keywords: EFL Speaking Skills, Communication Apprehension, Mobile Augmented Reality Applications, Primary Stage Pupils.

Introduction and Overview:

Nowadays, English language plays a vital part in many fields of life including Education. Teaching English as a foreign language (EFL) in a technology rich environment strengthens language learning and improves communication. Persons crave to be qualified in all of the four language skills (i.e., listening, speaking, reading and writing) to turn into fluent speakers and excellent communicators. Speaking skill provides the speakers with the unique advantage of gaining the attention of the audience, capturing their ultimate admiration and holding both of them till the completion of the message.

Speaking skill is well-known of its reputation as one of the most difficult skills. Many difficulties hinder students from speaking fluently and cause frustration. EFL learners' weakness in speaking skills turns them into phobic learners and creates their rejection to speak and communicate. EFL learners feel nervous and unrelaxed during oral conversations. Lack of previous preparation, fear of pronouncing words incorrectly and their inability to form well-structured sentences confuse them. All These elements cause tension and lead to what is called communication apprehension.

The rapid technological invasion and noteworthy digital advances have created one of the most fascinating phenomena for humans during the history which is simply the possibility to visualize the invisible. Without implementing technology in teaching and learning process, teachers will find themselves walking a tightrope and going nowhere so time has come to make technology their friend. In this digitalized era, progression in the communication technologies has had a substantial impact on the field of English language education (Ince, 2014; Mills & Kohyama, 2016).

The mobile phone is spreading more and more like wildfire and it becomes a crucial part of anyone's life. It is the means of communication that can serve educational purposes such as developing language learning. More teachers welcome the intervention of mobile phones in language learning tasks. "The use of mobile technology is a new gate-way to create more interactive environment in the classroom in an interesting and innovative way by making teaching more and more effective" (Yedla, 2013). Mobile phones are indispensable and can be considered a remarkable leap to a new world. Mobile phones are an enterance to deal with teaching and learning process from another trendy dimension.

The Speaking Skill

Speaking skill has been long considered to be the most distinguishing and powerful skill that grants the opportunity for meaningful communication and deep interaction with other people around the world. From EFL learners' viewpoint, this specific skill is also considered the most crucial long-term aim to maintain and accomplish (Brown, 2001; Al-Hosni, 2014; Ariyanti, 2016). Delivery of spoken information and conveyance of meaning among people are not as simple as they seem to be on the surface. They are very elusive and arduous due to the extreme endeavors they require and their regular presence in daily situations and in human interaction (Fauzan, 2016). Poccessing the ability to use the language itself in real life contexts and mastery of vocabulary, pronunciation, fluency and grammar go hand in hand. Although this skill remains the common path through which persons can expose and share ideas, thoughts, opinions and everythinng in their heads by word of mouth (Efrizal, 2015; Gani, Fajrina & Hanifa, 2012), the lion's share of difficulty goes to speaking skill on merit due to being associated with some challenging features.

Regardless of the overvaluing respect paid to speaking and accepting it as the most prominent of all language skills (Noor, Apriliaswati & Rosnija, 2012), it is mostly neglected during the language learning process

because of its demanding nature (Nazara, 2011 & Alonso, 2014). According to the viewpoint of some teachers, it is hard to assess learners while they are speaking. In addition, speaking skill is generally not preferred compared with other skills. So far, more concentration has been given to other skills and the emphasis has been on reading and writing skills in the classroom (Richards & Rodgers, 2001).

The improvement of linguistic and sociolinguistic skills are necessary to learn a language (Mahbub-ul-Alam & Khan, 2014). Phonology, morphology, linguistic semantics and syntactic language do not receive adequate preference or enough attention. Consequently, acquisition of the speaking skill is most needed for EFL learners. Stressful preparation of speaking activities in advance and negative opinions about speaking are other reasons that stand behind low performance in speaking (Mahmoud, 2012). Spoken English is a basic requirement of the future and an essential inclusion of the new technology (Leong & Ahmadi, 2017). EFL learner have to be taught speaking skills to be able to communicate in everyday events and cope with modern technology.

