

**استخدام الواقع المعزز لتنمية مهارات الكتابة باللغة
الإنجليزية لتلاميذ المرحلة الابتدائية
بالمدارس الرسمية للغات**
**Using Augmented Reality to Develop Primary
Stage Pupils' EFL Writing Skills in
Official Language Schools**

إعداد

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المستخلص

يهدف البحث الحالي إلى استخدام الواقع المعزز لتنمية مهارات الكتابة باللغة الانجليزية لدى تلاميذ المرحلة الابتدائية بالمدارس الرسمية للغات ، حيث قامت الباحثة باجراء دراسة استطلاعية اشتملت على اجراء اختبار مهارات الكتابة باللغة الانجليزية للتلاميذ ، و اظهرت النتائج وجود قصور لدى التلاميذ فى مهارة الكتابة مما دفع الباحثة الى اجراء هذا البحث ، حيث تم اختيار عينة البحث عشوائيا والتي اشتملت على (٧٢) من تلاميذ الصف الرابع الابتدائي من تلاميذ مدرسة دار التربية للغات، احدى مدارس ادارة شبين الكوم التعليمية بمحافظة المنوفية، خلال الفصل الدراسى الاول للعام الدراسى (٢٠٢٣-٢٠٢٤) ، وقد تبنت الباحثة التصميم شبه التجريبي القائم على تصميم المجموعتين التجريبية والضابطة وقامت الباحثة باعداد اختبار مهارات الكتابة باللغة الانجليزية حيث تم تطبيقه قبلها على المجموعتين ، وتم التدريس للمجموعة التجريبية باستخدام الواقع المعزز بينما تم تدريس المجموعة الضابطة بالطرق التقليدية، وفى النهاية تم تطبيق الاختبار بعديا على المجموعتين وقد اظهرت نتائج التحليل الاحصائى تفوق المجموعة التجريبية مقارنة بالمجموعة الضابطة بعد اجراء التجربة وعمل المعالجة الاحصائية وذلك فى نتائج الاختبار البعدى. وقد استخدمت الباحثة العديد من الانشطة المصاحبة للواقع المعزز اثناء التجربة ، مما اضاف الى التجربة العديد من الاثار الايجابية التى انعكست على التلاميذ والبحث وساهمت فى نجاح التجربة.

الكلمات المفتاحية: الواقع المعزز ، مهارات الكتابة باللغة الانجليزية، تلاميذ المرحلة الابتدائية

Abstract

The present study aimed at improving English writing skills among primary school pupils using augmented reality. Seventy-two fourth-grade pupils from Dar Al Tarbia official language school, Shebin Elkoum, Menofia governorate participated in this research. The pupils were divided into an experimental group and a control group, each consisting of 36 pupils. The experimental group was taught using augmented reality applications, while the control group received standard instruction. Pre- and post-tests were administered to both groups to assess their writing skills. Statistical analysis of the results showed a significant improvement in the writing skills of the experimental group compared to the control group. The study concludes that augmented reality is effective in enhancing EFL writing skills among primary pupils. It is recommended that educators incorporate augmented reality into their teaching methods to improve EFL writing skills.

Keywords: Augmented Reality, EFL Writing Skills, Primary Stage Pupils

1.1.Introduction

Languages are vital in many facets of our daily existence. They play a role in many different areas of knowledge and the human sciences, not just communication. Languages have the power to advance and broaden human knowledge for the good of humanity. English is one of the languages that should be considered a global language among all others. It is the language that people speak most in the globe. It serves as a common medium of communication for people from many countries. English is being studied by an increasing number of kids worldwide as it is the second foreign language these days.

The English language four components are reading, writing, speaking, and listening. One of the four macro skills is writing (Warschauer, 2010). For three reasons, writing is crucial to EFL learner training. First, being a proficient writer is essential for success in school or the workplace. Second, as writers are more likely to explore complex lexical or syntactic expression in their written work, writing can be a useful technique for improving academic language skills (Warschauer, 2010). Third, writing can help students grasp a wide range of subjects since it helps them become more aware of their knowledge gaps and transform specialized knowledge into schemas that they can use to solve other relevant problems.

Writing is an intricate skill as it takes a lot of effort and time to be mastered. For EFL learners, it is the most challenging skill to master. The challenge is not just in coming up with and arranging ideas, but also in turning them into legible writing. Writing involves a very complicated set of talents. Writing abilities, particularly those related to creative writing, are undervalued and inadequately taught in our educational situations despite their significance and complexity.

Since English is a foreign language, learning English writing takes a lot of time, and some students become disinterested or lose faith in the process. This is due to the fact that when these students practice writing, they frequently run into a variety of issues (such as a lack of vocabulary, unfamiliarity with the topic of composition, and trouble expressing their views).(Shih, 2006).

The technologically advanced environment of the twenty-first century has an impact on every facet of peoples' lives. The education sector was not immune to the impact of technology, which has crept into the area through the use of computers, cellphones, laptops, and other gadgets. With the swift advancement of technology, computer-assisted language learning (CALL) arose as a means to improve language instruction and acquisition. The practice of English writing through mobile learning has been studied by numerous academics (Rudel,2006), but the application of augmented reality has already been looked into.

Augmented reality, or AR, is one of the newest technologies that's beginning to gain traction in CALL. Augmented Reality (AR) is a method that helps add virtual data to the real environment. Furthermore, augmented reality (AR) is a tool that facilitates learning using a range of media, including video, animation, sound, and picture. These supportive resources lessen issues arising from individual variances and contribute to the establishment of a productive learning environment by offering a more comprehensive context, especially for interaction-based oral courses. In language education, learners require both written and spoken input that is understandable. This is because the use of images, videos, sounds, and animations enriches the input and adds to the learning process' longevity and interest. In this (Solak & Cakir, 2015).