Augmented Reality (AR)

In this age of technological advancements, the use of technology in education makes the learning process more active, inspiring, meaningful and motivating (Singhal, Bagga, Goyal & Saxena, 2012). Augmented Reality (AR) is one of these new technologies that can be used in many different platforms such as desktops and mobile devices (Kirner, Reis & Kirner, 2012). Augmented Reality is the seamless integration of virtual objects and real environments (Azuma, 1997). AR is a technology in which an artificial environment is created through the combination of a real world scene with a virtual scene in the way that the user sees both scenes as a single one (Wu, Yu Lee, Chang & Liang, 2013). Student-centered activities are enhanced by this kind of incorporation of a virtual world and a real environment. AR has the potential to move learning out of the classrooms and into the places where students live.

Many of previous studies dealt with the effect of augmented reality and its applications on just one speaking sub-skill (i.e., vocabulary, pronunciation, grammar, fluency and overall comprehensibility). For example, Sorrentino, Spano & Scateni (2015) presented both LEAF and Speaky Notes which were web-based software to create a mobile application that supported children in learning a new language in a more pleasant and entertaining way by using Augmented Reality. This application allowed pupils to improve their speaking skills turning the language

acquisition into a game under the supervision of both teachers and parents. Norraji & Sunar (2016) developed an AR mobile application called "WARna" to enhance children's experience during coloring activities. These applications showed that augmented reality is able to extend the limitations of traditional learning approaches by enhancing learners' visualization, especially on spatial relationships. Safar, Al-Jafar & Al-Yousefi (2017) reported the effect of using Augmented Reality applications in teaching the English alphabet to kindergarten children. Sirakaya & Cakmak (2018) revealed that the use of AR technology in education had positive contributions to students' satisfaction and success. It also created a deep impact on students' achievement. It showed great changes in their attitude towards the language.

Che Dalim, Sunar, Dey & Billinghurst, (2019) explored the potential of Augmented Reality (AR) and speech recognition as a strategy for teaching basic English to non-native young learners. They developed a prototype AR interface called TeachAR. Children had to say the new words repeatedly in order to get correct pronunciation in the speech-enabled teaching platform of TeachAR. Lyu (2019) designed The GOAT (Gamified cOmunicAtion Tool) and developed this application with AR technology. The GOAT app encouraged Japanese second language students to speak English and overcome their language anxiety and ultimately the barrier of speaking English. Haggerty & Whaley (2020) examined the effects of video modeling (VM) using an augmented reality ipad application on improving phonics skills of first-grade students who struggle with reading. Results indicated that all students made a significant growth in their performance. AR technology simplified information and grabbed students' attention. AR visualized the abstract concepts in minds.

Communication Apprehension (CA)

Communication is not a simple process as it seems. There are factors that cause difficulties in speaking English among EFL learners. These factors are related to the learners themselves, the teaching strategies, the curriculum and the environment (Rababa'h, 2005). Students feel really shy about talking in front of others. They suffer from anxiety of making mistakes and fear of negative evaluation so they prefer to remain silent. Avoidance of evaluative situations and nervousness of making errors create communication apprehension. Another reason for students' silence may simply be that the learning activities are boring and irrelevant to continual digital revolution. Speaking in front of other people needs courage, motivation, joyful atmosphere and interesting topics (Kannan, 2009).

Ka-kan-dee (2017) investigated the degree of communication apprehension among EFL students in oral presentation and speaking. The outcomes of the study showed that students experienced high degree of apprehension, which prevented them from doing their presentation appropriately. Leong & Ahmadi (2017) conducted a study to determine the factors affecting learners in English speaking skill. The findings indicated that learners with low self-esteem were less comfortable in their speaking classes and students with higher anxiety and low motivation had serious difficulties in oral communication. Students with lower apprehension and anxiety could speak easily and effectively.