Studies have been conducted regarding the efficacy of augmented reality applications in the fields of education and teaching foreign languages. The role of AR technology in Spanish teaching has been examined by Ibanez et al. (2011), and Perez-Lopez and Contero (2013), the effectiveness of the augmented reality technology in 3rd grade of an elementary school in Portugal has been investigated by Barreira et al., and the role of AR technology pop-up books to motivate and to help students increase their English language proficiency has been examined by Mhadzir and Phung (2013)

Radu (2012) and Yuen et al. (2011) presented some justifications for using AR technology in education as follows: augmented reality improves students' comprehension of scientific content in specific subjects. When compared to other learning tools like books, videos, or desktop computers, AR has the highest impact on student learning. Students are highly

enthusiastic about using AR technology in the classroom because they are happier, enjoy studying more, and are eager to use augmented reality apps once more. They feel satisfied, want to learn more, and want to use AR again. AR also leads to longer information retention because students retain information more deeply than when they learn it through conventional methods. AR also pushes students to investigate information and resources from different angles.

1.2.Context of the problem

A review of the literature has consistently highlighted a significant issue with EFL writing skills among learners. Studies by Allam (2012), Gebril (2014), El-Sayed (2015), Elbalshy (2016), and Ramadan (2017) have documented these challenges. To further substantiate this problem, the researcher conducted an experimental study with 30 fourth-grade pupils at Dar Al Tarbia Official Language School in Menofia Governorate. The study involved administering a writing test, and the results were concerning: 66.8% of the pupils demonstrated low proficiency in EFL writing skills.

Table (1) Distribution of marks among the students

Category of marks	(0:5)	(6:10)	(11:15)	(16:20)	(21:25)	(26:30)
Number of students	7	6	7	5	4	1
Percentage	23.4%	20%	23.4%	16.6%	13.3%	3.3%

1.3. Statement of the problem

The problem of the current study could be summarized in the weakness of fourth grade primary stage pupils' level in EFL writing skills.

1.4. Questions of the study:

To investigate this problem, the current study attempts to answer the following main question:

What is the effectiveness of augmented reality in developing primary pupils' EFL writing skills in official language schools ?

This main question could be sub-divided into the following ones:

- 1- What are the writing skills official primary pupils should have ?
- 2- To what extent do they possess such skills ?

- 3- How effective is augmented reality in developing words ?
- 4- To what extent is augmented reality effective in developing grammar and its use ?
- 5- To what extent is augmented reality effective in developing relevant and coherent sentences ?
- 6- To what extent is augmented reality effective in developing mechanics of writing ?

1.5. Aim of the study

The current study aims to investigate the effectiveness of augmented reality in developing EFL primary stage pupils writing skills.

1.6. Significance of the study

This research is significant for the following groups:

Curriculum Designers:

-Drawing attention to CALL in general and augmented reality in particular, encouraging the incorporation of activities and tasks that utilize augmented reality.

-Promoting the inclusion of innovative and technological methods in EFL classes.

Primary School EFL Teachers:

-Introducing teachers to new trends in teaching writing using augmented reality.

-Highlighting the importance of augmented reality in enhancing EFL writing skills.

Primary School Pupils:

-Developing and improving their EFL writing skills in an engaging and effective manner using augmented reality.

-Utilizing digital information, 3D models, videos, sounds, and movements to make learning more attractive and interactive.

1.7. Delimitations of the study

This study is delimited to the following:

1-Fourth year primary stage pupils in an official language primary school- Menoufia governorate.

2-Unity and coherence, Organization, Language use, and Mechanics as writing skills writing skills.

3-The first semester of the academic year 2023/2024.

1.8. Hypotheses of the Study:

The current study attempts to verify the following hypotheses:

- 1- There is no statistically significant difference between the experimental and the control groups' mean scores on the overall EFL writing skills post-test for official primary pupils.
- 2- official primary pupils' overall EFL writing skills posttest.
- 3- There is no statistically significant difference between the experimental and the control groups' mean scores on official primary pupils' each of the EFL writing skills posttest.

1.9. Variables of the study

- The independent variable: augmented reality
- The dependent variable: EFL writing skills .

1.10. Instruments and educational materials of the study

- 1)An EFL writing skills checklist to measure EFL writing skills among fourth year official language school pupils.
- 2)An EFL writing skills pre-posttest to measure the pupils' level in writing before and after the treatment.
- 3)A writing skills rubric to grade the EFL writing skills test.
- 4)A program based on augmented reality.

1.11. Definition of terms

- **Augmented Reality (AR):**

Augmented Reality (AR) is an evolving type of experience that involves integrating computer-generated content into specific locations or activities. Simply put, AR allows digital content to seamlessly blend and overlay onto our perception of the physical environment. In addition to 2D and 3D objects, users' real-world experiences can also include digital elements such as text, audio, video files, as well as tactile or olfactory information. (Yuen et al., 2011). In this study, the term augmented reality refers to a technique in which virtual information such as videos, images, and 3D animations are integrated with the user's environment to enhance the writing skills of sixth-grade official primary students.