Hartl et al (2019) presented an application with AR technology to show visual information about the audience's mood in a scenario where users is giving presentation. An AR solution was created to support the speaker while giving a speech by tracking the audience's current mood and displaying this information in real time to the speaker's view. Chen (2019) conducted a study to investigate whether mobile AR differently affected learning, motivation, and Math anxiety between students with different levels of anxiety (high or low anxiety) in primary math education. The results showed that AR group performed better than the Non- AR group. Escudero, Cutiopala, Caisaguano, & Gallegos, (2020) examined the drawbacks EFL students experience in oral communication in spite of years of English instruction. Results determined that learners face many (communication apprehension) problems in producing spoken language due to cognitive and social difficulties.

Background of the problem

In real classroom situations, students find it a hard mission to communicate with others using the target language. They assume that speaking a foreign language perfectly with a good pronunciation, fluency and accuracy is a complex task to fulfill. The majority of foreign language learners complain about their lack in fluency, low pronunciation level, no accuracy, and so many dilemmas they confront in their oral practices in classroom. Asking students to have the ability to speak well, fluently and accurately with lack of speaking skills and under intensive criticism is where the actual problem lies.

A pilot study was conducted a pilot study to determine pupils' speaking level during oral communication. EFL Speaking test was administered to 3rd year primary pupils in Delta International Language Schools (DILS). They were asked to answer orally. The topics were chosen from 3rd year pupils' book. Table (1) shows the mean scores and the

standard deviations (SD) on the speaking sub-skills for the EFL speaking test.

Table (1): Pilot Study Results

Speaking Skills	X	SD	%
Pronunciation	1.68	.88	56%
Vocabulary	2.42	.35	49%
Grammar	2.53	.36	51%
Fluency	1.12	.572	54%
Total	7.75	2.162	52.5%

These results showed that the mean score and the percentage of the EFL speaking test were 7.75 and 52.5% respectively which is an indication that the pupils needed to improve their EFL speaking sub-skills (i.e., pronunciation, vocabulary, grammatical skills, and Fluency). It must be taken into account that this category of learners studies at a language school in which most of subjects are taught in English like science and mathematics, so it was essential for these learners to have mastered the speaking skill since they need it most during the interaction process that happens inside the classroom.

Statement of the problem:

The reseach problem was stated as follows:

Based on the previous review of literature, the researcher's experience as a teacher of English and the results of the pilot study, it became clear that third grade primary pupils had a weakness in their EFL speaking skills and they lacked the ability to conduct and perform a well-established conversation. They were in need to improve their EFL speaking skills and reduce their communication apprehension.

Consequently, the current study was conducted to investigate the effect of using mobile augmented reality applications on developing primary stage pupils' EFL speaking skills and reducing their communication apprehension.

Questions of the study

The present study attempted to answer the following main question:

- To what extent can using mobile augmented reality applications help develop EFL speaking skills of primary stage pupils and reduce their communication apprehension?

Consequently, the study attempted to answer the following sub-questions derived from the main question:

1. What are the features of the downloaded mobile augmented reality applications that can be used to develop primary stage pupils' EFL speaking skills?
2. What is the effect of using mobile augmented reality applications on developing primary stage pupils' EFL speaking skills?
3. What is the effect of using mobile augmented reality applications on reducing the primary stage pupils' communication apprehension?

The Purpose

The current study aimed at:

1. Identifying the features of mobile augmented reality applications that can be employed in this study.
2. Investigating the effect of using mobile augmented reality applications on developing EFL speaking skills of the primary school pupils.
3. Investigating the effect of using mobile augmented reality applications on reducing communication apprehension.

Significance

The current study could be considered significant as it would contribute to:

1. Highlighting the importance of EFL speaking skills as they relate what the learner has learned with a process of thinking to express the ideas.
2. Providing empirical evidence to the value of incorporating and adopting mobile augmented reality applications in an EFL context.
3. Helping EFL learners overcome the difficulties they face while communicating in English and give them the opportunity to express themselves freely and gain confidence to speak.
4. Directing the attention of EFL teachers and curriculum designers towards the modern mobile AR applications that could help learners develop their speaking performance.
5. Raising the awareness of EFL specialists of the importance of employing mobile augmented reality applications in language teaching.

Delimitations

The study was delimited to:-

1. Two intact classes from the 3rd grade primary stage pupils at Al Shaheed Mohamed Mostafa El Gohary Official Language School (formly called Nasser Official Language School), one class as an experimental group and another one as a control group.

2. One term from the 2021/2022 academic year as the duration of the experiment.
3. Some EFL speaking skills required from the primary stage pupils: (e.g., grammar, vocabulary, fluency, pronunciation and overall comprehensibility).
4. Some mobile AR applications (e.g., Snapchat, AR Unite and AR Loopa) appropriate for improving pupils' EFL speaking skills.

Hypotheses

The present study tested the following hypotheses:

1. There is a statistically significant difference at the 0.05 level between the mean score of both the control and experimental group pupils on the EFL Speaking post-test in favor of the experimental group.
2. There is a statistically significant difference at the 0.05 level between the mean score of the experimental group pupils on the EFL Speaking pre and post-tests in favor of the post one.
3. There is a statistically significant difference at the 0.05 level between the mean score of both the control and experimental group pupils on the post administration of the Communication Apprehension scale favoring the experimental one.
4. There was a statistically significant difference at the 0.05 level between the mean score of the experimental group pupils on the pre and post administrations of the Communication Apprehension Scale favoring the post one.

Methodology

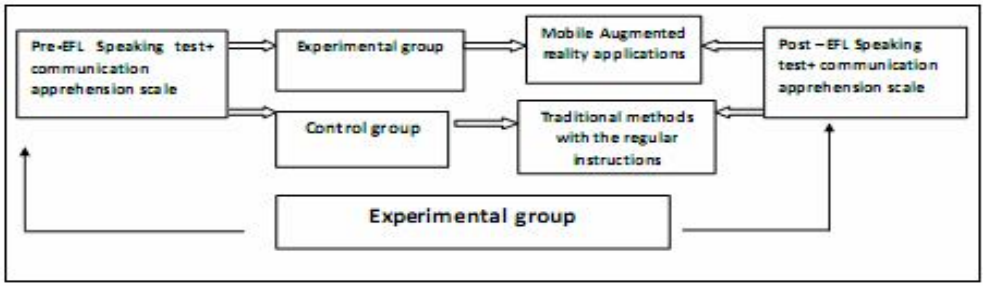
Participants

The participants of the present study were a group of third grade primary stage pupils (N=70) enrolled in one of the official language schools in Mansoura, Dakahlia Governorate during the second semester of the academic year (2021- 2022). The sample was distributed into two groups (a control group and an experimental one) and each group consisted of 35 pupils.

Design

The study adopted the quasi-experimental design in terms of dividing the participants of the study into two groups : the experimental group and the control one. The experimental group received instruction through using downloaded mobile Augmented Reality (MAR) applications. On the contrary, the control group was taught EFL speaking skills through the regular method of instruction.

Figure (1): the quasi experimental design of the study



Instruments and materials

The present study employed the following instruments and materials:

1. An EFL Speaking Skills Checklist to determine the most important EFL speaking skills necessary for the third grade primary pupils.
2. A pre-post EFL speaking skills test to assess the speaking skills performance of the third grade primary stage pupils.
3. A scoring rubric to provide clear and accurate standards for scoring the test.
4. A communication apprehension scale to measure pupils' apprehension during oral communication and speaking before and after the treatment.
5. The downloaded MAR applications (i.e., Snapschat, AR Unite and AR Loopa).
6. The treatment sessions.

Procedures:

The procedures followed by the researcher in conducting the study can be summarized as follows:

1. Reviewing the related literature and previous studies.
2. Adopting a list of the EFL speaking skills that should be mastered by 4th primary stage pupils as identified in the pupils' textbook, the workbook and teacher's guide.
3. Designing instruments of the study in their initial form. Next, presenting the instruments of the study to jurors' recommendation and putting them in their final form.
4. Choosing and deciding on the number of participants.
5. Randomly assigning the participants into a control group and an experimental one.
6. Pre - administrating the instruments to the participants.