Writing skills:

According to Helal (2003), writing is the ability of a student to complete guided writing assignments through various phases of the writing process, such as composing paragraphs and letters. In this study, writing skills refer

to the ability of sixth-grade official primary pupils to produce well-structured, grammatically correct, and coherent sentences and short paragraphs. The written paragraphs should demonstrate proficiency in organization, mechanics of writing, relevance, coherence, as well as language proficiency in terms of vocabulary and grammar. **2.Review of literature**

2.1.1 Stages of writing

Alodwan and Ibn Ibini (2014), mentioned that the notion of writing as an ordinary cyclical activity in which several steps are independent and sequenced does not exist anymore. In contrast, writing is now considered to be a complicated and integral set of processes in which interaction and reversibility are involved. Harmer (2007) pointed out that the process of writing is divided into four main stages. They are represented in the following figure:

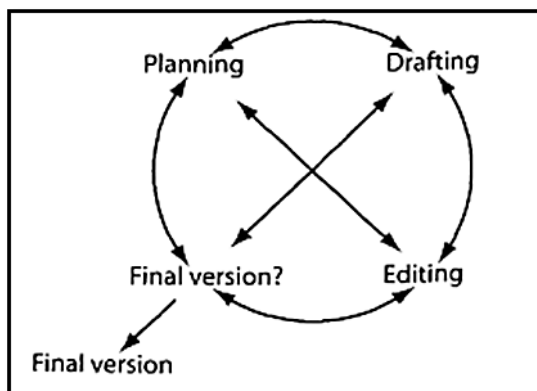


Fig. (1) Process of writing

Planning

Some experienced writers are planning what they're going to be writing. They make up their minds what they'll be saying by the time they start writing or typing. Three key issues are to be taken into consideration by writers in their planning.

a-The purpose of their writing: It will also affect both the type of text they want to generate and their language, as well as the information that they choose to include in it.

b-The target audience: This affects not only the quality of the written text but also the choice of language, for example whether it is formal or informal.

c-**The content structure of the writing piece:** This means, what is the best way of grouping facts, ideas or arguments that they choose to include.

2-Drafting

A draft is the first form of a piece of writing. As the writing process progresses, pupils may submit multiple drafts on their way to the final version.

Editing (reflecting and revising)

Once they've drawn up the proposals, students are usually going back to examine what they wrote in order to determine how it functions and doesn't. Other readers or editors who have commented and made suggestions can often be relied upon to help reflect and revise. It will help the author to revise appropriately when another reader responds to his or her writing.

4-Final version

After modifying their draft and adding whatever adjustments they deem appropriate, writers create their final edition. Due to changes made during the editing process, this may seem very different from both the first draft and the intended intention. But the author is now prepared to deliver the written work to its target readership. Graham et al. (2012) agreed with Harmer (2007) but they added to the previous stages three additional ones. They are as follows:

Planning

It is frequently associated with the development of goals and ideas, collecting information derived from reading, previous knowledge, or discussions around other topics that will lead to suggestions for writing in line with the aims of the text. In order to allow students to refer to and change these goals and ideas during the writing process, it is important for them to compile a list of such goals and ideas.

B-Drafting

concentrates on producing a draft copy of a text. When creating a draft, pupils are asked to pick words that best express their thoughts and formulate the sentences which they can then transpose into writing. At this stage, however, it is important for students to be able to use skills such as spelling, handwriting, capitalization, and punctuation when drafting; but these are not the focus of their efforts.

C-Sharing

Students can get criticism and suggestions for enhancing their writing by sharing ideas or drafts with peers, teachers, and other adults during the writing process.

D-Evaluating

Individual writers use this method when they re-read all or part of the text. They carefully consider whether their original goals are being met. Teachers and colleagues who provide feedback to authors can also carry out the evaluation.

E-Revising

This means amending the content after students first evaluate problems within their texts, which don't correspond to what it was meant for. In order to clarify or improve their meaning, students should make changes. It may include the restructuring of ideas, addition or deletion of entire sections of text, as well as revision of their linguistic choice and sentence structure.

Editing

Specifies that changes must be made to make sure that the text is properly structured in accordance with the English language conventions. It is important that students review their spelling, and grammar and correct any mistakes they may have made. Changes made to a text make it readable for outside audiences and can clarify the author's intentions.

Publishing

Usually, this happens after the writing process because pupils create a final product which is distributed to the public both in written and oral form. There is no need to publish every student's writing, but students should be given a chance to make their work publicly available and celebrate their achievements.

2.1.2 Techniques used to improve pupils' writing

The following techniques have been proposed by Al-Alami (2003), Brown (2001), El-Naggar (2002), and Hedge (2001) to improve pupils' writing:

1-Training pupils to be good writers: In the classroom, students should be involved in the writing process. Additionally, students can be encouraged to discuss what they have written before and after writing.

2-Writing as a skill should be integrated with other skills.

3-Involvement with writing: Models of good writing should be used in the classroom. To a certain audience, teachers should give them as many authentic writings as possible with a clear purpose.

4-Raising awareness about writing: This can be achieved by carrying out a questionnaire that gives students an insight into their potential roles and responsibilities in relation to the teacher.

5-Taking a balanced approach to teaching writing.

6- Varying strategies for responding to writing: self-correction and peer editing are widely recognized today.

7-Designing a grading scheme: The criteria for the assessment of a written article, as well as its key to correction, should be agreed between teachers and pupils.

2.1.3 Types of writing

Bukhari (2016) identified five types of writing. They are as follows:

1-Descriptive writing

Descriptive writing provides a simple format for summarizing all the facts and information on various areas pertaining to real life. It's a guide to people, places, events, situations, thoughts and feelings. Through the senses of sight, hearing, smell, state, and touch as well as emotion, a writer displays his or her ideas in descriptive writing. Descriptive details make it easier for readers to see elements in the story.

2-Critical writing

Critical writing is characterized by the following :

- A clear confident rejection to accept the conclusions of other writers without considering the arguments and evidence that they offer.
- Reasons why the conclusions of other writers may be accepted or may need to be treated with caution are revealed in a balanced presentation.
- A clear demonstration of your own evidence and argument guides to your conclusion.
- Accepting the limitations in your own idea, argument, and conclusion.