7. Training the experimental group using the mobile AR applications in an appropriate period of time while the control group studies through the regular method.
8. Post - administrating the instruments to the participants.
9. Collecting and analyzing data.
10. Presenting the discussion of results.
11. Recommendations for future research will be given.

Definition of terms

Speaking Skill

Speaking skill was operationally defined for the purpose of the study as "The ability to communicate by combining words and using grammar to give meaning and accomplish social tasks with accuracy, fluency and overall comprehensibility."

Communication Apprehension

In this study, communication apprehension was operationally defined as "The level of pupils' nervousness which they experience at the thought of communicating with others and their fear of judgment from the audience when they are exposed to a public speaking situation."

Augmented Reality

For the purpose of this study, augmented reality was defined as " A digital technique that allows learners to combine both virtual objects such as: videos, images and 3D animation with the physical world and interact with them through using some downloaded mobile applications to develop their speaking performance."

Mobile Augmented Reality Application

In this study, some easy mobile augmented reality applications (Snapchat, AR Unite & AR Loopa) were used to enhance what pupils saw through the mobile device's camera with multimedia content.

Statistical Analysis and Results

Establishing the Homogeneity of the groups

The study instruments were administered before the treatment to establish the homogeeity between the experimental and control groups. Pupils' oral performance was scored and rated on the speaking skills test and their communication apprehension was rated on the communication apprehension scale. Data were collected and analyzed statistically using appropriate statistical methods as shown in Table (4).

Table (4) t- test value between mean score of both experimental and control groups in pre-test:

Speaking Skills	Group	N	Mean	SD	*t*	Df (n-1 +n2-2)	Sig.(2-tailed)
Pronunciation	Exp.	35	4.57	.92	1.8	68	Not Sig.
	control	35	4.23	.65			
Vocabulary	Exp.	35	5.09	1.12	1.4	68	Not Sig.
	control	35	4.74	. 98			
Grammar	Exp.	35	5.03	1.01	0.6	68	Not sig.
	control	35	4.86	1.22			
fluency	Exp.	35	4.06	.34	1.02	68	Not Sig.
	control	35	4.17	.57			
Overall Comprehensibility	Exp.	35	4.74	.98	0.8	68	Not Sig.
	control	35	4.57	.92			
Total	Exp.	35	23.66	2.14	1.95	68	Not Sig.
	control	35	22.57	2.50			

Results in table (4) indicate that the independent t-test value of the total speaking skills pre-test was 1.95, and it was non-significant. There are no significant difference at the level of 0.05 between the mean score of the experimental and control groups on the pre- administration of the speaking skills test, which means that the two groups were homogeneous. Consequently, results of the table verify the homogeeity between the control and the experimental groups**.**

Table (5) Pre-administration t-test results between the experimental and control groups on the communication apprehension scale

scale	Group	N	Mean	*t*	Df(n1+n2-2)	Sig. (2-tailed)
Total scale	Exp.	35	68.1	0.97	68	Not significant
	Control	35	67.1			

Table (5) reports that the t-test value was not significant for the two groups. This means that there was no statistically significant differences at the level of 0.05 between the mean score of the experimental and control groups in the pre- administration of the communication apprehension scale. In other words, the two groups were homogeneous in their communication apprehension towards EFL speaking skills at the beginning of the study.

Testing the First Hypothesis

The first hypothesis stated that: "There is a statistically significant difference at the 0.05 level between the mean scores of both the control and experimental group pupils on the EFL Speaking Skills post -test in favor of the experimental group pupils". A t-test for independent samples was used to verify this hypothesis. Table (6) reports results concerning the first

hypothesis which addressed the differences between the mean scores of the control group and those of the experimental group of each speaking sub-skill on the post administration of the EFL speaking skills test.

Table (6) Results of t- test of the control and experimental group on the post- administration of the EFL speaking Skills test.