3-Persuasive writing

In persuasive writing, logic and reason are used to show that one idea is more legitimate than the other. It seeks to persuade the reader to take a position or take a specific action. By stating facts, providing logical reasons,

and using examples and quotations from specialists, the argument must always be based on sound reasoning and solid evidence.

4-Narrative writing

Narrative writing provides a subject matter that the writer has written on. This type of text is commonly taught to pupils, as it does not require them to be confronted with any additional elements relating to the sequence of events. The purpose of a narrative is to tell a story where the author talks about his or her feelings, thoughts, and actions. The writer creates a story that is not only entertaining to the readers but also contains a conclusion or a message.

5-Discursive writing

Discretionary writing is formal and impersonal. In a balanced discussion of the issue and an objective evaluation of it, this question is presented. This is a topic that may be difficult to discuss, but the essay makes an effort to bring a much more balanced debate about it. Each issue needs to be dealt with in a single paragraph and each paragraph should have a coherent sentence on the subject.

2.1.4 Factors affect pupils' writing

Maltin (2005) mentioned many factors that affect writing. They are as follows:

Social factors: e.g. audience who read the piece of writing.

Motivational factors: e.g. the pupils with high writing self-efficacy (assessment of one's capabilities), are expected to produce better writing than pupils with the same abilities but with less self-efficacy.

Motor factors: a student may write differently if they use a computer instead of pen and paper.

Working memory: Working memories are short and immediate recollections of material being processed at present, as well as coordinating our ongoing mental activities. For example, when students are required to write figures or graphs in their reports, they use working memory.

Long-term memory: It involves writing down semantic memories, experiences on topics, general designs and target groups.

Graham and Perin (2007) have a different view. They believe that the factors that influence writing are:

-Needs and objectives: Students' writing is affected by a number of different kinds of differences. If the learning plan has been designed to meet learners needs and objectives, ESL writing development will be improved.

- Motivation: Students are motivated to write when they are allowed to choose the topics they want to write about. Successful writers have a good sense of writing.

Authenticity: It's about using text to get the message across to the right people. It helps students focus on content and organize their written work.

- Cultural and linguistic experiences: Students' culture and native language writing skills can influence development.

-Background knowledge: a student's background knowledge affects his or her writing. A student with limited knowledge needs new experiences to build knowledge.

-Integrating the four language skills: Al-Alami (2003) and Madkour (2009) mentioned that the problem of integration is widely understood.

2.2. Augmented reality

2.2.1 Definition of augmented reality

According to Holler and Feiner (2004, P. 2), Augmented Reality is a system that blends computer-generated and real-world data in a live setting, allowing users to interact with it in real time and align virtual and real-world times.

Zhou et al., (2008, P. 193) defined Augmented Reality as a technology that superimposes real-time, computer-generated virtual graphics over oversized physical objects.

Kan et al., (2011, P. 340) stated that Augmented Reality refers to combining virtual items with the actual world in a way that allows users to explore the real world surroundings through interactive virtual objects, creating a realistic illusion.

Miyosawa et al., (2012, P. 1) mentioned that Augmented Reality is the ability to superimpose digital material on the actual world via a smartphone or personal computer. It allows us to see and experience a world full of knowledge that was previously unimaginable.

Gutiérrez and Fernández (2014, P. 24) stated that Augmented Reality modifies the user's view of reality by fusing virtual elements into it. It is not simply restricted to the use of virtual components; it has the ability to remove real-world things as well.

Kysela and Storkova (2014, P. 927) described Augmented Reality as a way of displaying digital content in a picture of the real world and potentially interacting with the surroundings and the user.

Abdoli-Sejzi (2015, p. 1) pointed out that Augmented Reality is a direct or indirect approximation of the real world with the addition of computer inputs such as audio, video, graphics or GPS data.

2.2.2 Types of augmented reality

According to Shetty et al., (2015) types of augmented reality are as follows:

Recognition: Recognition is the standard type of augmented reality used to deliver additional virtual information to a user in real time using special features such as recognition, faces, or other elements from an actual world. Example of this is shown in the following figure.



Fig. (2)
Recognition

Location:

Location uses GPS technology to provide instant location information. For example, a person could use a smartphone with GPS to determine their location and then display arrows on the screen overlaid on a live image of what is in front of the user and show them instructions on where to go. An example of this is shown in the following figure.



Fig. (3) Location

Outline: combines the frame of the human body or part of the body with the physical device, allowing the user to pick up and use the virtual object.



Fig. (4) Outline

Projection: It is a common type of augmented reality. It captures real-time images and uses them to enhance your real-life experience. Some mobile devices can record audio and video and communicate using a camera. An example of an augmented reality device that uses interactive projection is a virtual or projection keyboard.

Fig. (5) Projection



2.2.3 Augmented reality and writing skills.

Ellis, (2002), Rostami & Hoveidi, (2014) , Saud, Jufri, Rahman & Salam, (2014), stated that For most pupils, writing is one of the most challenging talents. Because they are not used to expressing concepts based on their sensuous experiences (seeing, hearing, smell, taste, and touching) in writing, pupils frequently struggle to articulate their ideas in the target language. Most foreign language learners are unable to use writing as an effective means of conveying new ideas and concepts, despite the fact that it is an essential ability to master. Pupils' propensity to employ avoidance techniques and a host of other issues are always caused by their fear of receiving criticism from the teacher. So, when pupils learn to write through a process that engages all of their senses, they will be able to overcome their writing challenges. Additionally, it could spur them on to become more interested in and motivated to improve their writing.

Safar, Al-Jafar & Al-Yousefi (2017) indicated that Schools must stay up with the rapid advancements in the world of ICT. The conventional approaches still employed in schools do not motivate students or provide them with knowledge in a way that is current and effective, nor do they keep up with the latest ICT tools, apps, and services. As a result, it's imperative to provide instructional resources that keep up with the technologically sophisticated world, particularly since these methods boost both teacher and student productivity. Furthermore, the quick advancement and development of AR technology has made it applicable to a wide range of topics. It also encourages creativity in educational activities and the necessary educational goals. Without a doubt, augmented reality technology has the potential to become the instructional technology of the future.

According to Kamnoetsin, (20140), Whithaus, (2005), Bensetti- Benbader,(2017), People living in today's world are a part of a continuous digital transformation. They essentially use the Internet and information and communication technology (ICTs) every day. People's lives are greatly impacted by technology, particularly those of college students. As a result, students are identifying as digital natives and the language classroom has shifted from the conventional language lab to adding digital tools due to technological advancements. Augmented Reality (AR) is one innovative technology that helps bring language training into the twenty-first century by effectively meeting the technological and motivational needs of students.

Teachers constantly strive to provide their pupils the best instructions possible by incorporating new technologies into their lesson plans and placing a strong emphasis on 21st-century abilities.

Rasalingam, Muniandy & Rasalingam, (2014), Solak & Cakır, (2015), pointed out that Teaching and learning methods are changing as a result of the ongoing advancements in technology. The profile of the learners may also vary during this process. Multitouch technologies are just one example of the new technologies that are commonly added to modern classrooms to make them better. Users will actively participate in an experience when augmented reality technology is used in teaching and learning. As a result, the majority of the knowledge that is given to them will be retained and remembered. Furthermore, augmented reality (AR) is a tool that facilitates learning using a variety of media, including writing, video, animation, sound, and picture. These supportive tools lessen issues arising from individual differences and contribute to the establishment of a productive learning environment by offering a more comprehensive background, especially for interaction-based oral courses.

2.2.4 Essence of augmented reality

Azuma (1997) introduced for the first time characteristics of augmented reality. These characteristics were emphasized by a wider research project of Azuma et al., (2001), which has been complementary to the earlier survey. These characteristics shall be as follows:

1-Combines real and virtual objects in real-time: real and virtual objects exist together in the same place and at the same time.

2-Runs interactively in real time: users interact with virtual content that responds to their actions.

3-Registers virtual objects in a 3-D alignment: virtual objects must be three-dimensional and must align correctly to the real world.

Liarokapis and Anderson (2010) also added the following ones:

-Simple and effective.

-Provides the user with clear and specific information.

-Enables the teacher to input information in a simple and efficient way.

-Enables easy interaction between learners and teachers.

-Makes complex procedures transparent to the learners and educators.

-Inexpensive and easily extensible.

2.2.5 Justifications of using AR in education

Radu (2012) mentioned that justifications of using augmented reality in education are as follows:

- 1- Increase student understanding of scientific concepts in specific subjects: when compared to traditional teaching materials like books, DVDs, or desktop computers, AR has the biggest impact on student learning.
- 2- When used in education, AR inspires a lot of student enthusiasm since it makes them feel more fulfilled, love learning more, and want to try AR applications again.
- 3- Leads to a longer retention of information since, in comparison to learning through conventional methods, the content explained by using AR applications is more deeply ingrained in memory.
- 4- Encourage students to examine a variety of educational materials and information.
- 5- Assists pupils in learning subjects like astronomy, geography, and other topics that can only be grasped or easily recognized by hands-on experience.
- 6- Expands the student's thinking capacity to help him know facts and ideas.
- 7- Assists students in customizing their education to fit their understanding and desired learning style.
- 8- Establishes a teaching and learning environment appropriate for a variety of pedagogical approaches and age ranges.

2.2.6 Augmented Reality as a motivating tool in education

Filgona et al. (2020) underscored that motivating students to learn poses an ongoing challenge in contemporary educational environments, as motivation stands as one of the pivotal components of childhood education. In accordance with Kucuk et al. (2014), augmented reality (AR) presents a departure from traditional methods by integrating virtual elements into real-world settings, thereby fostering interactive learning approaches that captivate students' attention and engagement in various tasks. This direct involvement in the learning process through AR technology significantly boosts learners' motivation, consequently enhancing their learning outcomes. Furthermore, Silva et al. (2015) noted that students exhibit

heightened enthusiasm and delight when utilizing this innovative technology, rendering them more inclined to participate in activities incorporating augmented reality.

3.Method

3.1.Participants of the study

Seventy-two from Dar Al Tarbia official language school, Shebin El-Koum, Menofia governorate participated in this study during the academic school year 2023/2024. They were assigned to two groups: a control group (N = 36) and an experimental group (N = 36).The participants' age ranged from eight to nine years. They were approximately at the same linguistic level as they have been studying EFL for about two years at the kindergarten stage and four years at the primary stage. The experimental group received EFL writing skills by the researcher through using augmented reality, while the control group received regular instruction.

3.2.Instruments and materials of the study

- 1)An EFL writing skills checklist to identify the pupils' problems.
- 2)An EFL writing skills pre-posttest to measure the pupils' level in writing before and after the treatment.
- 3)A writing skills rubric to grade the writing skills test.
- 4)A program based on augmented reality.

3.2.1 An EFL writing skills checklist

A)Aim of the checklist

The writing skills checklist aimed at identifying the appropriate skills for fourth grade official primary school pupils. The checklist was prepared in the light of the review of literature and related studies on writing skills. Also, the viewpoints of senior teachers, supervisors and EFL experts were considered.

B) Description of the checklist

The checklist included 4 main items representing the EFL writing skills checklist (unity and coherence, organization, Language use (vocabulary and grammar), mechanics). Every skill has many sub skills.