Speaking Skills	Group	N	X	S.D	Df	*t*
Pronunciation	Exp.	35	6.74	1.09	68	8.7
	control	35	4.63	.92		
Vocabulary	Exp.	35	6.57	1.04	68	2.9
	control	35	5.66	1.57		
Grammar	Exp.	35	5.54	1.20	68	0.4
	control	35	5.43	1.50		
fluency	Exp.	35	5.43	1.14	68	5.4
	control	35	4.23	.65		
Overall Comprehensibility	Exp.	35	5.89	.96	68	5.2
	control	35	4.69	.96		
Total	Exp.	35	30.11	3.50	68	6.7
	control	35	24.51	3.48		

* Significant at 0.05

Table (6) shows that the mean scores of the experimental group pupils in the five sub-speaking skills and in the total increased and became higher than those of the control group. The table illustrates that the estimated t- value is significant at 0.05 level. This indicates that there are statistically significant differences between the experimental and control groups in the five sub-speaking skills and in the total score on the post-administration of the test. These significant differences are in favor of the experimental group.The experimental group outperformed the control group.

Testing the Second Hypothesis

The second hypothesis stated that: "There is a statistically significant difference at the 0.05 level between the mean scores of the experimental group pupils on the EFL Speaking Skills pre and post -tests in favor of the post one". A t-test for paired dependent samples was used to test the second hypothesis, which addressed the difference between the experimental group pre and post administration of the Speaking Skills test.

Table (7): Comparing the EFL Speaking Skills Performance of the experimental group on the pre & post- administration of the Speaking Skills test

Skills	Test type	N	X	SD	Df	*t*
Pronunciation	Pre	35	4.5714	.91670	34	9.8
	Post	35	6.7429	1.09391		
Vocabulary	Pre	35	5.0857	1.12122	34	6.7
	Post	35	6.5714	1.03713		
Grammar	Pre	35	5.0286	1.01419	34	3.01
	Post	35	5.5429	1.19663		
fluency	Pre	35	4.0571	.33806	34	6.96
	Post	35	5.4286	1.14496		
Overall Comprehensibility	Pre	35	4.7429	.98048	34	6.7
	Post	35	5.8857	.96319		
Total	Pre	35	23.6571	2.14123	34	14.4
	Post	35	30.1134	3.49598		

* Significant at 0.05

Results in table (7) indicate that the total mean score of the pupils on the pre-total Speaking Skills test was (23.6571), while their total mean score on the post-total Speaking Skills test was (30.1143). These results indicate that the high mean was obtained for the post-test results. So, it can also be noticed that the t- value for the total speaking skills test was 14.4.Results in the above table show that the estimated t- value is significant at 0.05 level. Thus, the results of the t-test verified the second hypothesis. This reflects that there are statistically significant differences between the mean score of the pre-post-administration of the total speaking skills test. This significant difference is in favor of the post test.

Estimating the effect size (η2):

Eta Squared (η2) was used in order to estimate the effect size of the experimental treatment.

Table (8): Value of (η2) and the experimental treatment on EFL Speaking Skills:

Skills	*t*	df	Eta – Squared (η2)*	Level of effect size
Pronunciation	9.8	34	0.74	Large
vocabulary	6.7	34	0.57	Large
grammar	3.01	34	0.21	Large
fluency	6.96	34	0.59	Large
Overall comprehensibility	6.7	34	0.57	Large
total	14.4	34	0.86	Large

Table (8) illustrates the effect size of the MAR treatment on both the speaking skills and communication apprehension of the experimental group pupils. Results indicate that the effect size is large. The difference between the pre and post adminstration can be illustrated as follows:

1. A 74% of the total variance of experimental group pupils' post –level in the first sub- skill (pronunciation) of the dependent variable can be attributed to the independent variable (MAR applications).
2. A 57% of the total variance of the second sub -speaking skill (vocabulary) can be attributed to the independent variable (MAR applications).
3. A 21% of the total variance of the in the third sub- speaking skill (grammar) can be attributed to the independent variable (MAR applications).
4. A 59% of the total variance of the in the fourth sub- speaking skill (fluency) can be attributed to the independent variable (MAR applications).
5. A 57% of the total variance of the in the fifth sub- speaking skill (overall comprehensibility) can be attributed to the independent variable (MAR applications).
6. An 86% of the total variance of the overall EFL speaking test can be attributed to the independent variable, using the MAR applications (the proposed treatment). According to Cohen's standards, this is a high indicator of the effect of the treatment on promoting the pupils' EFL speaking skills. It is obvious from the previous table that the effect of the treatment on the development of the EFL Speaking Skills was significant, as indicated by the obtained total test percentage.

Results prove that the statistical difference between the pre-post administration of EFL Speaking Skills test is in favor of the post administration. In addition, the size of these differences fosters and supports the positive effect of the treatment on developing the pupils' EFL speaking skills. Therefore, the second hypothesis of the study can be accepted.

Testing the Third Hypothesis

The third hypothesis stated "There is a statically significant difference at 0.05 level between the mean score of both the control and experimental group pupils on the post administration of the communication apprehension scale favoring the experimental group". The researcher used a communication apprehension scale to compare the scores of both the

experimental group and those of the control group after the administration of the treatment (MAR applications).

The following table shows results concerning the third hypothesis which addressed the difference between the mean scores of both the control group and those of the experimental group pupils on the post administration of the communication apprehension (CA) scale favoring the experimental group.

Table (9): Results of t- test of the control and experimental groups on the post- administration of the communication apprehension scale

Scale	Group	N	X	SD	df	*t*
Total scale	Exp.	35	51.6286	4.17334	68	14.7
	Control	35	66.0286	4.03285		

* Significant at 0.05

Table (9) indicates that there is a statistically significant difference at 0.05 level between the mean score of the post administration of the motivation scale of the experimental group and those of the control group in favor of the experimental group; as the t value=14.7 is statistically significant at 0.05 level. These results give support to the fact that the experimental group outperformed the control group, which may be attributed to the effect of the proposed treatment (MAR applications).

Testing the Fourth Hypothesis

The fourth hypothesis stated that "There is a statically significant difference at 0.05 level between the mean scores of the experimental group pupils of pre and the post administrations of the communication apprehension scale of FL learners concerning MAR application usage in favor of the post administration ". A t- test for dependent samples was used to test this hypothesis which addressed the differencebetween the experimental group pre and post on application of the communication apprehension scale.

Table (10):Results of t- test of the experimental groups on the pre & post-administration of the communication apprehension scale

scale	**Administration**	**N**	**Mean**	**SD**	**df**	***t***
Total scale	Pre	35	68.1429	3.71913	34	17.96
	Post	35	51.6286	4.17334		

* Significant at 0.05

Results in table (10) show that the total mean score of the experimental group pupils on the pre- administration of the CA scale is (68.1429) while the total mean score of pupils on post- administration of the communication apprehension scale is (51.6286). These results indicate that the high mean score was obtained for the post-administration results. The t- value for the CA scale was17.96, so the results in the above table illustrate that the estimated t- value is significant at 0.05 level and this reflects that there is a statistically significant differences between the mean scores of the CA scale of the experimental group pupils in the pre-post administration of the CA scale in the favor of the post administration. Thus, the results of the t-test verified the fourth hypothesis.

The calculation of effect size

To calculate the effect size, the researcher used (η2) to measure the effect size. Table (11) illustrates the effect size and values of (η2) of the MAR treatment to reduce the communication apprehension towards EFL speaking skills.

Table (11): Value of (η2) and the Levels of Effect Size

Skills	*t*	df	Value of Eta Squared(η2)*	Level of effect size
Total scale	17.9	34	0.90	Large

Table (11) indicates the high effect of MAR applications on the total score of the CA scale, as the value of (η2) in the total score on the CA scale is =0.90. From the results of table (11), 90% of the total difference in pupils' reducing communication apprehension is due to the large effect of MAR applications.