C) Validity of the checklist

A panel of jurors (N=8) in TEFL methodology were requested to validate the writing checklist and determine its clarity and appropriateness to the

pupils' level. The jurors validated it and provided some comments. The researcher modified and refined the checklist accordingly

3.2.2 An EFL writing skills pre-posttest

3.2.2.1 Aim of the EFL writing skills pre-posttest

In its pre-administration, it aimed at ensuring the equivalence of both the experimental and control groups on writing skills in their entry level. Post-testing aimed at measuring 4th year primary pupils' progress on writing skills due to augmented reality

3.2.2.2 Description of the EFL writing skills pre-posttest

The EFL writing pre-posttest consisted of eight questions. The first question is a dialog, where pupils were given some words and were asked to complete the dialog using these words. The second question is a multiple choice question, where pupils were given five sentences and were asked to choose the correct answer. In the third question, pupils were given five sentences and were asked to rewrite these sentences using the words between brackets. The fourth question is five scrambled sentences and pupils were asked to rearrange them correctly. In question five, pupils were given some sentences and each sentence contains an underlined word in bold which is not correct. Pupils were asked to correct these underlined words. In question six, pupils were given five pictures and two guiding words under each picture. They were asked to write a complete sentence under each picture using these guiding words. The seventh question is a punctuation question where pupils were given two sentences with four missing punctuation marks each. They were asked to punctuate them. In question eight, pupils were given some guiding words and they were asked to write a paragraph.

3.2.2.3 Validity of the EFL writing skills pre-posttest

To determine the EFL writing skills pre-posttest validity, it was given to a panel of jurors (N=8) in TEFL methodology. They were requested to read the test items and express their opinions for the following questions:

- 1.To what extent are the test items appropriate and sufficient to measure EFL writing skills ?
- 2.To what extent are the test items appropriate for 4th grade pupils, Dar Al Tarbia official language school ?

jurors approved the pre-posttest without any additions or deletions.

3.2.2.4 Reliability of the EFL writing skills pre-posttest

In order to calculate the reliability of the EFL writing skills pre-posttest, the following method was used:

● Test-Retest Method

In order to calculate the reliability of the EFL writing skills pre-posttest, the test-retest method was used where the test was administered to (30) pupils (not included in the main intervention) from Dar Al Tarbia official language school, Shebin El-Koum, Menofia governorate. Two weeks later, the test was re-administered to the same pupils. Pearson Correlation (r) was used to calculate the correlation between the two administrations. Reliability statistics were calculated by "Cronbach's alpha of the scores of EFL writing skills test" that Cronbach's Alpha of the test = 0.824. It means that the test has high reliability.

3.2.2.5 Reliability of the EFL writing skills pre-posttest

Test Time

The test time was estimated to be (45) minutes. It was computed by taking the average of time taken by each pupil having the test divided by pupils' number.

Test time = $\frac{\text{Time taken by all pupils}}{\text{Number of pupils}} = \frac{1245}{30} = 41.5 \text{ minutes} + 3.5 \text{ minutes for test}$

Number of pupils 30

3.2.3. The EFL writing skills Rubric

3.2.3.1 Preparing the EFL writing skills Rubric

To construct the EFL writing skills rubric, the researcher:

1. Reviewed the literature and previous studies related to EFL writing skills rubrics.
2. Analyzed the content of the text book (Connect plus 4th grade primary pupils).
3. Designed the instrument taking into consideration its relevance to pupils' language proficiency.
4. Submitted the rubric to a panel of TEFL jurors.
5. Modified and refined the checklist accordingly.

3.2.3.2 Description of the EFL writing skills Rubric

The researcher prepared the EFL writing skills scoring rubric to grade pupils' EFL writing skills before and after the experiment of the study. The rubric consists of four parts. Each part deals with a main EFL writing skill. Each part contains specific sub skills. Each sub skill includes three varying levels which are reflected in varying marks. These varying marks have three evaluation criteria. They are 3, 2, 1 (see appendix). Pupils get "3" marks if they did the most aspects of the defined sub skill. They get "2" marks if they did few aspects of the sub skill. At last, pupils get "1" mark if they did the least concerning the defined sub skill.

3.2.3.3 Validity of the EFL writing skills Rubric

To determine the EFL writing skills rubric validity, it was submitted to a panel of jurors (N=8) in TEFL methodology. They were requested to judge the rubric validity and give their opinions in terms of clarity and suitability to measure EFL writing skills of the pupils' level. Their comments were taken into consideration to form the final EFL writing skills rubric.

3.2.3.4. The teacher's guide

3.2.3.4.1 Content of the teacher's guide

The researcher conducted her experiment. The control group was taught using the regular instruction commonly used in teaching EFL writing skills, whereas the experimental group was taught using augmented reality (AR). The researcher guided the pupils and explained to them the steps they should follow when they use the augmented reality application. The experiment lasted for 8 straight weeks from 8th October (2023) to 26th November (2023). The experiment consisted of fifteen sessions. Time for each session was 60 minutes. The first session was the pretest on 8th October (2023). The second session was the orientation session, which was on 11th October (2023). The orientation session was an introduction about the experiment, its objectives (goal setting), and its importance. The researcher explained to the research participants the importance of foreign language writing skills and began to introduce the concept of augmented reality. The researcher also determined the procedures to be followed next sessions, the skills they will deal with later on, and the augmented reality application which was designed to achieve the aim of the research and how to use it.

The researcher selected units (1,2,3) from Connect plus level textbook for primary four. The three units consisted of fifteen lessons which were taught in thirteen sessions. Finally, the researcher post-tested the study participants using the same instrument (the EFL writing skills test) on 26th November, 2023

4.Findings and discussion

Data were treated statistically. Statistical Package for the Social Sciences (SPSS, version26) was used to analyze the pupils' scores on the pre and post-test. The results of the current research were interpreted considering the research and hypotheses:

4.1.1.Hypothesisone

There is no statistically significant difference between the experimental and the control groups' mean scores on official primary pupils' overall EFL writing skills posttest.

To investigate this hypothesis, data were described and summarized through calculating the means, standard deviation, minimum, and maximum scores of the control and the experimental groups as shown in Table (1).

Table (2) Descriptive Statistics of the Control and the Experimental Groups in overall writing skills.

Test	Group	N	Mean	Std. Deviation	Minimum	Maximum	Mean difference	total score
overall writing skills	Experimenta l	36	35.14	3.58	28	40	15.45	40
	Control	36	19.69	6.01	3	33		

Table (1) indicates that the value of the overall writing skills mean score of the experimental group was (35.14) which is higher than that of the control group which was (19.69). As table (2) shows the experimental group's scores were higher than those of the control group in the post-administration of overall writing skills test. It also indicated a higher homogeneity (=Std. Deviation /Mean) of the experimental group's grades than the grades of the control group due to using augmented reality . This is represented graphically in figure (1)

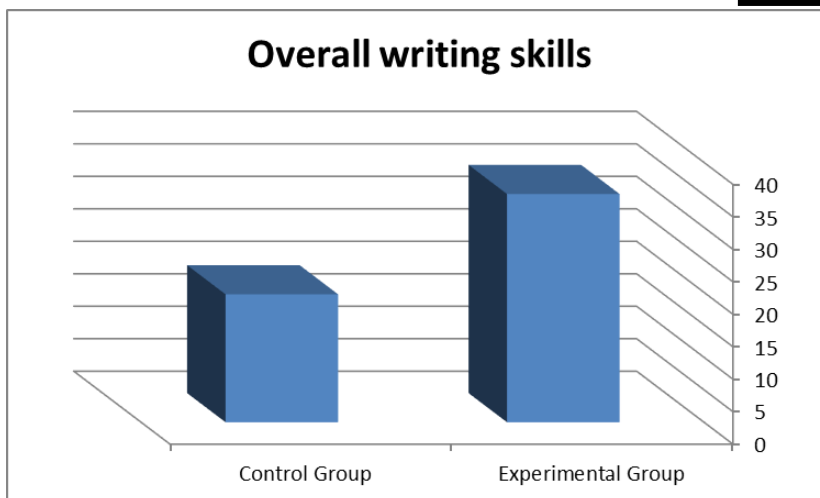


Figure (6) Bar Chart of the Mean Scores of the Control and the Experimental Groups in the Post overall writing skills.

To show the significance of the differences, independent Samples test t-value was calculated for the difference between the mean scores of the two groups as illustrated in table () :

Table (3) t-Value and effect size of both groups

Test	Group	Mean	Std. Deviation	t-value	d.f	Sig	η^2	d	Effect size
overall writing skills	Experimental	35.14	3.58	13.250	70	Significant at (0.01)	0.71	3.17	Large
	Control	19.69	6.01						

- T : Tabulated value = 2 (at 0.05 level , d.f. 70) and t = 2.66 (at 0.01 level , d.f. 70)

It is clear from table (2) that the calculated value of "t" (= 13.250) which is higher than the tabulated value of "t" with 70 degrees of freedom and significant level "0.01"; which means that the difference between the mean scores of the two groups reached the level of statistical significance. Thus, the first hypothesis is accepted.

To investigate the effect and educational importance of the results, the value of ETA squared and the effect size (d) were calculated using the following equation.

$$\eta^2 = \frac{t^2}{T^2 + d.f}$$

Table (4) Reference standers of (η^2) and (D) values

Test	Effect volume		
	Small	Medium	Large
η^2	0.01	0.06	0.14
D	0.2	0.5	0.8

ETA squared was 0.71 reflecting its practical significance. And in the light of this, it can be said that 71% of the variations between the scores of pupils in the overall writing skills could be due to differences of teaching treatment which the two groups were exposed to, and the effect size (d) = 3.17 and that there was height effect and educational importance for improving and developing overall writing skills.

4.1.2.Hypothesis two

There is no statistically significant difference between the experimental and the control groups' mean scores on official primary pupils' each of the EFL writing skills' posttest.

To investigate this hypothesis, data were described and summarized through calculating the means, standard deviation, minimum and maximum scores of the control and the experimental groups as shown in table (3).

Table (5) Descriptive Statistics of the Control and the Experimental Groups in each writing sub- skills.

Skill	Group	N	Mean	Std. Deviation	Minimum	Maximum	Mean difference	total score
Unity& coherence	Experimental	36	9.03	1.46	4	10	4.25	10
	Control	36	4.78	2.64	0	10		
Organiza tion	Experimental	36	4.75	0.44	4	5	2.33	5
	Control	36	2.42	1.57	0	5		
Language use (vocabulary& grammar)	Experimental	36	12.81	2.04	8	15	4.44	15
	Control	36	8.36	2.85	1	13		
Mechanics	Experimental	36	8.56	1.46	6	10	4.42	10
	Control	36	4.14	2.13	0	8		

It is clear from Table (4) that:

The value of unity& coherence mean score of the experimental group was (9.03) which is higher than that of the control group which was (4.78).

- The value of organization mean score of the experimental group was (4.75) which is higher than that of the control group which was (2.42).

- The value of Language use (vocabulary& grammar) mean score of the experimental group was (12.81) which is higher than that of the control group which was (8.36).

- The value of Mechanics mean score of the experimental group was (8.56) which is higher than that of the control group which was (4.14).