Discussion of Results

The results dicussed above reveal the following:

1- There was a statistically significant difference at the 0.05 level between the mean scores of both the experimental and control groups on the speaking post-test favoring the experimental group.
2- The mean score of the experimental group on the post-speaking test in the overall speaking skills was significantly higher than their mean score on the pre-test.
3- There was an increase in the mean score of each sub-skill on the post Speaking Skills test.
4- The mean score of the experimental group was significantly lower than the mean score of the control group on the overall communication apprehension scale post administration.

5- The mean score of the experimental group on the post-administration communication scale was significantly decreased and became lower than their mean score on the pre-administration of the communication apprehension scale.
6- The highest mean scores were obtained for the pronunciation skill.
7- The lowest mean scores were obtained for the grammar skill.
8- There was a statistically significant difference between the mean scores of the experimental group pupils and those of the control group pupil on the Speaking Skills post-test in favor of the experimental group pupils.
9- There was a statistically significant difference between the mean score of the experimental group pupils on the pre and post administrations of the Speaking Skills Test in favor of the post-one.

The previous results affirms that there is a remarkable and noticeable development in the experimental group pupils' speaking skills on the post administration of the speaking skills test. This development is due to the use of MAR applications with the experimental group.

Mobile augmented reality applications which are featured with 3D animation, images, voices, music and colorful models are very catchy and attractive for the pupils as they encourage them to take part in the treatment in order to emulate the native speakers' pronunciation and act out different situations. This enables pupils to broaden their horizon and enrich their capacity to gain a good repertoire of vocabulary, right grammatical rules and strong sentence structure to apply them inside and outside the classroom. Their pronunciation has been improved and their rate of fluency has been fostered because they listened carefully and frequently to the listening texts and audio files of each unit. They kept listening to native speakers and paid so much attention to how the words and sentences that are pronounced before they made up their own videos.

In addition, hesitant and timid pupils got involved gradually and step by step boosted confidence in their potentials to speak English in front of an audience. Also, pupils who had some sort of negative, gloomy and antagonistic attitudes towards English confessed their excitement and enthusiasm to speak English as they had a lot of fun and jubilation using the MAR applications which held a new surprise each time. After a while, the number of the pupils who participated in speaking activities increased lesson after lesson. By the end of the study administration, almost every pupil participated in the treatment with clear joy and a spirit of creativity and revamp.

Major Findings:

This study yielded the following findings:

1. The experimental group pupils outperformed their control group counterparts on the speaking skills post-test.
2. The experimental group pupils greatly exceeded their control group counterparts on some sub-skill on the post Speaking Skills test especially the pronunciation skills.
3. The experimental group pupils showed lower apperhension than their control group counterparts on the communication apprehension scale post administration.

Recommendations of the Study

In the light of the results and conclusions of the current study, the following recommendations were suggested:

1. MAR applications treatment supports teaching English vocabulary with different technologies for creating a better learning environment so it is recommended to be used by EFL teachers as a framework for developing vocabulary.
2. This MAR applications trearment is recommended to be integrated in the "Speaking Course" that learners may study or participate in and it should receive attention from curriculum designers.
3. New techniques for enhancing speaking should be explored and exploited, so that language learners will easily make their way to their proficiency goals of the speaking skills.
4. Learners ought to adopt technology in teaching and learning in order to improve their levels in all academic fields.
5. Speaking skills should receive more attention by curriculum designers in order to be enhanced especially at the primary stage.

Suggestions for Further Research

The following suggestions are recommended for further research:

1. Using MAR applications treatment in developing the speaking skills of other EFL learners at other schools levels (e.g. preparatory and secondary stages).
2. Using this treatment to create different videos that pupils use in learning EFL.
3. Using this treatment with different set of EFL skills (e.g. reading, writing and listening) and with different participants.
4. Using this treatment to enhance the learning of disabled pupils' EFL Skills (e.g. reading and writing skills).

5. Using this treatment to enhance the learning of disabled pupils' EFL Skills (e.g. listening and speaking skills).

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