As table (3) shows the experimental group's scores were higher than those of the control group in the post-administration of each writing sub- skills test, it also indicated a higher homogeneity (=Std. Deviation /Mean) of the experimental group's grades than the grades of the control group due to using augmented reality (AR). This is represented graphically in figure (2)

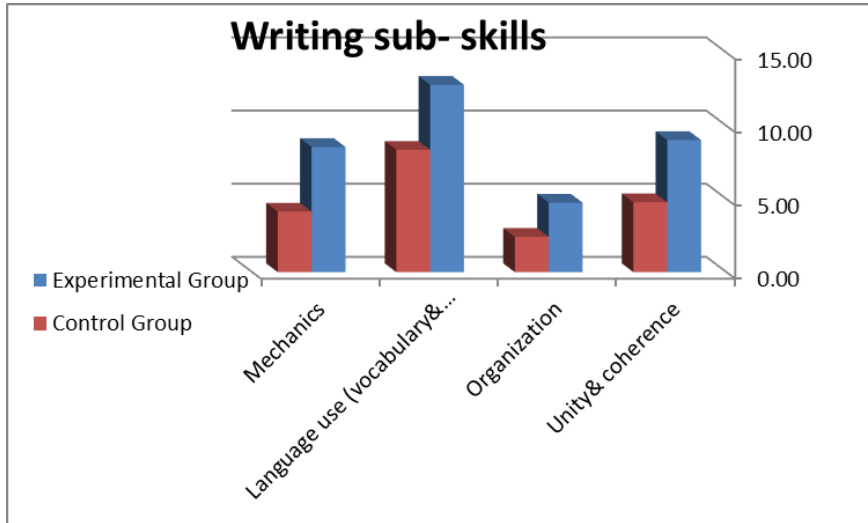


Figure (7) Bar Chart of the Mean Scores of the Control and the Experimental Groups in the Post test of each writing sub- skills.

To show the significance of the differences, Independent Samples Test t-value was calculated for the difference between the mean scores of the two groups. This is illustrated in table (4):

Table (6) t-Value and effect size of both groups

Skill	Group	Mean	Std. Deviation	t-value	d.f	Sig	η^2	d	Effect size
Unity & coherence	Experimental	9.03	1.46	8.44	70	Significant at (0.01)	0.50	2.02	Large
	Control	4.78	2.64						
Organization	Experimental	4.75	0.44	8.57	70	Significant at (0.01)	0.51	2.05	Large
	Control	2.42	1.57						
Language use (vocabulary & grammar)	Experimental	12.81	2.04	7.61	70	Significant at (0.01)	0.45	1.82	Large
	Control	8.36	2.85						
Mechanics	Experimental	8.56	1.46	10.27	70	Significant at (0.01)	0.60	2.45	Large
	Control	4.14	2.13						

- T : Tabulated value = 2 (at 0.05 level , d.f. 70) and t = 2.66 (at 0.01 level , d.f. 70)

It is clear from table (4) that the calculated values of "t" (= 8.44 , 8.57 , 7.61 , 10.27) which were higher than the tabulated value of "t" with 70

degrees of freedom and significant level "0.01". This reflects that the difference between the mean scores of the two groups reached the level of statistical significance.

To investigate the effect and educational importance of the results, the value of ETA squared (η^2) and the effect size (d) were calculated

4.2. Discussion of the results

The current study was designed to investigate the use of augmented reality to develop primary stage pupils' EFL writing skills in official language schools. Results of the current study revealed that augmented reality is effective in developing EFL writing skills. Findings of the current study might be due to the following:

First, augmented reality learning focuses on generating a learning environment that is non-threatening to pupils. They can get rid of their fears of writing as adopting the characteristics of AR (sound, animation, images, and videos) gave them the chance to express themselves freely and this helped students write better than students who studied using paper-based instruction.

Second, AR brings the real world into the classroom, encouraging students to be smarter at expressing their ideas and organizing them more appropriately. The actual world can be incorporated into the classroom to motivate students and achieve desired learning outcomes.

Third, augmented reality encourages students to learn by doing and work together. Students become more attentive when writing and enjoy such experiences (using AR English) application. They were confident enough and began to use the APP many times.

Fourth, through participating in the program, students' EFL writing skills were developed. Pupils became competent in applying the grammatical features of describing. They used adjectives to add extra information to nouns and verbs to add more information and provide more details.

Fifth, Pupils' interest towards English language learning increased. Augmented reality presents various fun activities and tasks. As a result, Pupils became more motivated and learn the language more effectively with a positive attitude. Through the implementation of augmented reality (AR

English) application, personal developments such as thinking, self-confidence, communication skills and team spirit were improved.

Sixth, pupils were active while using augmented reality (AR English) application. Everyone worked to achieve common goals. They worked together, co-operating and collaborating with his/ her group to make progress and finish the task on time.

These results confirmed the hypotheses mentioned above and showed the positive impact of using augmented reality to develop primary stage pupils' EFL writing skills in official language schools. Therefore, it appeared that that the results above offered sufficient proof to support hypotheses. Compared to the pre-test administration, there was a greater change in the experimental group's performance as demonstrated by the post-test administration. This development is due to administration of augmented reality.

5.Suggestions for further research

The research offers the following suggestions for further research:

- 1.Using augmented reality to develop primary stage pupils' other EFL skills such as listening, reading, receptive and / or productive skills.
- 2.Using augmented reality to develop primary stage pupils' EFL vocabulary and grammar learning.
3. Using augmented reality to develop EFL learners' creative writing skills.
- 4.Using augmented reality to develop different skills among learners at other educational stages.
- 5.Using augmented reality on other student-related psychological factors like: motivation, attitudes, values, self-efficacy, anxiety, and apprehension towards EFL learning experiences.
- 6.Using augmented reality to develop EFL learners' critical thinking skills.

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